Module 5 Means of Implementation and Finance

Standardized Baselines – Cases Studies:

Case Study 1: South African Power Pool (SAPP)

Case Study 2: Waste Sector

Montclair Hotel, Nyanga, Zimbabwe

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Case Studies

- Case Study 1: South African Power Pool

  Mayuresh Sarang

- Case Study 2: Waste Sector

  Ambachew Admassie

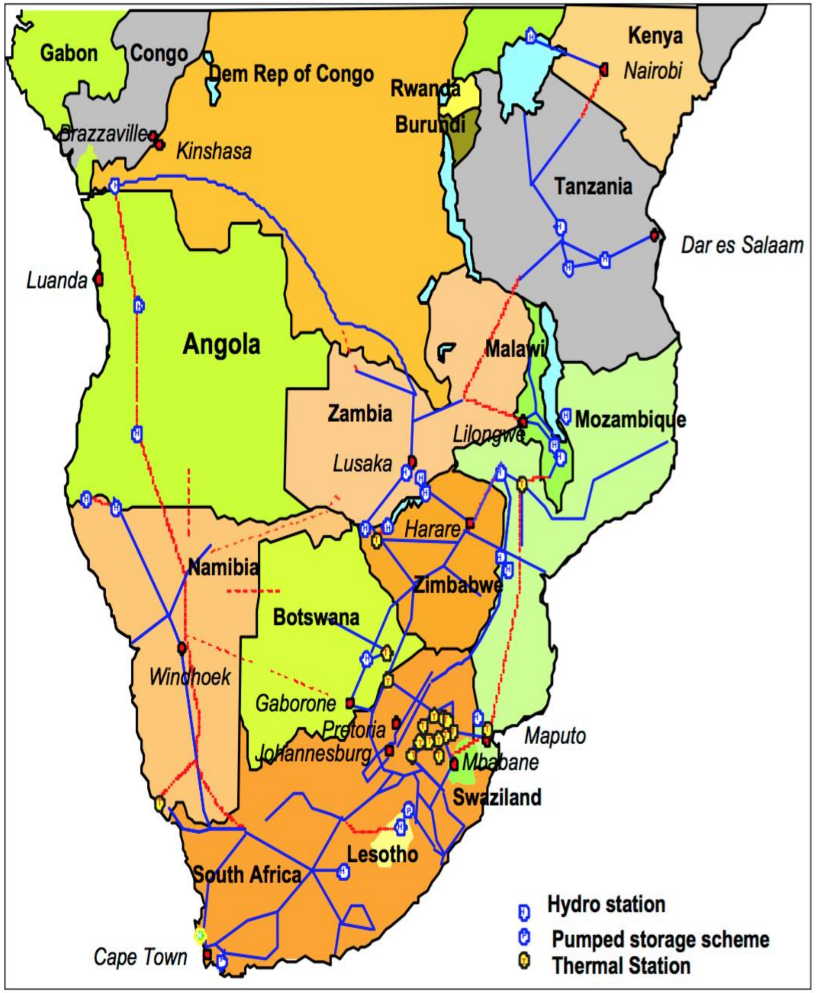
- Applicable to the group of countries, that are members of the SAPP

- SAPP members:

1. The Republic of Botswana (representative for the group of countries);
2. The Democratic Republic of the Congo (DRC);
3. The Kingdom of Lesotho;
4. The Republic of Mozambique;
5. The Republic of Namibia;
6. The Republic of South Africa;
7. The Kingdom of Swaziland;
8. The Republic of Zambia;
9. **Zimbabwe**

