



GENERAL SECRETARIAT

**COMPARATIVE STUDY OF
ELECTRICITY TARIFFS
USED IN AFRICA**

DECEMBER 2009

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I. INTRODUCTION

In 2002, the UPDEA General Secretariat carried out a comparative study for Low and Medium Voltage electricity tariffs used in Africa. The study covered 24 power utilities.

The following one covers 40 power utilities spread out all over the 5 sub-regions of the continent. For this purpose, requests for information were sent to all utilities to provide updated data concerning their tariffs. For utilities which did not submit updated data, it was assumed that the data sent previously remain in force.

This study occurs in the framework of « benchmarking » in order to allow the various power utilities enhance their performances by comparing themselves. This study also will serve as a decision making tool for authorities of African countries in the process of formulating their tariff policy.

The study hereby does not concern public lighting and the High Voltage customers.

The General Secretariat welcomes any suggestion to improve the study and expresses acknowledgments to all utilities which information have enabled to work out this report. It hopes that the next edition will cover all power utilities of Africa.

II. METHODOLOGY

The methodology followed :

1. A request was sent by the General Secretariat to the various utilities in order to receive information on their tariffs: structures, categories, costs, etc...
2. The replies received were analysed in order to defined point of similarity and difference between the utilities.

3. Due to diversity in the list and content of tariffs categories and blocks, a harmonization was made in order to find bases to compare the rates received.

To this end, the following standard categories were defined:

- Social tariff (0 to 100 kWh)
- Domestic tariff (Single and triphase)
- Commercial tariff
- Semi-Industrial and motive power tariff
- Medium voltage tariff (only industrial usage was considered for MV consumers)

NB: A study will be carried out later on to analyse the disparities in the definition of tariff categories and blocks between power utilities in order to make relevant recommendations.

4. Concerning the rates, given the diversity of tariff structures, averages were calculated for each standard category as mentioned above. Afterwards the results were converted into USD to illustrate better the comparison.

The rates indicated are inclusive of taxes.

5. For a better comparison, only the following were considered :
 - Full time tariffs or equivalent tariffs, for utilities applying tariffs with time of use.
 - Calculation of an average for utilities applying seasonal tariffs
 - Medium usage for utilities applying tariffs with usage duration
 - Non including meter hiring fees.

III. WORK ASSUMPTIONS

The study has considered 6 categories of consumers.

1) Social LV consumers

- Consumption : 100 kWh/month
- Subscribed demand : 1 kW

2) Single phase domestic LV consumer

- Consumption: 200kWh /month
- Subscribed demand : 2 kW (1st case)
4 kW (2nd case)

3). Three-phase domestic LV consumer

- Consumption : 600 kWh/month
- Subscribed demand : 6 kW (1st case)
10 kW (2nd case)

4). Commercial LV Consumer

- Consumption : 1800 kWh / month
- Subscribed demand :12 kW (1st case)
15 kW (2nd case)

5). Semi-industrial and motive power LV. Consumer

- Consumption : 2500 kWh/ (1st case)
- Subscribed demand : 20 kW/ (2nd case)
25 kW (2nd case)

