

Private Investments Promotion Program

An Integrated Approach to Promote Low Carbon Technologies

Istanbul June 15, 2015



RCREEE 

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

About RCREEE

- Independent regional inter-governmental organization
- 16 member states
- In operation since 2008
- Headquartered in Cairo, Egypt





Arab Future[™]
Energy Index
AFEX 2015

Energy Efficiency

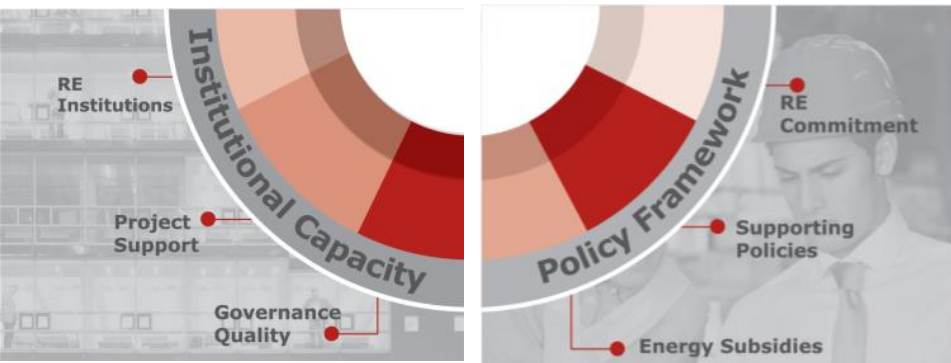
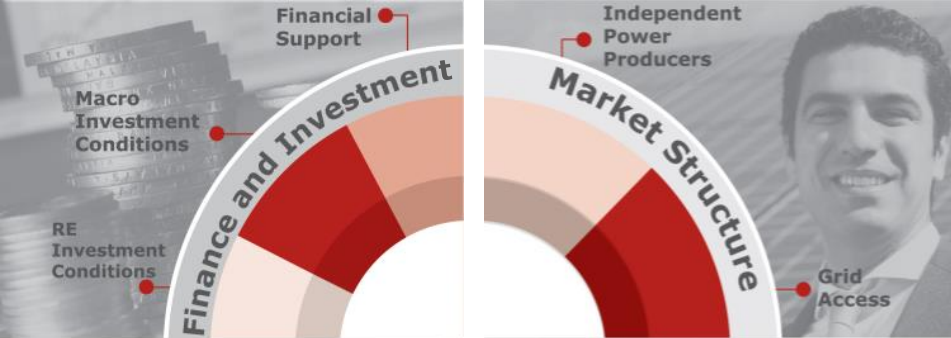


Arab Future[™]
Energy Index
AFEX 2015

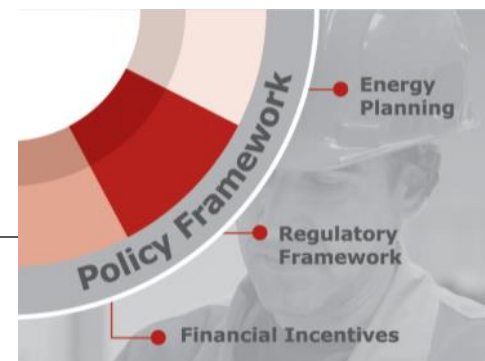
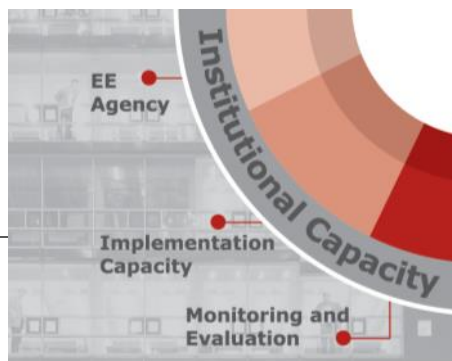
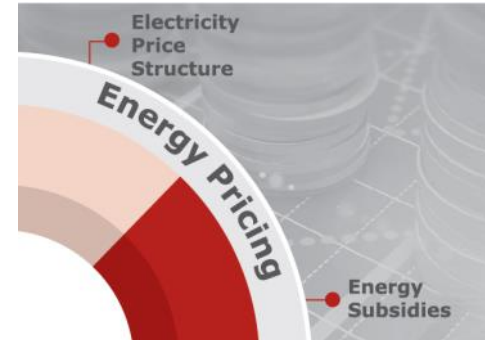
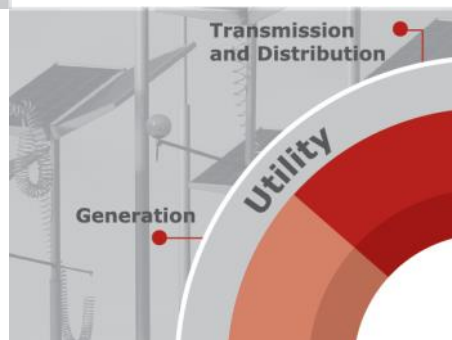
Renewable Energy