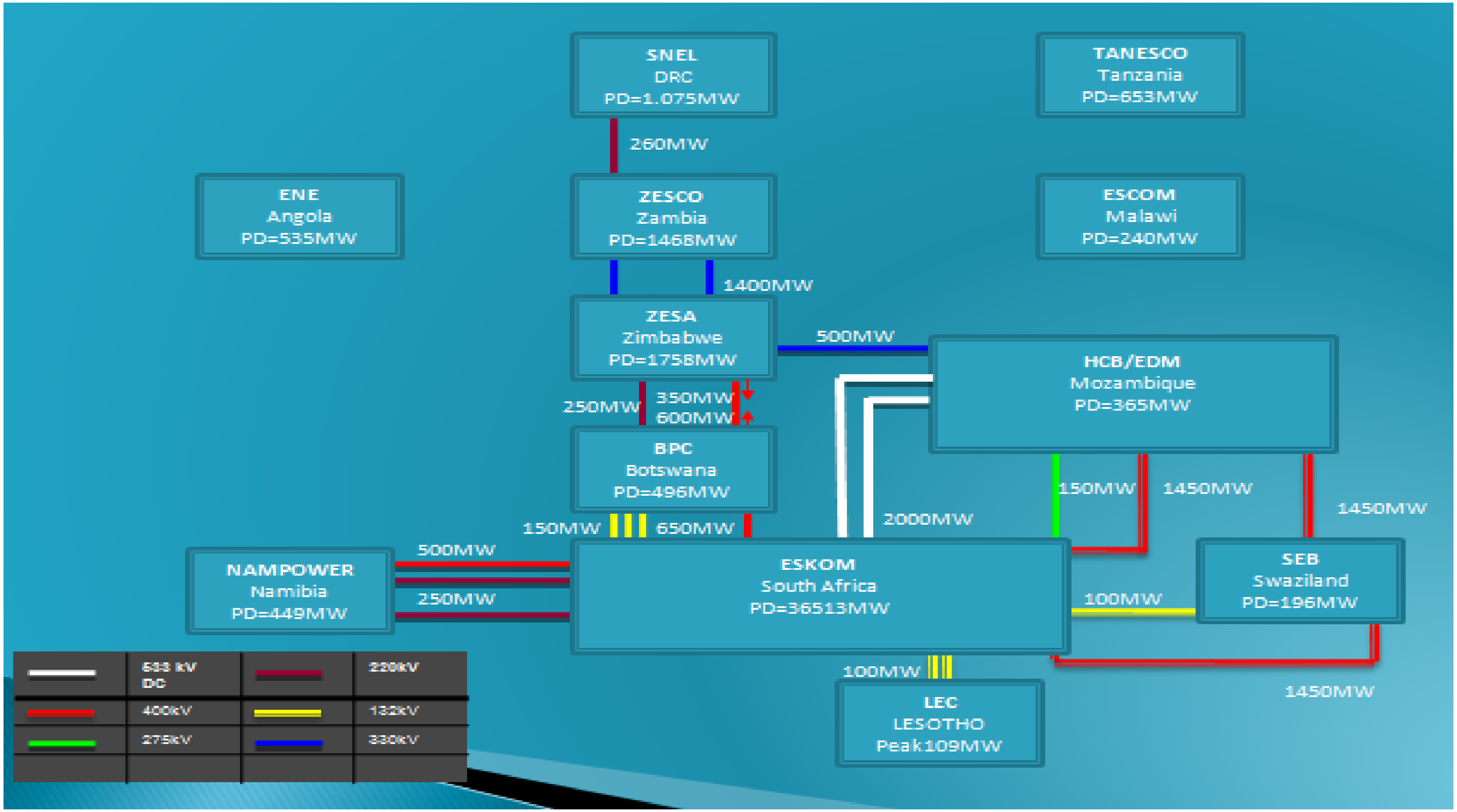
SAPP Countries

- SAPP member countries and the interconnected grid are shown in Figure
- SAPP comprises all 12 South African Development Country member countries in the subcontinent
- Nine of these are operating members, which are part of the interconnected grid
- Grid comprises of 97% of the energy produced by SAPP countries



Source: Southern African Power Pool (2008)