6). Medium Voltage consumer

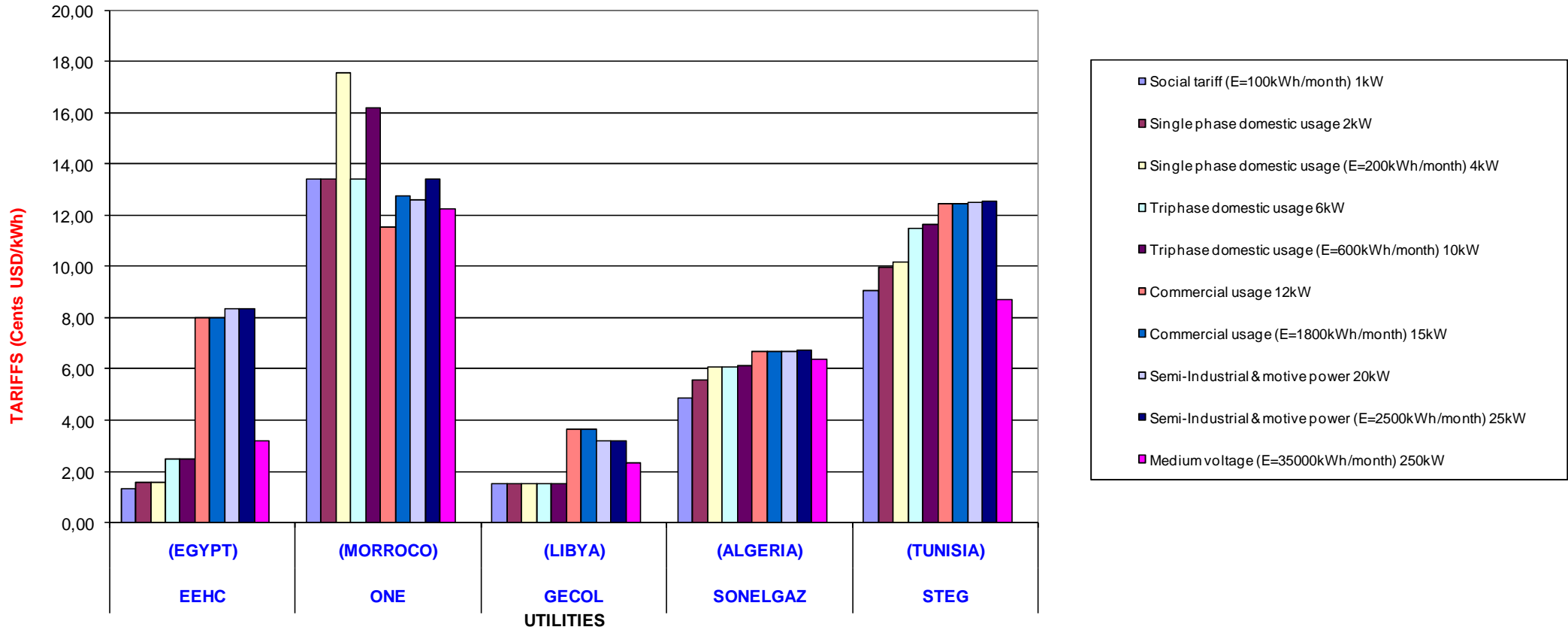
- Consumption : 35 000 kWh/month
- Subscribed demand : 250 kW

COMPARATIVE TARIFFS TABLES

NORTHERN AFRICA - COMPARATIVE TARIFF(cents US / kWh)

		EEHC	ONE	GECOL	SONELGAZ	STEG
		(EGYPT)	(MORROCO)	(LIBYA)	(ALGERIA)	(TUNISIA)
Social tariff (E=100kWh/month)	1kW	1,34	13,44	1,52	4,84	9,05
Single phase domestic usage (E=200kWh/month)	2kW	1,56	13,44	1,52	5,59	9,96
	4kW	1,56	17,56	1,52	6,07	10,20
Triphase domestic usage (E=600kWh/month)	6kW	2,50	13,44	1,52	6,09	11,48
	10kW	2,50	16,22	1,52	6,14	11,64
Commercial usage (E=1 800kWh/month)	12kW	8,02	11,52	3,64	6,66	12,44
	15kW	8,02	12,76	3,64	6,70	12,48
Semi-Industrial & motive power (E=2 500kWh/month)	20kW	8,33	12,62	3,18	6,68	12,53
	25kW	8,33	13,44	3,18	6,72	12,58
Medium voltage (E=35 000kWh/month)	250kW	3,20	12,27	2,35	6,36	8,70