Progress Towards
Sustainable Energy
Development

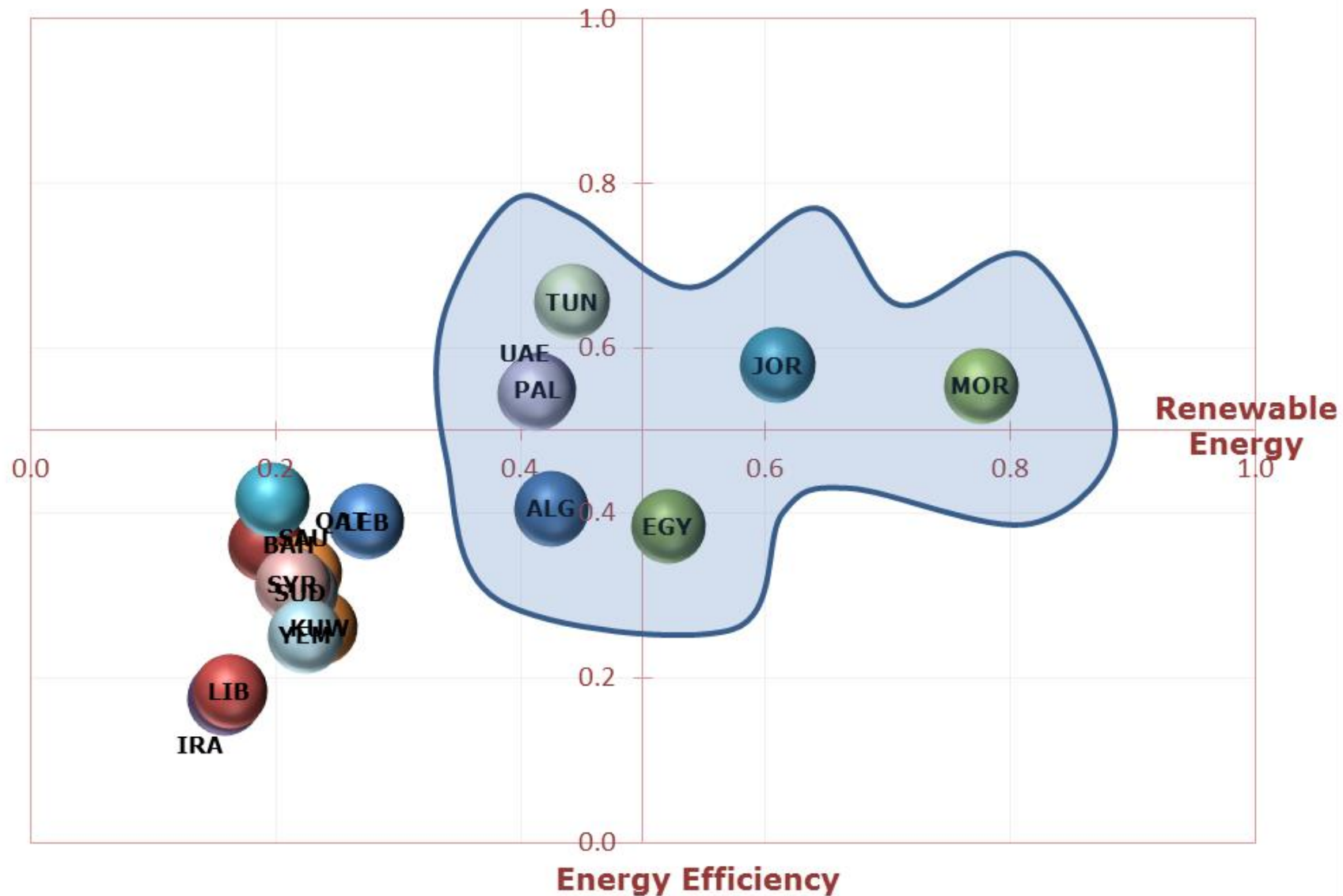
Renewable Energy



Energy Efficiency



Transition to Sustainable Energy





Although there are many profitable opportunities in sustainable energy in Arab countries, private investments have lagged