- Interconnected Transmission Lines & Capacities between SAPP Members



❑ SAPP Transmissions, data for year 2010

Utility A	Utility B	Transfer from B to A (in MWh)	Transfer from A to B (in MWh)	Transmission Capacity (in MWh)	Transmission Load Factor B to A (in %)	Transmission Load Factor A to B (in %)
ZESCO	ZESA	424,613		6,132,000	7%	0%
SNEL	ZESCO	107,870		2,277,600	5%	0%
ZESA	BPC	1,568,531		2,628,000	60%	0%
BPC	Eskom	1,452,837	2,353,865	4,599,000	32%	51%
HCB	ZESA	1,810,723	0	4,380,000	41%	0%
Eskom	NamPower	1,683,997	2,722	5,475,000	31%	0%
Eskom	SEC	575,842	172,174	11,388,000	5%	2%
Eskom	LEC	164,327	0	876,000	19%	0%
Eskom	EdM-South	1,882,564	0	10,512,000	18%	0%
HCB	Eskom	10,643,400	0	17,520,000	61%	0%
EDM-South	SEC	172,174	0	10,512,000	2%	0%

Background about SAPP

- SAPP allows for substantial electricity trades between the countries, their national power companies as well as between Independent Power Producers

- SB provides values of CO_2 emission factors for the interconnected electricity system of the SAPP

- Develop national grid emission factors (GEFs) in SAPP member countries for application in Clean Development Mechanism projects

- Calculation of the GEF was based on UNFCCC's "*Tool to calculate the emission factor for an electricity system*" (version 2.2)[++]

[++] Current version of the Grid Tool is 5.0

SB Development Steps

(a) Step 1: Identify the relevant electricity systems

(b) Step 2: Choose whether to include off-grid power plants in the project electricity system (*optional*)

(c) Step 3: Select a method to determine the operating margin (OM)

(d) Step 4: Calculate the operating margin emission factor according to the selected method

(e) Step 5: Calculate the build margin (BM) emission factor

(f) Step 6: Calculate the combined margin (CM) emission factor

Requires calculation OM, BM and CM emission factors for the electricity system:

- Operating Margin: Simple OM chosen for SAPP
  - Demonstrated that the Low-cost/must-run resources constitute less than 50 per cent of total grid generation
  - The 5-year average for SAPP was 19.995%
  - Simple OM may be calculated by Option A – i.e., based on the net electricity generation and a CO_2 emission factor of each power unit

- Build Margin:
  - Approach selected: set of power capacity additions in the electricity system that comprise 20% of the system generation (in MWh) and that have been built most recently
  - Approach resulted in a BM which comprises nine facilities commissioned between 2010 and 1987
  - These 9 plants generated 80,205,141 MWh in 2010 i.e., 27.96% of total generation – *well above the 20% required*
- Combined Margin: CM is the weighted average of the OM and BM

Final Values of SAPP SB

Parameter (tCO_2/MWh)	Weights	Description	Value
$EF_{grid,OM,y}$		Operating margin CO_2 emission factor for the project electricity system	0.9958
$EF_{grid,BM,y}$		Build margin CO_2 emission factor for the project electricity system	0.9331
$EF_{grid,CM,y}$	wOM = 0.75 and wBM = 0.25	Combined margin CO_2 emission factor for the project electricity system applicable to the wind and solar power generation for the first crediting period and for subsequent crediting periods	0.9801
$EF_{grid,CM,y}$	wOM = 0.5 and wBM = 0.5	Combined margin CO_2 emission factor for the project electricity system applicable to all project activities other than wind and solar for the first crediting period	0.9644
$EF_{grid,CM,y}$	wOM = 0.25 and wBM = 0.75	Combined margin CO_2 emission factor for the project electricity system applicable to all project activities other than wind and solar for the second and third crediting period	0.9488

Validity of the SAPP SB

- SAPP OM, BM and CM values are valid for three years from the date of adoption of standardized baseline, which was 31 May 2013

- Due to expire on 30 May 2016

- At EB89 (para 39 of Board report)
  - "The Board agreed, on an exceptional basis, and after having analysed proper justification, to extend the validity of the current version of the "Standardized baseline: Grid emission factor for the Southern African power pool" (ASB0001) by one year"

- New expiry 30 May 2017

Effect of standardized values

With one value of the GEF to be used by projects:

- Facilitate access to the CDM in the underrepresented countries-members of SAPP
- Implementation of projects with reduced transaction costs in all the 9 countries
- Ensures environmental integrity

Case Studies

- Case Study 1: South African Power Pool
- Case Study 2: Waste Sector

Background

- Waste: everything we send to the ecosystem (Boulding et.al)

- Waste Sector under the climate change debate: emission from handling of waste with focus on GHGs and precursors

- IPCC: GHG from Solid waste and liquid waste, (i.e GHG as waste from production processes treated under IPPU)

- IPCC Waste: Industrial and Domestic (household, institutional, community etc).