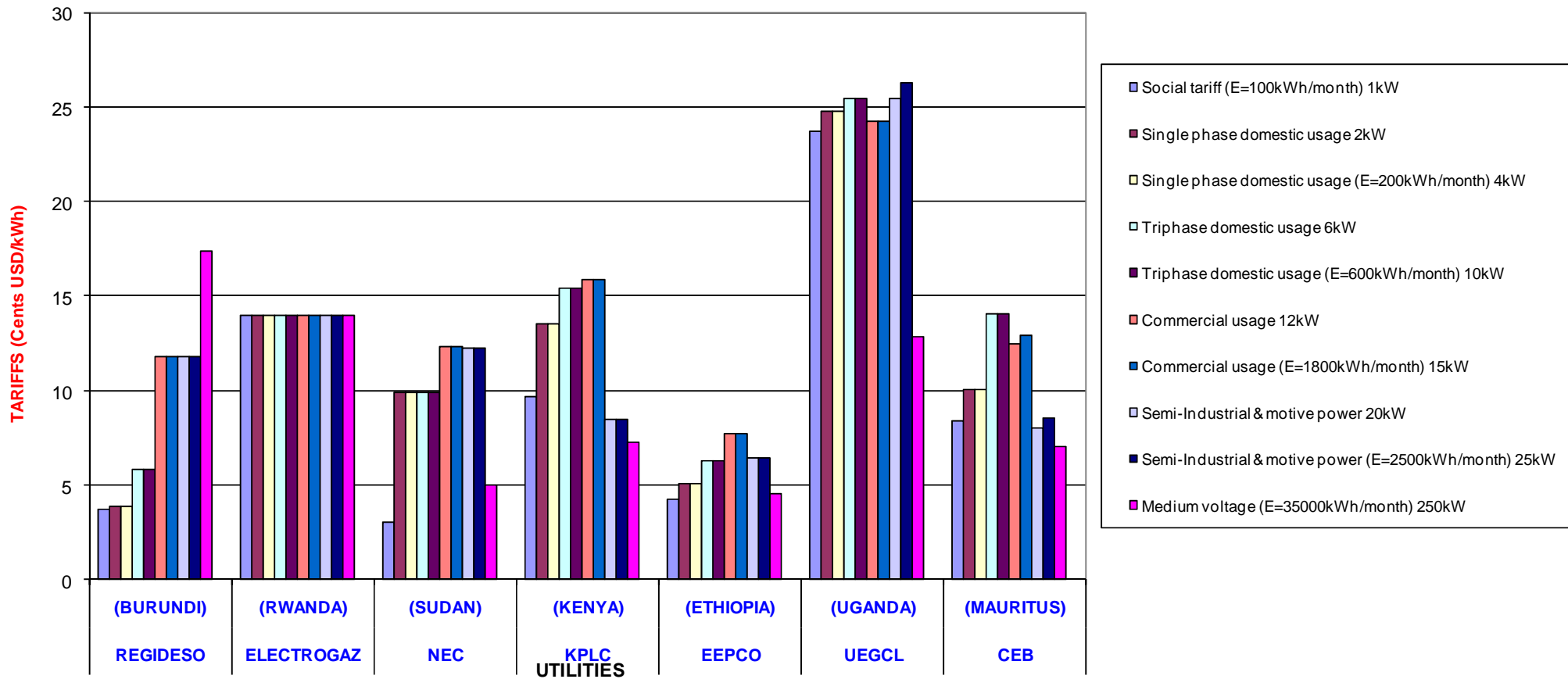
COMPARATIVE TARIFF GRAPH



EASTERN AFRICA - COMPARATIVE TARIFF(cents US / kWh)

		REGIDESO	ELECTROGAZ	NEC	KPLC	EETPCO	UEGCL	CEB
		(BURUNDI)	(RWANDA)	(SUDAN)	(KENYA)	(ETHIOPIA)	(UGANDA)	(MAURITUS)
Social tariff (E=100kWh/month)	1kW	3,70	13,99	3,04	9,70	4,25	23,74	8,42
Single phase domestic usage (E=200kWh/month)	2kW	3,82	13,99	9,88	13,50	5,09	24,79	10,04
	4kW	3,82	13,99	9,88	13,50	5,09	24,79	10,04
Triphase domestic usage (E=600kWh/month)	6kW	5,84	13,99	9,88	15,40	6,26	25,49	14,04
	10kW	5,84	13,99	9,88	15,40	6,26	25,49	14,04
Commercial usage (E=1 800kWh/month)	12kW	11,79	13,99	12,29	15,90	7,69	24,25	12,45
	15kW	11,79	13,99	12,29	15,90	7,69	24,25	12,94
Semi-Industrial & motive power (E=2 500kWh/month)	20kW	11,79	13,99	12,25	8,45	6,42	25,50	8,03
	25kW	11,79	13,99	12,25	8,45	6,42	26,26	8,53
Medium voltage (E=35 000kWh/month)	250kW	17,40	13,99	4,97	7,25	4,54	12,83	7,05

