

Assessment of Policy, Practices & Business Models for Public-Private Partnerships in Renewable Energy Applications in Rural Areas in the ESCWA Region

Draft Report submitted to ESCWA
November 2011

Presented at the workshop
"Scaling up the Use of Renewable Energy in Rural Areas in ESCWA Member Countries"

1-2 February 2012, UN House- Beirut

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PRESENTATION OUTLINE

- **Limitations of the assessment**
- **Overview of energy (E) access in the region**
- **Challenges facing E access in the region**
- **E poverty (& insecurity): barrier to achieving the MDGs**
- **Can RE bridge the gap in E access & reduce GHG emissions?**
- **Initiatives to improve E access**
- **Barriers to & requirements for optimum functioning of RE services**
- **Public-Private Partnerships (PPPs): a viable financing mechanism**
- **PPREPs: an option for the region?**
 1. *Market segmentation*
 2. *Governance practices*
 3. *Investment climate & opportunities to access funds*
- **PPREP readiness tool for ESCWA member countries**
- **PPREP model for ESCWA member countries**
- **Case studies in PPREPs (Egypt & Saudi Arabia)**
- **Concluding remarks**
- **References**

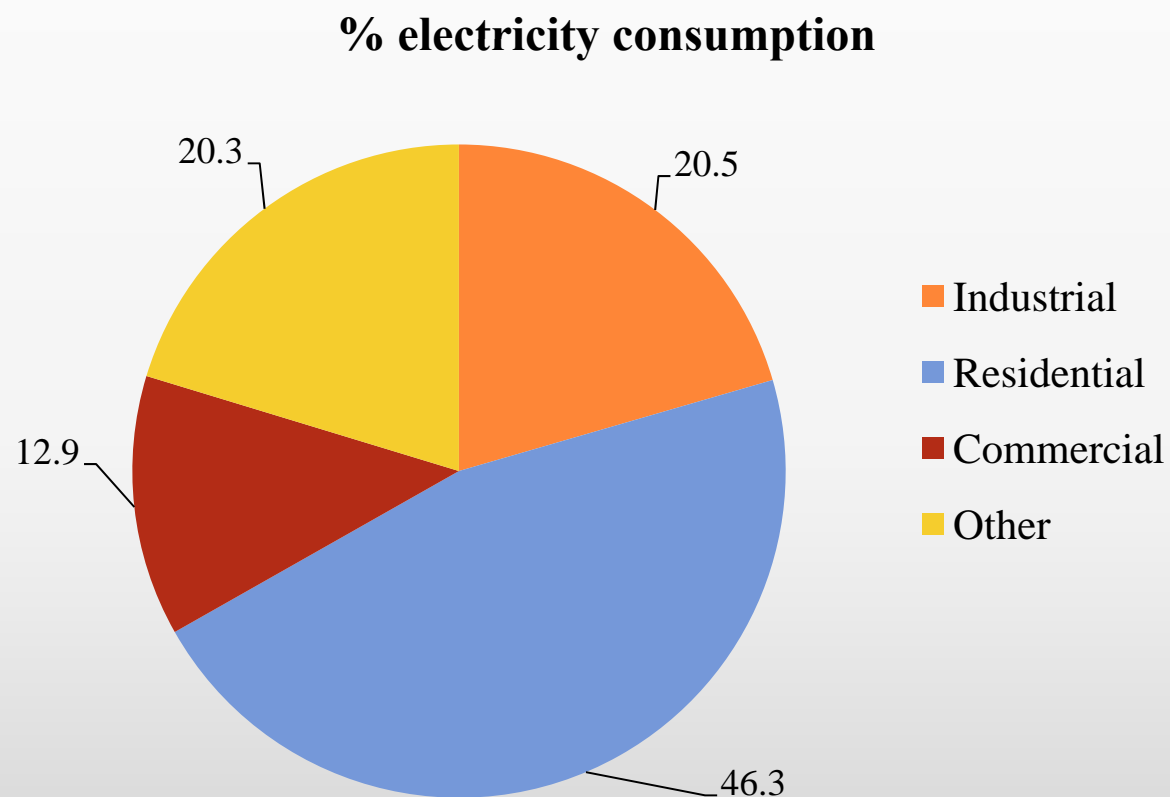
LIMITATIONS OF THE ASSESSMENT

1. Most recent unified data available for all 14 countries was used for better comparative purposes (though sometimes more up to date data were available on individual countries)
2. Due to time constraints to deliver within the time frame, the data reviewed & analysed was compiled from published literature & information available in the public domains of the worldwide web.
3. The assessment does not get into the analysis of the latest political developments in the region & their potential impacts on governments' priorities of governments & investment climate
4. The assessment refers to the Sudan as a unified country before the split in 2011.