Low Awareness

Actors are not aware of the existence of a certain business model and/or financing option that would make this opportunity economically feasible

Insufficient Capacity

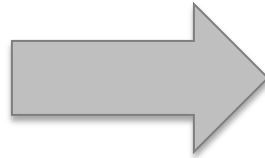
Local businesses, banks and government agencies do not always have enough human capacity to assess the feasibility of a project

Lack of Trust

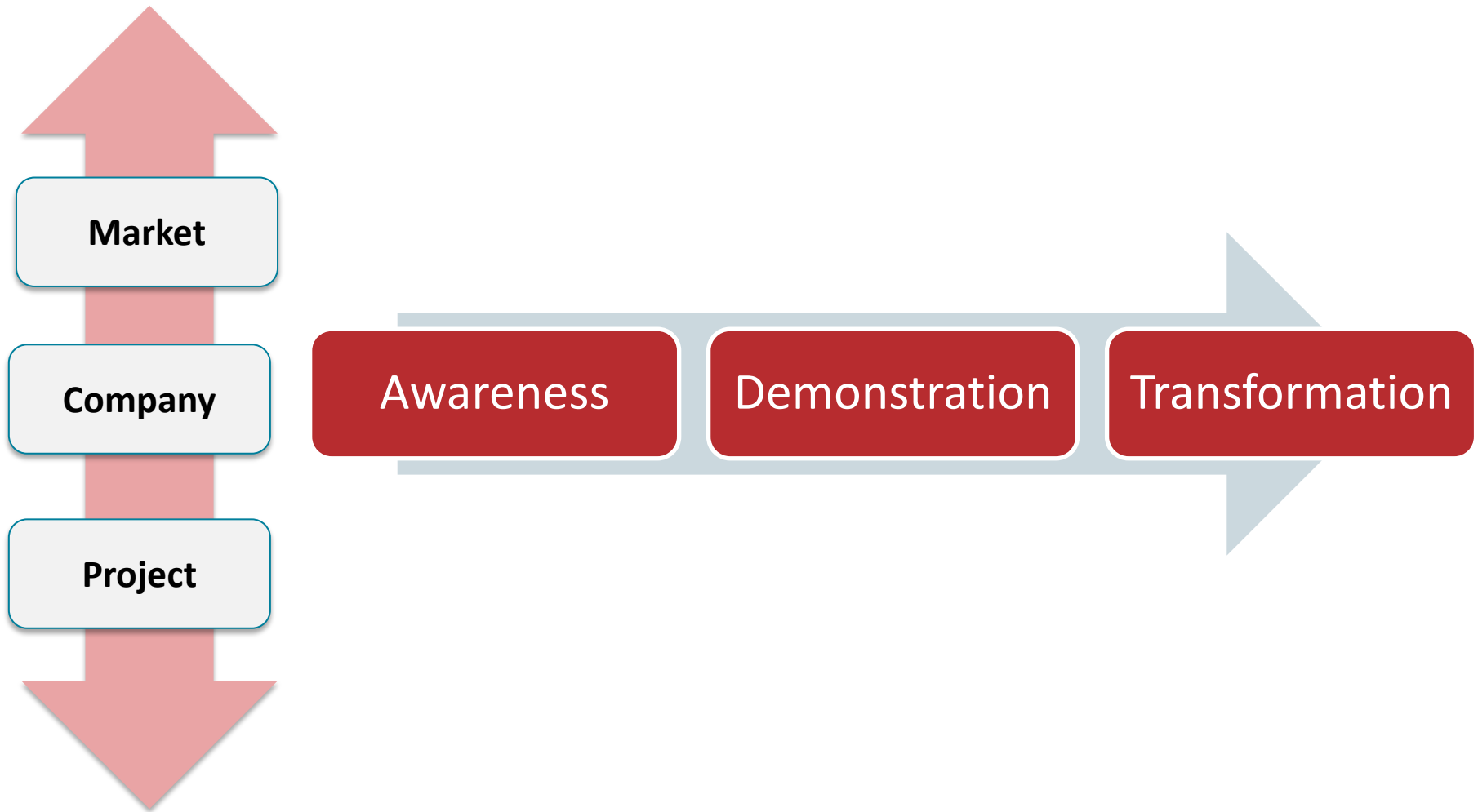
Not enough practical experience of success stories to overcome initial distrust of new technologies and business models