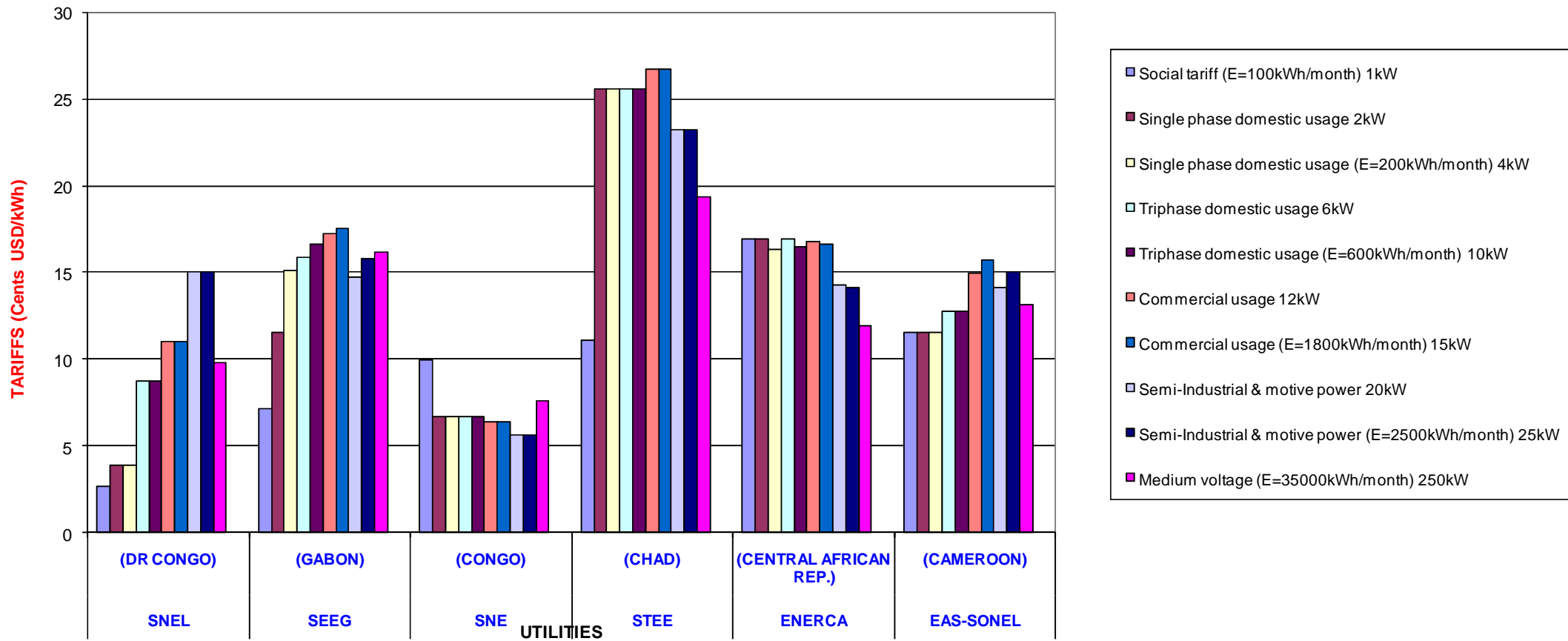
COMPARATIVE TARIFF GRAPH



CENTRAL AFRICA - COMPARATIVE TARIFF(cents US / kWh)

