RE/EE Benefits Workshop

RCREEE
Regional Center for Renewable Energy and Energy Efficiency
المركز الإقليمي للطاقة المتجددة وكفاءة الطاقة

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THE SOCIO-ECONOMIC BENEFITS OF SUSTAINABLE ENERGY: OPPORTUNITIES, APPROACHES AND INSTRUMENTS FOR LOCAL VALUE AND EMPLOYMENT PROMOTION THROUGH RENEWABLE ENERGY AND ENERGY EFFICIENCY IN THE MIDDLE EAST AND NORTH AFRICA

The socio-economic impact of EE
Up-to date results from the MENA region

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Presentation Content

- Objective of the assessment
- Structure of the assessment report
- Methodology
  - EE Potential
  - Social Impact
  - Economic Impact
  - Environmental Empact
  - Barriers and way forward

- Update results from the region

Objective of the assessment

- **Objective:**
  - Provide an aggregate global figure for EE socio-economic and environmental impact in the Arab region

- **Purpose :**
  - Provide decision makers in the region with appreciation to the value of EE.
  - Such can also be used as an input for other strategies that are being developed such as the Sustainable Energy Strategy that is being developed by LAS

- This would be first step to secure the buy-ins and justify further analysis and efforts in better qualifying such impacts

2. Expected outcome (proposed structure of the study report)

Table of Contents
1. Rational
2. Methodology
3. EE Potential
4. EE Social Impact
5. EE Economic Impact
6. EE Environmental Impact
7. Barriers and Way-Forward

Methodology

- The study will be mainly developed based on rational
  - Arguments,
  - Justifications and
  - Assumptions
- Using published data and studies to quantify major impacts through a top-down aggregate approach in addition to highlighting other qualitative impacts.

Methodology
EE Potential

- The focus of the study is towards socio economic impact of end use energy efficiency improvement as this creates most local jobs, most positive economic impact and most co2 emission reduction
  - kW demand growth and related $ Capital investment
  - kWh consumption growth and fuel needs $
  - Government spending on subsidy
- To quantify End use energy potential by answering:
  - How much of the kW and kWh growth can be met by EE and
  - at what economic return from the end user perspective

EE Potential

- To Develop scenarios based on i.e.:

    1. BAU

    2. At 50% reduction in electricity demand & consumption growth

    3. Decoupling Electricity Growth from Economic and Population Growth providing this is feasible from the EE potential from the end use side

EE Social Impact

- Number of jobs that can be created
  - Net, Gross, direct, Indirect…
  - taking into account the local contexts

- Other qualitative impacts

EE Economic Impact

- GDP impact
- Other qualitative impacts

1. **At micro-level:** in terms of EE investment and return and converting this into GDP

2. At the Macro level:

- Reducing the total cost of investment
- Reducing Subsidy
- Shifting investment to end users
- Public investment into other sectors resulting in:
  - GDP and
  - further additional employment

EE Environmental Impact

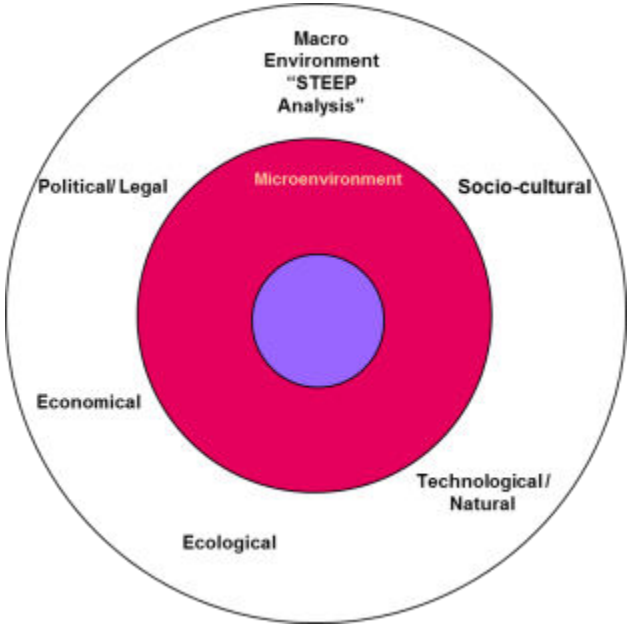
- CO2 emission reduction will be estimated for the different EE scenarios