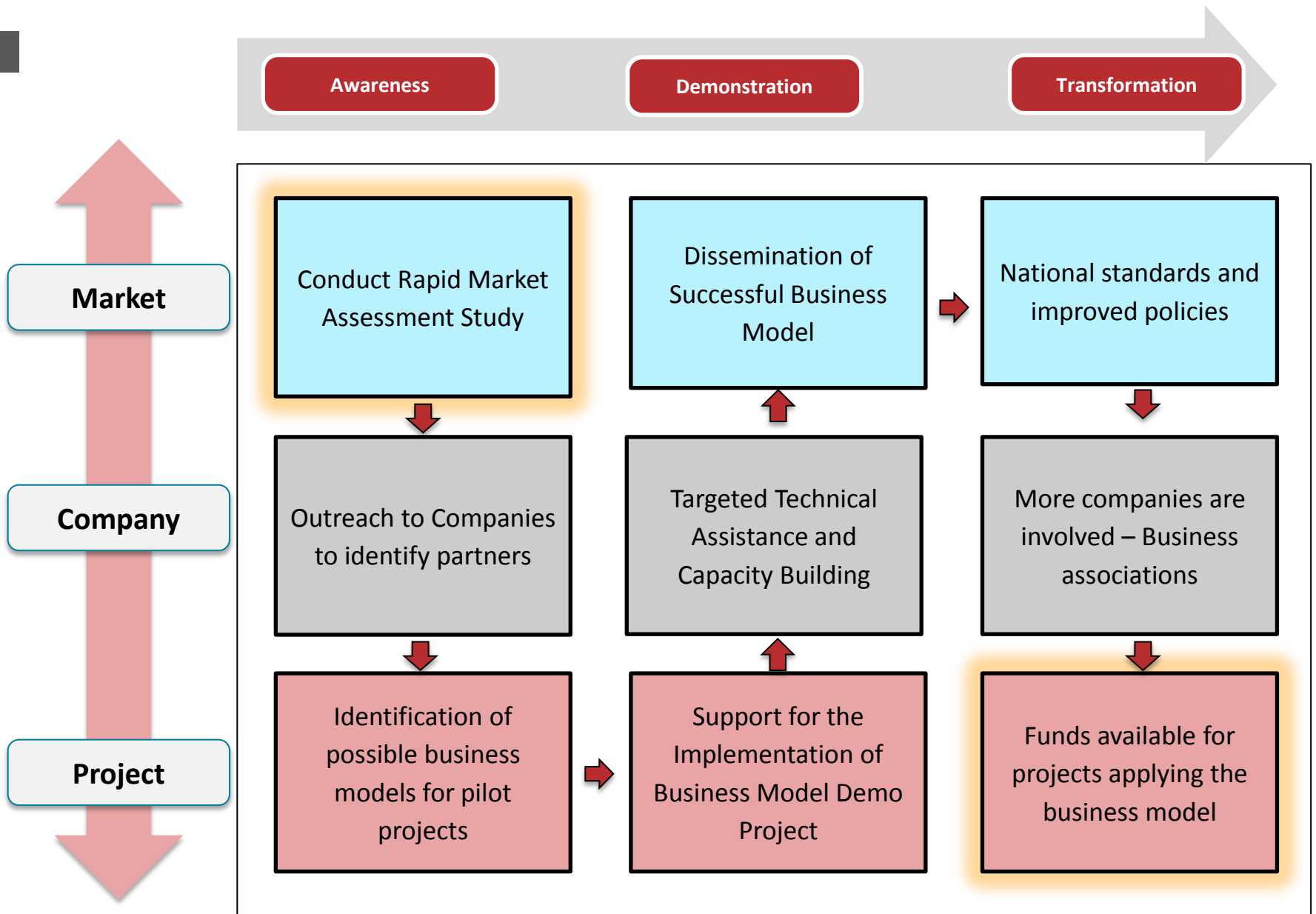
Program Objective

To translate **improved framework conditions** in Member States into concrete renewable energy and energy efficiency **actions by the private sector**, through **market-based transformative** interventions