		SNEL	SEEG	SNE	STEE	ENERCA	AES-SONEL
		(DR CONGO)	(GABON)	(CONGO)	(CHAD)	(CENTRAL AFRICAN REP.)	(CAMEROON)
Social tariff (E=100kWh/month)	1kW	2,65	7,13	9,94	11,07	16,90	11,55
Single phase domestic usage (E=200kWh/month)	2kW	3,90	11,52	6,72	25,60	16,94	11,55
	4kW	3,90	15,10	6,72	25,60	16,30	11,55
Triphase domestic usage (E=600kWh/month)	6kW	8,70	15,90	6,72	25,60	16,94	12,73
	10kW	8,70	16,64	6,72	25,60	16,51	12,73
Commercial usage (E=1 800kWh/month)	12kW	11,00	17,23	6,40	26,75	16,80	14,94
	15kW	11,00	17,58	6,40	26,75	16,66	15,70
Semi-Industrial & motive power (E=2 500kWh/month)	20kW	15,00	14,76	5,64	23,26	14,27	14,09
	25kW	15,00	15,80	5,64	23,26	14,13	15,00
Medium voltage (E=35 000kWh/month)	250kW	9,80	16,17	7,60	19,33	11,91	13,17

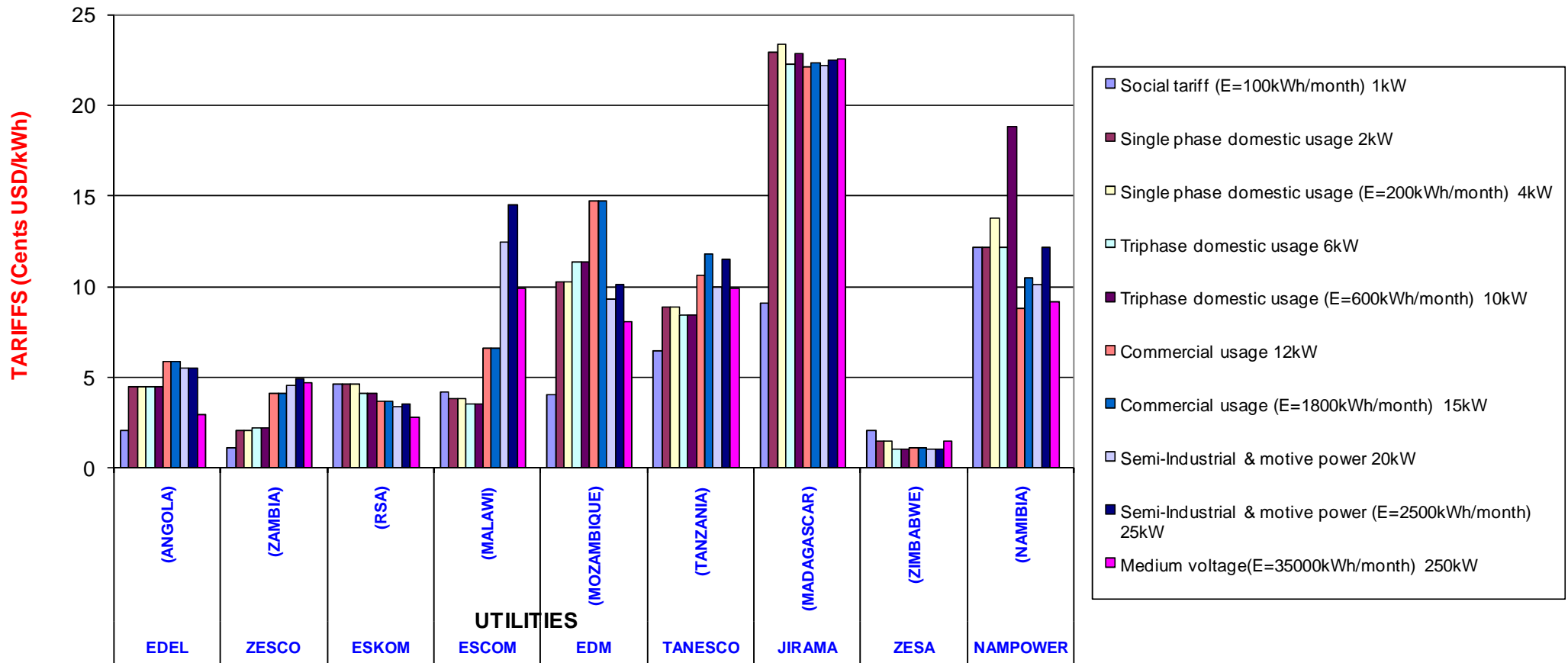
COMPARATIVE TARIFF GRAPH



SOUTHERN AFRICA - COMPARATIVE TARIFF(cents US / kWh)