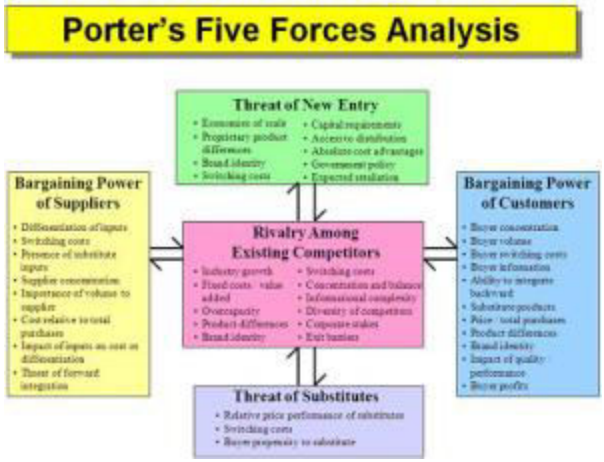
- Other Qualitative benefits to be listed

Barriers and Way Forward

Using qualitative strategic planning tools:

1. Micro Environment Analysis (STEEP)
2. Assessing the internal environment: the Five Forces Model





Barriers and Way Forward

3. Using SWOT analysis to develop possible Strategic Options from the external-internal analysis

Internal / External	**Strength, is something is good at doing or a characteristic that gives an important capability:** **S1:** **S2** **S3:**	**Weaknesses, is something lacks, or does poorly in comparison to others, or a condition that puts it at a disadvantage (can also be viewed as opportunities for improvement):** **W1:** **W2:**
Opportunities, is something in the external environment which is beyond its control and can have a positive effect if invested by using the strengths: **O1:** **O2:** **O3:** **O4:**	SO Strategies, use strength to take advantage of opportunities: 1. (S2, S3, S5, S6, O6, O7, O8, O10) 2. 3. 4. 5.	WO Strategies, overcome weaknesses by taking advantage of opportunities 1. 2.
Threats, is something in the external environment and beyond control which can have a negative effect, if not avoided or dealt with properly: **T1:** **T2:** **T3:** **T4:**	ST Strategies, use strength to avoid threats: 1. 2. 3.	WT Strategies, Minimize weakness and avoid threats 1. 2..

New generation capacity and EE measures - Comparative

Impacts	Adding new Generation capacity	Adopting EE measures
Economic	Highly capital intensive (Equipment and construction etc)	Capital costs are lower
	Period from construction to commissioning is high with a waiting period	Implementation is fast and can be done in phases, reducing waiting period
	OPEX depends highly upon the price of fuel	OPEX does not depend upon fuel prices
Social	Percentage of Jobs created locally is low since most jobs are low-skilled and created during the construction period.	Market creation for EE can have direct and indirect long term employment (both high and low skilled)
	Jobs created mostly abroad	Jobs created locally
Environmental	Increase in CO2 emissions if fossil fuel technology used	Energy Efficiency allows for CO2 reduction

1. Up-to-date results from the region
EE potential

- Power demand in the region is set to grow at around **7 % per year** over the next 10 years

- The World Bank estimates that by 2040, total investment needs in MENA's energy sector will exceed **US$30 billion a year.**

New generation capacity v/s EE measures

	Energy	Time	cost
EE	Between 17400 GWh and 18800 GWh	1 to 3 years implementation	Approx. 762 Million Euros
Additional capacity	electricity produced during 5 years by a 500MW coal-fired power plant	4 years construction period	1.2 billion Euros Construction, O&M, Fuel costs (For 5 years)

Based upon EE measures found in NEEAP documents of Egypt, Jordan, Lebanon, Palestine and Sudan

1. Up-to-date results from the region
EE potential

– kW demand growth and related US$ Capital investment

US$ 30 billion per year to develop power sector and increase capacity

– kWh consumption growth and fuel needs.