OVERVIEW OF ENERGY (E) ACCESS IN THE REGION

- In 2009, in ESCWA Region: *(ESCWA, 2010 & 2011)*
 - ➔ ESCWA member countries produced: 18.5M barrels of oil/day & 331.7B m³ of gas
 - ➔ Of the total E consumption: Oil accounted for 52%
Gas accounted for 45%
 - ➔ Primary E consumption: 1,862koe/capita, ↑ by 4% from 2008
 - ➔ Average electricity consumption: 2,244KWh/capita, ↑ by 6.48% from 2008
- **PS:** E consumption is disproportionate across the region & +vely correlated to GDP (2 LDCs)
Largest electrical E consumer in 2008: residential sector (46.3%)

ELECTRICITY CONSUMPTION (%) IN ESCWA REGION BY ECONOMIC SECTOR (2008)

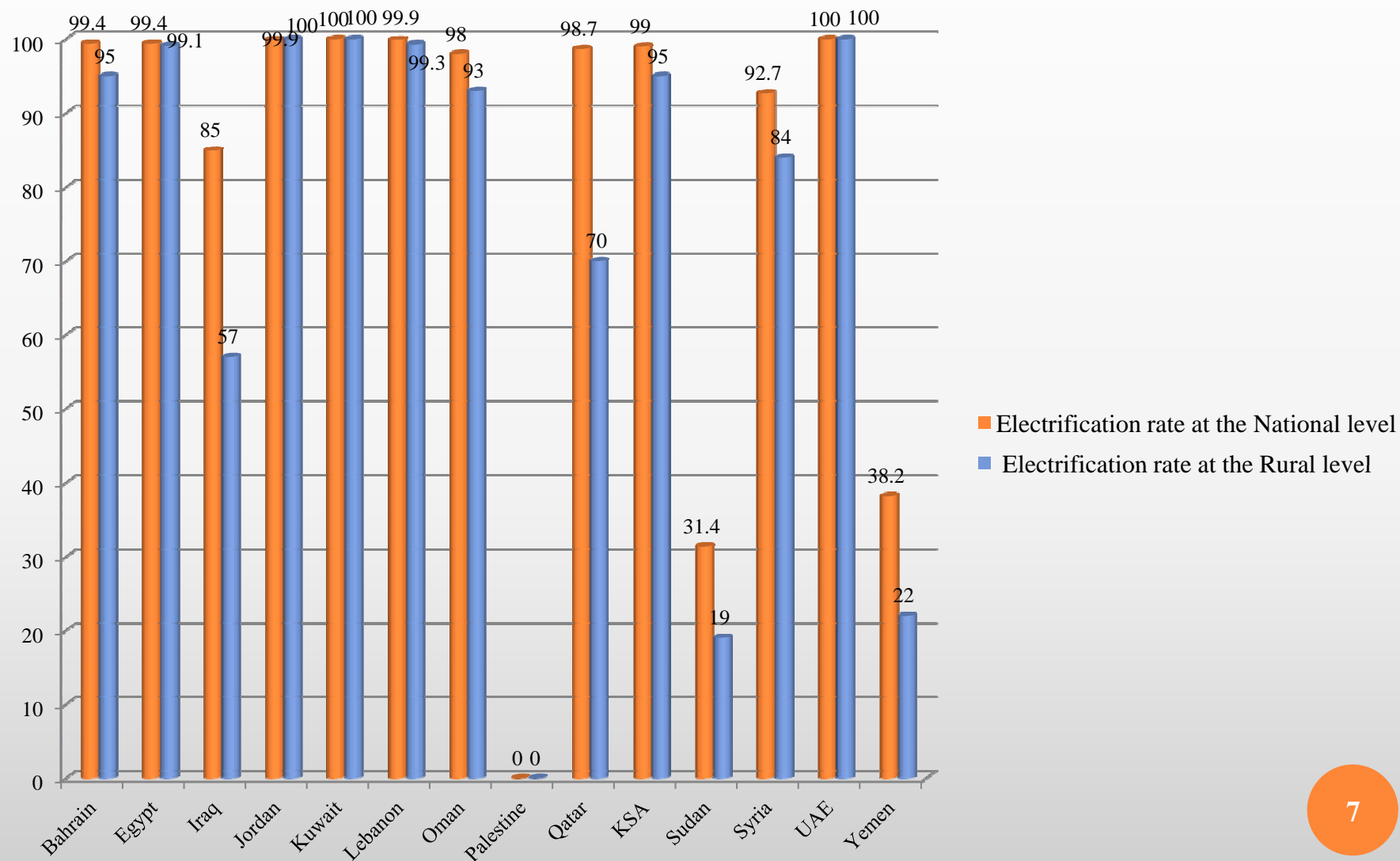


Source: ESCWA. 2010. Statistical Abstract of ESCWA Region. Issue No. 29. UN, New York.