- Significant source of CO_2 and non CO_2 GHGs. CH_4 most significant. (Ex: Second largest non-AFOLU source of GHG in Zimbabwe). CDM skips precursors and conservatively neglects N_2O

CDM Methodologies in waste sector

- ACM 0001: Flaring or use of landfill gas V 17.0
- ACM 0014: Large-scale Consolidated Methodology, Treatment of wastewater ; V 06.0 ; Sectoral scope(s): 13
- AM0053: Approved baseline and monitoring methodology; “Biogenic methane injection to a natural gas distribution grid” **;** V 04.0.0, Sectoral Scopes: 01 and 05
- AM0069: Approved baseline and monitoring methodology, “Biogenic methane use as feedstock and fuel for town gas production”**;** V02;Sectoral Scopes: 01 and 05
- AM0080: Approved baseline and monitoring methodology;“Mitigation of greenhouse gases emissions with treatment of wastewater in aerobic wastewater treatment plants” V 01, Sectoral scope: 13
- ACM0010: GHG emissions reduction from manure management V 8.0

CDM Methodologies in waste sector

- ACM 0022: Alternative waste treatment process V 2.0
- AM0075: Approved baseline and monitoring methodology, “Methodology for collection, processing and supply of biogas to end-users for production of heat” V01, Sectoral scopes: 01 and 05
- AM 0083: Avoidance of landfill gas emission by in-situ aeration of landfills, V 1.01
- AM 0093: Avoidance of landfill gas emission by passive aeration of landfills, V 1.01
- AM0001 : Decomposition of floroform (HFC-23) waste stream Version 6? (IPPU as per IPCC)
- + Several small scale methodologies

SB waste Sector : where to start

- Standardization requires
  - Choice of intended mitigation action or areas thereof in waste sector
  - Choice of existing methodology fitting the intended mitigation action and is convenient for own/HC circumstance
  - or designing new methodology less section seeking standardization
  - examination of elements of the selected methodology
  - Selecting elements of existing methodology that needs or is plausible to be standardized (focus on transaction cost, data issues, strategic, MRV comparability, ease etc)
  - Optional: Ponder if complete standardization (tCO2/unit product) is possible/plausible . This may help increasingly align with the future!
  - Select a method of standardization
  - Develop a Standardized Baseline

SB Case: Land fill gas capture and flaring in Sao Tome and Principe

- Intended mitigation action: land fill gas capture and flaring
- Choice of existing methodology: AMS III G (landfill methane recovery) or ACM 0001 (Flaring or use of landfill gas)
- Elements of existing methodology sought to be standardized: Additionality, Baseline scenario and element of the baseline emission algorithm (value for amount of LFG captured or flared in landfills due to the regulation or contractual obligations)
- Selected method of standardization: the “Guideline for the establishment of sector specific Standardized Baselines”
- Status: SB developed and Approved

SB Case : Outcome

	Element standardized	Outcome of SB	merit of SB against the methodology
1	Additionality	All LFG capture projects in HC are additional	No further need of going through Additionality demonstration or validation of Additionality
2	Baseline Scenario	Atmospheric release of LFG	No further need of outlining other possible baseline scenarios
3	LFG that would be captured or flared in the baseline in year Y, in existing and new land fills	0	This value (0) is directly used to substitute the relevant parameter in AMS III-G and ACM 0001
4	Summed up	Reduced effort during registration/ MRV	Reduced transaction cost and registration timeframe; with no harm to environmental integrity
			Any waste actor in STAP can apply it!

End of presentation…

Thank You For Your Attention

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Extra

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