4% increase in electricity consumption until 2020 would be equivalent to 107 TWh, equal to 13 Mote annually at 94 millions barrels of oil costing a total of $3.7 billion ($40 per barrel)

– Subsidy savings need to be quantified

2. Up-to-date results from the region
Social Impact

- Population increase from 222 Million in 1990 to 385 Million in 2014
- If we consider an average rate of 3% per year, by 2020 the Arab population would be about 460 Million (More than twice the 1990 value)
- Arab region has the highest youth unemployment rate (20% in 2009) compared to other regions of the world
- **1 out of every 5 person in the Arab region is between the age of 15 – 24 years**, and more than half the population is below the age of 25

2. Up-to-date results from the region
Social Impact Example 1: **Alberta, Canada**

- Cost of the plan: about US$77.8 Million
- Population of 4 million inhabitants
- Save consumers US$ 373 million
- would create 3,800 jobs 50 jobs per US$ million invested in EE
- Reduce emissions equivalent to taking 800,000 cars off the road

(http://www.bloomberg.com/news/articles/2016-05-29/citigroup-says-saudi-arabia-is-best-emerging-market-for-deals)

2. Up-to-date results from the region
Social Impact Example 2: **Germany**

- The German initiative to retrofit houses has yielded 25,000 jobs for every €1 billion spent (25 jobs per million)
- CO2 emissions will be decreased by 9%
- 1% increase in GDP
- employment of 260,000 people (from 2009 to 2020).

2. Up-to-date results from the region
Social Impact : Employment estimate for MENA

Country / region	No. of Jobs per million USD
Canada (Alberta)	50
USA	20
Germany	25

MENA region
75 jobs per million USD

With US$ 30 billion spent per year, this would create 2.25 Million Jobs per year as an initial estimate.

Estimated from avoiding investment in additional capacity in power sector.

2. Up-to-date results from the region
Social Impact – MENA region

EE could generate between 1.2 million to 1.6 million jobs by 2030. (MEDENEC, 2013).

Highest number of jobs which can be created in :

- Egypt : 700 000
- Algeria : 300 000
- Morocco : 300 000

Main activities:

- EE in new buildings
- EE in existing buildings
- Phasing out of incandescent lamps

3. Up-to-date results from the region
Economic Impact :Increase in EE and its effect on GDP

GDP changes due to large-scale energy efficiency policies show positive outcomes with economic growth ranging from 0.25% to 1.1% per year.

Table 1.2. Energy efficiency could boost the region's GDP by up to $23 billion

GDP gain (in US$ millions) from various percentage increases in energy efficiency

Country / region	10	20	30	40	50
Iran, Islamic Rep.	1,611	3,010	4,237	5,325	6,295
Egypt, Arab Rep.	751	1,406	1,983	2,496	2,955
Morocco	189	353	497	624	737
Tunisia	125	233	328	413	488
Rest of North Africa	584	1,089	1,530	1,920	2,268
Rest of West Asia	2,630	4,917	6,929	8,717	10,320
MENA total	5,890	11,008	15,504	19,495	23,063

Source: Ivanic and Martin, 2008.

4. Up-to-date results from the region
Environmental Impact: CO2 general figures

Four MENA countries rank among the 11 in the world where emissions are increasing most rapidly.

Saving the equivalent of 94 million barrels of oil a year will result in 31,000 Kton Co2 emission reduction.

Up-to-date results from the region

Annual savings:

- $30 billion saved from Electricity Capacity investment
- $3.7 billion a year saved from fossil fuel
- $ Subsidies saved to be investigated

The above savings can be invested in different sectors resulting in more indirect jobs

- 600,000 direct Jobs created a year
- Indirect jobs created to be estimated
- 31 000 ktons Co2 emission reduced
- GDP increased 0.25% to 1.1% per year.

Thank you and appreciate your feedback