CHALLENGES FACING E ACCESS IN THE REGION

- Heavy reliance on fossil fuels & focus on centralised power generation & grid extension
 - ➔ Challenge for oil-exporting & -importing countries alike:
Diversification & security of E resources/ Dwindling reserves /
Dependence on imported fuel / Sensitivity to E prices volatility
 - ➔ Key solution: E mix.
- High oil subsidies mask the real cost of fossil fuels → market distortions, restrain E sector reform & generate economic losses in public budgets
 - ➔ Urgent need to integrate sustainable E strategies within national development policies.
- Low electrification rate in some parts → hinders provision of social & public services → hampers economic & social development
 - ➔ Urgent need to enhance E access in rural & remote areas

ELECTRIFICATION RATE (%) IN ESCWA REGION (2008)



Source: IEA, 2009. World Energy Outlook 2009. Paris.

PS: Data not available for Palestine

CHALLENGES FACING E ACCESS IN THE REGION

(CONT'D)

- Population growth with average annual growth rate 1.0-3.0% (world average = 1.1%) → further pressure on E resources.
- CO₂ emissions: top countries in the world in Mt of CO₂ emitted/capita in 2007: Qatar (55), Kuwait (32), the UAE (31) & Bahrain (29). Estimated world average per capita = 4.3 Mt of CO₂, other ESCWA countries emitted lower than world average (UNDP, 2010)
 - ➔ Urgent need to address climate change issues
- Interconnectedness between water & E. E is crucial for extraction, processing/treatment, distribution & consumption of water at all levels (desalination as E consumer & producer of CO₂)
 - ➔ Careful consideration to be given to water consumption when studying life cycle of fossil fuel production to satisfy E demand.

E POVERTY (& INSECURITY): BARRIER TO ACHIEVING THE MDGs

- None of the MDGs tackles E. YET their achievement needs accessible, affordable & reliable E provision. E at the heart of social development:
 - ➔ Enhances education by allowing for study beyond daylight hours
 - ➔ Improves healthcare by providing safe drinking water, lighting & storage
 - ➔ Contributes to improvement of information & telecommunications
 - ➔ Fosters increased productivity → creates jobs & generates income
 - ➔ E poverty engenders social disorder → jeopardises national security
- Population in developing countries is more rural than urban → 55% of total population & 4/5 households in rural areas work the farm. YET, increasing number is looking away from agricultural opportunities (*IFAD, 2010*)
 - ➔ Challenges:

Make farming more productive, more commercially viable & better marketable (climate change & resource scarcity & degradation)

Create new opportunities in rural areas (multi-sectoral approach)

E POVERTY (& INSECURITY): BARRIER TO ACHIEVING THE MDGS (CONT'D)

○ MDG1: Eradicate extreme poverty & hunger

➔ FAO: price rise of foods & other commodities in 2007 added ~ 14% more hungry people to MENA region compared to 2006 (largest % increase in hungry people at the time worldwide) (*IFAD, 2010*)

➔ Large disparities between countries in terms of achievement of MDG.

➔ Economic model built on oil is fragile, characterised by economic insecurity (high prices volatility). Oil-exporting economies more hit by financial crisis: oil & gas constitute ~ 85% of their exports (*UNDP, 2009*) → ripple effect on neighbouring countries (labour, outbound tourism)

○ MDG7: Ensure environmental sustainability

➔ Challenge of improving environmental governance & integrating environmental protection in planning & policy framework in ESCWA.

➔ Ecological footprint of consumption (hectares/capita) in 2006:

Kuwait (7.9), Qatar (9.7) and the UAE (10.3) /// Germany (4) (*UNDP, 2010*)

➔ Environmental Sustainability Index in 2005 (the closer to 1 the better): highest rank in the region filled by Oman (83) (*UNDP, 2009*)

CAN RE BRIDGE THE GAP IN E ACCESS & REDUCE GHG EMISSIONS?