		EDEL	ZESCO	ESKOM	ESCOM	EDM	TANESCO	JIRAMA	ZESA	NAMPOWER
		(ANGOLA)	(ZAMBIA)	(RSA)	(MALAWI)	(MOZAMBIQUE)	(TANZANIA)	(MADAGASCAR)	(ZIMBABWE)	(NAMIBIA)
Social tariff (E=100kWh/month)	1kW	2,08	1,13	4,62	4,17	4,04	6,46	9,06	2,07	12,15
Single phase domestic usage (E=200kWh/month)	2kW	4,48	2,04	4,62	3,78	10,25	8,88	22,93	1,46	12,15
	4kW	4,48	2,04	4,62	3,78	10,25	8,88	23,38	1,46	13,75
Triphase domestic usage (E=600kWh/month)	6kW	4,48	2,18	4,12	3,53	11,34	8,40	22,28	1,01	12,15
	10kW	4,48	2,18	4,12	3,53	11,34	8,40	22,88	1,01	18,85
Commercial usage (E=1 800kWh/month)	12kW	5,88	4,13	3,64	6,57	14,75	10,61	22,12	1,11	8,79
	15kW	5,88	4,13	3,64	6,57	14,75	11,84	22,34	1,11	10,47
Semi-Industrial & motive power (E=2 500kWh/month)	20kW	5,50	4,52	3,38	12,44	9,28	10,00	22,23	1,04	10,13
	25kW	5,50	4,92	3,55	14,53	10,13	11,48	22,50	1,04	12,15
Medium voltage (E=35 000kWh/month)	250kW	2,93	4,72	2,81	9,87	8,08	9,91	22,55	1,45	9,19