- RE applications: wind, hydro, solar, geothermal (lesser degree, biomass):
 - ➔ Generate much lower concentrations of GHG throughout life cycle
 - ➔ Create jobs in manufacturing, sales, installation, O&M → mechanism for poverty alleviation & minimisation of internal migration
 - ➔ Give countries autonomy (quasi-independent from oil prices fluctuations)
 - ➔ ➔ Strong link between global T increase & potential –ve impacts on food supply, water, ecosystems & extreme events
- ESCWA region lies in the “solar belt”: high potential for RE
 - ➔ Solar radiation = 1,460-3,000 kWh/m²/year across the region (*ESCWA, 2011*)
 - ➔ Potential for solar energy in Egypt, Jordan, Syria & Yemen exceeds electricity demand by several orders of magnitude (*RCREEE, 2010*)
 - ➔ Average growth in hydropower consumption = 7.89% (from 94,400boe/day in 2005 to 127,900boe/day in 2009 + wind farms & solar power stations; YET, potential is far from being fully tapped (*ESCWA, 2011*))

INITIATIVES TO IMPROVE E ACCESS

- Targets set for % primary E from RE by 2020: Egypt (20%), Lebanon (12%); Jordan, Palestine & Syria (10%); the UAE (7%) (*AMCE, 2008*)
- Examples of national initiatives: (*AMCE, 2008*)
 - ➔ New draft electricity law (Egypt): building new power generation systems from clean E, establishing competitive market to encourage private sector involvement & increasing electricity tariffs
 - ➔ Pilot project for a 30,000 m³/d solar E powered desalination plant (Saudi) in partnership with IBM to serve 100,000 people.
 - ➔ Masdar city (the UAE) planned to be carbon neutral & zero-waste
 - ➔ Technical & economic feasibility studies for solar & wind (Jordan, Oman, Qatar, Saudi, Sudan, Syria & the UAE)
 - ➔ Wind &/or solar atlases (done or underway) (Egypt, Jordan, Lebanon, Syria, the UAE & Yemen)

INITIATIVES TO IMPROVE E ACCESS (CONT'D)

- Examples of regional initiatives: (*AMCE, 2008*) & (*AMCE, 2010*)
 - ➔ Euro-Mediterranean Partnerships e.g. the Mediterranean Solar Plan (MSP)
→ develop 20GW electric power & promote integrated renewable market in MENA → enabling environment for private sector investment in RE
 - ➔ Under UNFCCC's Clean Investment Funds (2009) Clean Technology Fund (CTF) approved US\$750M for concentrated solar power (CSP) (Algeria, Egypt, Jordan, Morocco & Tunisia)
 - ➔ Pan-Arab Strategy for Use of RE calls for policies & regulations development to encourage use of RE & establishment of regional grid & centre to monitor E production/transmission/distribution/consumption
- Declarations (*AMCE, 2008*)
 - ➔ Abu Dhabi Declaration on Environment & E (2003)
 - ➔ Arab Ministerial Declaration on Climate Change (2007)
- ➔ ➔ **Commendable initiatives but big room for improvement**

BARRIERS TO & REQUIREMENTS FOR OPTIMUM FUNCTIONING OF RE SERVICES

	Barriers	Requirements
Legal, institutional & policy level	<ul style="list-style-type: none"> -Lack of coherent policies & institutions & institutional coordination for RE -Quasi-absence of regulations to control quality & effectiveness of equipment used for RE -Huge subsidies on fossil fuels 	<ul style="list-style-type: none"> -RE planning integrated into national planning -Restructuring of E sector: production, distribution/ transmission, consumption (including E efficiency) -Lower subsidies on conventional fuels
Economic & financial level	<ul style="list-style-type: none"> -Subsidies on fossil fuels & absence of economic & financial incentives for RE - Lack of attractive environment for investments & limited involvement of private sector. 	<ul style="list-style-type: none"> - Innovative financing mechanisms to mobilise funds - Incentives such as feed-in tariffs, quotas, green certificates, reduction in taxes or import duties, etc. -Market stimulation to allow for decentralised investments by independent power producers & SMEs
Technical level	<ul style="list-style-type: none"> -Lack of technical knowledge & limited industrial capabilities -Lack of research in manufacturing & marketing mechanisms 	<ul style="list-style-type: none"> -Adoption of demonstration projects & investment in R&D -Hub for training & capacity-building in RE technologies

PUBLIC-PRIVATE PARTNERSHIPS (PPPs): A VIABLE FINANCING MECHANISM

- It is argued RE services are capital intensive. Public vs. private divide?
 - ➔ State services: cater for the poor but often times are bad/inadequate
 - ➔ Privatisation: profit accumulation, may mean ignoring the poor & remote segments but provides high capital
- Partnership/ contractual agreement between public & private entities: **PPPs**
 - ➔ Acknowledge that both public & private sectors have advantages
 - ➔ Overcome state budgetary constraints & make expertise available
 - ➔ Government ensures frameworks are in place, provides social responsibility & local knowledge & mobilises political support
 - ➔ Private sector provides cash & expertise & asks for financial rewards proportionate with outputs
 - ➔ Serviced community gets jobs & transfer of skills + competitive bidding offers best available option to increase service efficiency

PPREPs: AN OPTION FOR THE REGION?

1. MARKET SEGMENTATION

- **Demand market:** potential “consumers” /market segments of PPREPs

- ➔ Residents of remote rural areas lacking access to E (decentralised)
- ➔ Residential areas already electrified but witness power cuts (Leb)
- ➔ People aware of climate change, link consumption practices to environmental degradation → would not mind paying more
- ➔ Growing populations wherever there is potential for RE (atlases)
- ➔ Commercial market (hotels, SMEs) → “green” involvement & CSR
- ➔ Desalination (niche):

MENA accounts for ~ half of the world's desalination capacity, expected to grow from 21M in 2007 to ~ 110M m³ of water/day by 2030 (climate change will increase the need for water) (IEA, 2009)

- ➔ European countries on the Mediterranean (MSP)

PPREPs: AN OPTION FOR THE REGION?

1. MARKET SEGMENTATION (CONT'D)

○ Supply market:

➔ Private businesses in the region & globally willing to invest in RE projects to improve their image among consumers: create local jobs & increase poor people's access to E

➔ Many local companies (Egypt, Jordan & Syria) are importing, installing, manufacturing, assembling or producing parts or whole systems & already supplying to end-users

➔ Independent power producers

○ RE businesses should be proactive to create a favourable market for RE:

➔ Prepare the market to better accept their products

➔ Develop business models that show technical & economic performance under local conditions

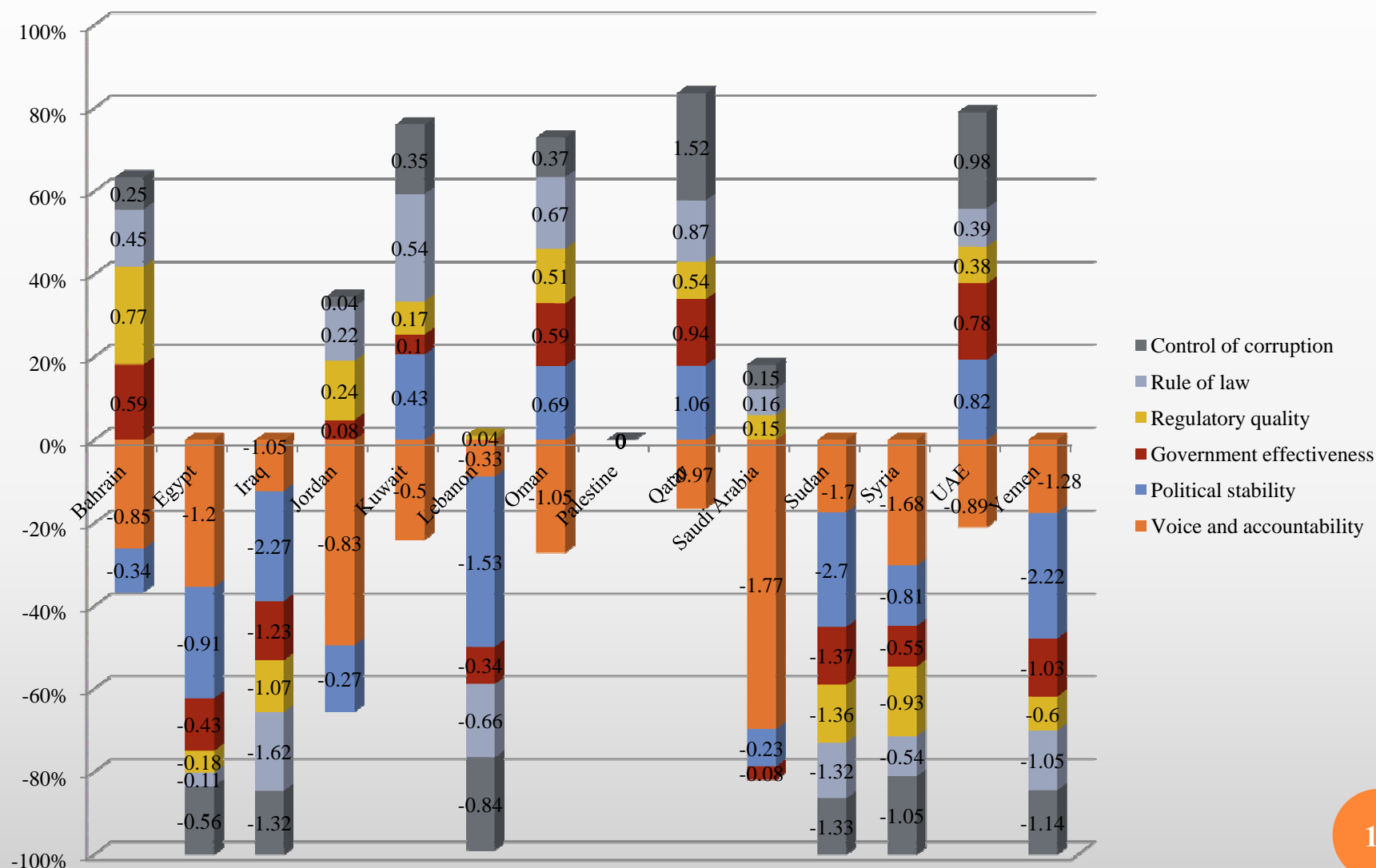
➔ Lobby for legislation in favour of RE technologies

PPREPs: AN OPTION FOR THE REGION?