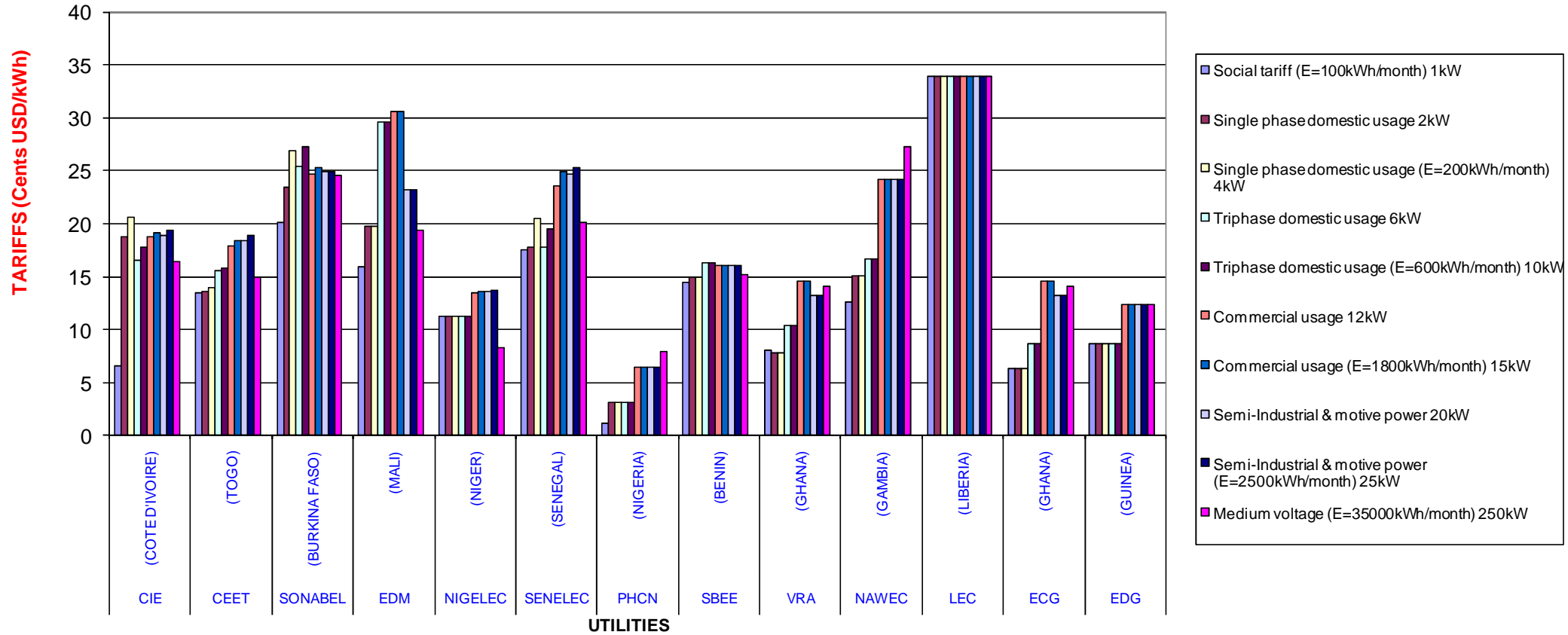
COMPARATIVE TARIFF GRAPH



WEST AFRICA - COMPARATIVE TARIFF(cents US / kWh)

		CIE (COTE D'IVOIRE)	CEET (TOGO)	SONABEL (BURKINA FASO)	EDM (MALI)	NIGELEC (NIGER)	SENELEC (SENEGAL)	PHCN (NIGERIA)	SBEE (BENIN)	VRA (GHANA)	NAWEC (GAMBIA)	LEC (LIBERIA)	ECG (GHANA)	EDG (GUINEA)
Social tariff (E=100kWh/month)	1kW	6,51	13,50	20,10	15,96	11,23	17,58	1,05	14,40	8,07	12,57	34,00	6,27	8,70
Single phase domestic usage (E=200kWh/month)	2kW	18,80	13,55	23,41	19,79	11,23	17,74	3,12	14,93	7,80	15,03	34,00	6,27	8,70
	4kW	20,60	14,00	26,93	19,79	11,23	20,47	3,12	14,93	7,80	15,03	34,00	6,27	8,70
Triphase domestic usage (E=600kWh/month)	6kW	16,51	15,55	25,48	29,57	11,23	17,74	3,04	16,34	10,32	16,68	34,00	8,61	8,70
	10kW	17,74	15,85	27,23	29,57	11,23	19,56	3,04	16,34	10,32	16,68	34,00	8,61	8,70
Commercial usage (E=1 800kWh/month)	12kW	18,74	17,91	24,71	30,57	13,40	23,52	6,45	16,00	14,61	24,17	34,00	14,61	12,40
	15kW	19,10	18,36	25,30	30,57	13,54	24,91	6,45	16,00	14,61	24,17	34,00	14,61	12,40
Semi-Industrial & motive power (E=2 500kWh/month)	20kW	18,89	18,40	24,95	23,19	13,52	24,63	6,44	16,00	13,22	24,17	34,00	13,22	12,40
	25kW	19,33	18,95	24,95	23,19	13,68	25,31	6,44	16,00	13,22	24,17	34,00	13,22	12,40
Medium voltage (E=35 000kWh/month)	250kW	16,37	14,92	24,62	19,37	8,27	20,09	7,95	15,15	14,06	27,33	34,00	14,06	12,40

COMPARATIVE TARIFF GRAPH



IV. CONCLUSION

The study has shown a large disparity in the definition of tariff categories and blocks.

Each utility has its own list of categories even for those who operate in similar socio-economic and political environments.

Some utilities use one rate for all their customers while others practice unmetered tariffs for some categories of clients.

The average rates resulting from our calculations range as follows:

In LV: from 1.01 to 34.0 US cents/kWh

In MV: from 1.45 to 34.0 US cents: kWh

To improve billing process within our utilities, it would be better to carry out a comprehensive study on billing methods, categories of tariffs, tariffs blocks, unmetered tariffs, etc.