2. GOVERNANCE PRACTICES

- Good governance is a pre-requisite of a successful PPREP:
Establishment of competent, transparent & efficient institutions/procedures & building-up of expertise to negotiate agreements, manage contracts & manage risk → organizational & institutional challenges to the public sector
- Benefits of good governance:
 - ➔ Private party selected through fair & transparent bidding
 - ➔ Fair incentives for private entity to achieve commercial success & financial returns while minimising risk
 - ➔ Public services improved & personnel trained
 - ➔ Better service provided to end-users (political support)
 - ➔ Governments access services of higher quality at lower prices

THE POINT ESTIMATES OF INDICATORS OF GOVERNANCE IN ESCWA COUNTRIES (2010)



Source: <http://info.worldbank.org/governance/wgi/index.aspx> (Kaufman et al., 2011)

PS: Data not available for Palestine

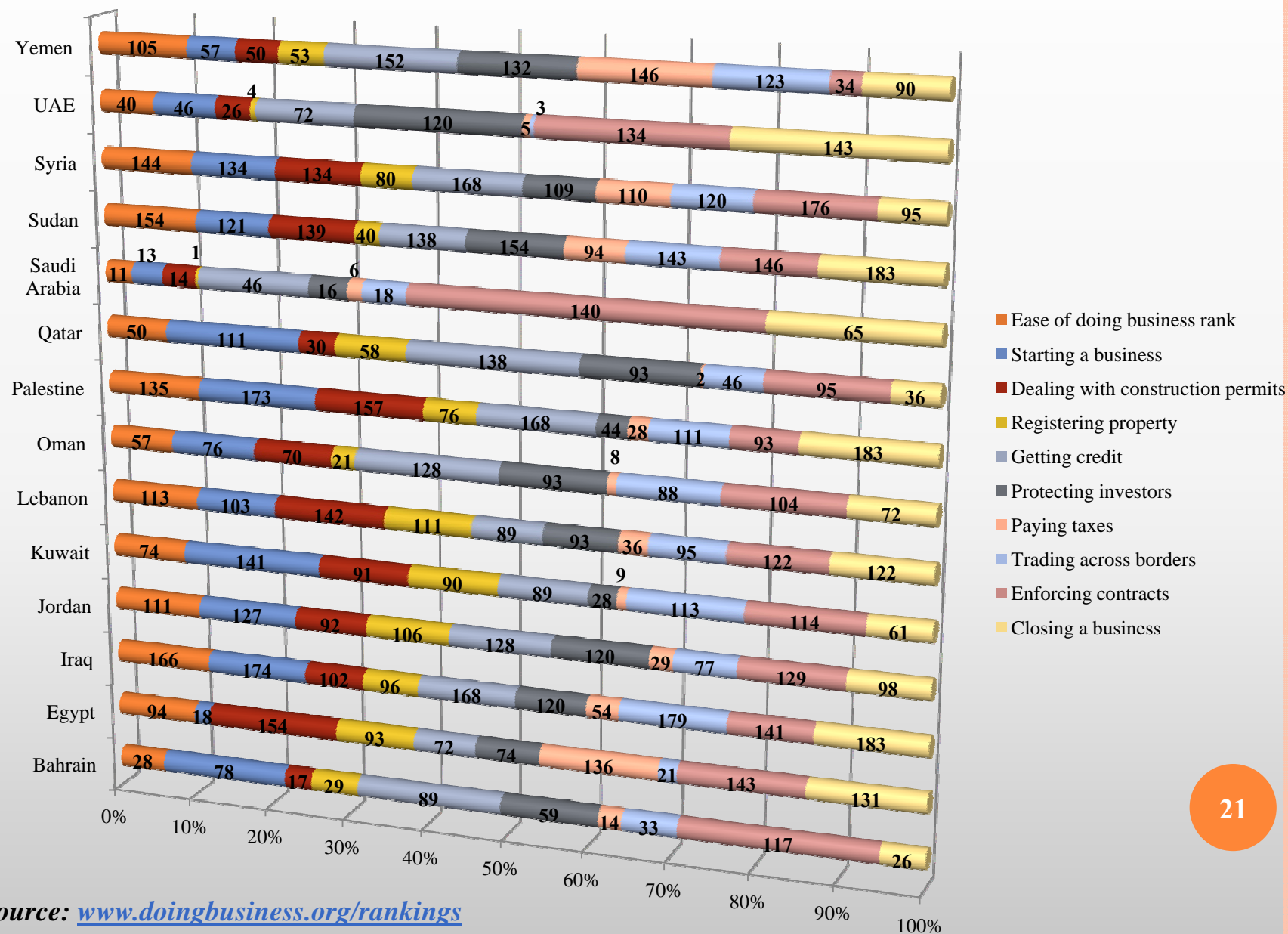
PPREPs: AN OPTION FOR THE REGION?

3. INVESTMENT CLIMATE & OPPORTUNITIES TO ACCESS FUNDS

Improved governance = Foundation for an investment climate conducive to private sector development & economic growth

- Some reforms in the region to improve the business climate:
 - ➔ Removing taxes, allowing free repatriation of capital (Bahrain)
 - ➔ Establishing a one-stop shop for investment (Bahrain, Oman)
 - ➔ Creating investment authorities (IDAL in Lebanon, the Abu Dhabi Investment Council & the Emirates Investment Authority in the UAE)
 - ➔ Finalising land use policy for wind power developers; approving 0-customs duty & foreign currency denominated power purchase agreements & allowing investors to sell certificates of emission reduction (Egypt)
 - ➔ Improving credit information system & setting up a regulatory framework to establish a private credit bureau (Jordan)
 - ➔ Establishing new financing mechanisms to encourage projects in RE & EE through a subsidized loan with 0% interest rate & a repayment period of 5 years (Lebanon)

PERFORMANCE OF ESCWA COUNTRIES IN 9 REGULATIONS FOR DOING BUSINESS (2010)



Source: www.doingbusiness.org/rankings

PPREPs: AN OPTION FOR THE REGION?

3. INVESTMENT CLIMATE & OPPORTUNITIES TO ACCESS FUNDS (CONT'D)

- Impact of reforms on the business climate (*WB, 2009*)
 - ➔ 6mths after Egypt had reformed its property registry, title registrations increased & revenue rose by 39%
 - ➔ Commercial registrations in Oman leaped by 93% during the year after Oman implemented a one-stop shop for business start-ups
 - ➔ In Saudi, reducing the minimum capital requirements for doing business led to 81% increase in new company registrations

PPREPs: AN OPTION FOR THE REGION?

3. INVESTMENT CLIMATE & OPPORTUNITIES TO ACCESS FUNDS (CONT'D)

- Global recession & financial market instability + volatility of commodities' prices + the consequences of climate change → -ve implications on fiscal balances
- FDI inflows impeded by: high inflation rates; weak legislation & enforcement; bureaucracy; corruption & domination of government sector (ESCWA, 2008)
- Decline in remittances flows → consumption & investment levels → cash flow
- Military struggles → infrastructure destruction, brain drain, displacement → pressure on resources
- Capital requirements: Catalyse public sector funding & leverage private sector investments through financial support mechanisms & international finance:
 - ➔ IFIs call for structural reform of business environment through mitigation of risk, support for demonstration projects & private sector incentives
 - ➔ CDMs allow countries to reduce GHG emissions by implementing emission-reduction projects in developing countries (Egypt & the UAE)
 - ➔ ETM created a new commodity –carbon- & allow countries to sell excess carbon units to countries that are over their targets

PPREP READINESS TOOL FOR ESCWA MEMBER COUNTRIES

- Until Nov 2011, no PPP-readiness tool for ESCWA region
- UNDP, UN-ECE & UN-ESCAP / UN-ESCAP's PPP Readiness Self-Assessment, user friendly → adopted for ESCWA Region
- Diagnostic tool to draw government's attention to factors that constrain successful implementation of potential PPP/PPREP by:
 - ➔ Assessing general macroeconomic, business, financial & governance environments
 - ➔ Evaluating indicators that focus specifically on PPREP issues: legal & regulatory provision for PPREP, PPREP policy framework, PPREP capacity, social dimension of PPREP policy & PPREP process including selection, contracting & post-selection indicators

PPREP MODEL FOR ESCWA MEMBER COUNTRIES

- **PPP models:**

- ➔ Differ in terms of entry mode, ownership of capital assets, O&M, risk sharing mechanisms, duration & ultimate ownership of the project

- ➔ Range from options where little private investment capital is mobilised (service/management/lease contracts) to where private entity is responsible for providing assets owned by public entity (concessions). In between: build-transfer-operate (BTO); build-own-operate (BOO); design-build-operate (DBO), **build-operate-transfer (BOT)** etc.

BOT: Specialised concession in which private firm/s develop/s a project according to performance standards set by government. Private firm/s own/s assets until investment costs are recovered. At the end of contract, public sector assumes ownership / contracts operations to developers

- PPREPs are more demanding than PPPs particularly under current heavy subsidies on conventional E resources

PPREP MODEL FOR ESCWA MEMBER COUNTRIES (CONT'D)

BOT projects deploying mini-grids/decentralised stations of RE sources

- Pre-assessment of E sector status-quo (Assessment tool) → strategy for sector reform (timetable & milestones) → PPREP implemented as part of strategy
- Pre-requisites before PPREP implementation:
 - ➔ Legal, regulatory & policy frameworks: laws, regulations & policies including tariff & subsidy policies, quality performance standards, environmental & health regulations, foreign investments laws...
 - ➔ Institutional structures & frameworks: capacity-building of institutions to perform bidding, negotiate & monitor performance...
 - ➔ Technical issues: maintenance, effective management, operational expertise, technical standards...
 - ➔ Commercial, financial & economic issues: perform financial analyses & construct financial models
 - ➔ Labour considerations: inclusion of local partners & local labour power

PPREP MODEL FOR ESCWA MEMBER COUNTRIES (CONT'D)

BOT projects deploying mini-grids/decentralised stations of RE sources-cont'd

- Success factors:
 - ➔ Model is customised to fit local context
 - ➔ Contract is specific & explicit (clear duties of all parties involved, performance targets, structuring tariff levels, establishing procedures for dispute resolution...)
 - ➔ Stakeholder dialogue to secure public support & get valuable input
 - ➔ Inclusion of municipalities & several ministries in implementation
 - ➔ Mix of financing resources: state budgets, private investor & international loans/ donations. Cross-subsidies
 - ➔ Monitoring of service performance & consumer satisfaction

CASE STUDIES IN PPREPS

1- Egypt: Al Kuraymat Hybrid STP plant

- Overall capacity: 150MW
- Private sector: Flagsol GmbH & Orascom Construction Industries
- PPREP model: Build, operate plant for 2 years (including O&M) then hand over to the NREA (New & Renewable Energy Agency)
- Components of the project:
 - ➔ Train public sector workers in STP plant operations
 - ➔ NREA to survey local equipment suppliers/contractors to establish a database to develop project needs locally
 - ➔ NREA to monitor & evaluate the project then disseminate results
 - ➔ NREA to establish a RE fund to develop local know-how: natural gas saved in projects is exported at a premium price & margin of profit goes into the fund

CASE STUDIES IN PPREPS (CONT'D)

2- Saudi Arabia: Pilot SP station

- Forecasted increase in power generation between 2010 & 2020 is 56.2%. Though RE is perceived as less cost-effective than oil, government pledged US\$133M in 2011 budget for RE projects.
- Expected annual production capacity: 864MWh.
- Private sector company: Solar Frontier, a subsidiary of Showa Shell Sekiyu (Japanese energy company)
- Farasan Island chosen because its inhabitants lacked connection to general electricity grid (according to the press)
- Projected the plant will eliminate the need for 28,000 barrels of diesel over its lifetime → reduce cost of diesel transport & handling, protecting the environment & decreasing GHG emissions.

CASE STUDIES IN PPREPS (CONT'D)

Review of case studies:

- Less sophisticated models, but a momentum is developing
- Efforts from governments to employ PPREPs to provide E access to people in remote or rural areas (Farasan Island)
- Increasing interest from local (Orascom) & international (Shell) private companies in entering into PPREPs with governments
- Governments restructuring their E sectors: policies & institutions, incentives targeting private sector & improving investment climate
- Governments obliging bidding companies to include employment of local manufacturers & local labour force (Al Kuraymat)
- Clear appreciation of the importance of transfer of know-how & technology from private investors to local public entities (Egypt)
- Past experiences of the countries in PPPs in infrastructure & conventional power plants enhances private sector confidence

CONCLUDING REMARKS

- E access best secured through locally-available RE resources.
- Call for private sector to complement state efforts & budgets in deploying RE technologies, with public agencies serving a central role.
- PPREPs bring great benefits to centralised & distributed RE projects in rural areas but there is no single formula on how to implement them
- Properly implemented PPREPs fill E access gap & mobilise funding for R&D
- General recommendations for governments:
 - ➔ Use PPREP tool to assess institutions' readiness & work on loopholes
 - ➔ Build on lessons learned from other countries
 - ➔ Establish a jurisdictional PPREP constitution: consistent & firm policy commitments to ensure transparency & develop reliable, predictable market conditions (political instability)
 - ➔ Reduce subsidies on fossil fuels & subsidise RE projects instead
 - ➔ Target R&D in RE & introduce awareness raising programmes (RE + EE)
- Role of regional & international agencies to improve technical assistance, enhance coordination & design a monitoring & evaluation system

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