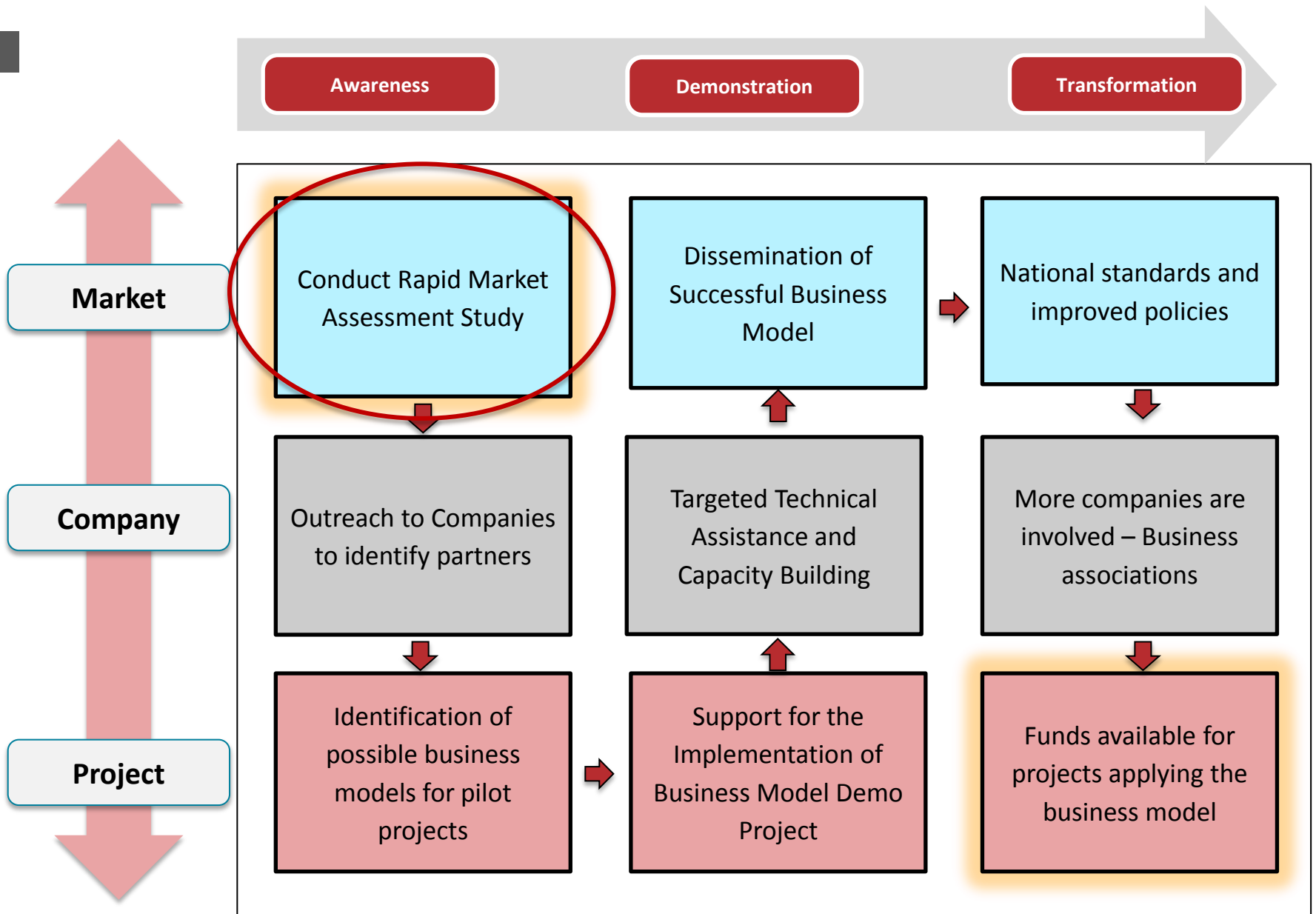
Integrated Approach to Promote Low Carbon Technologies





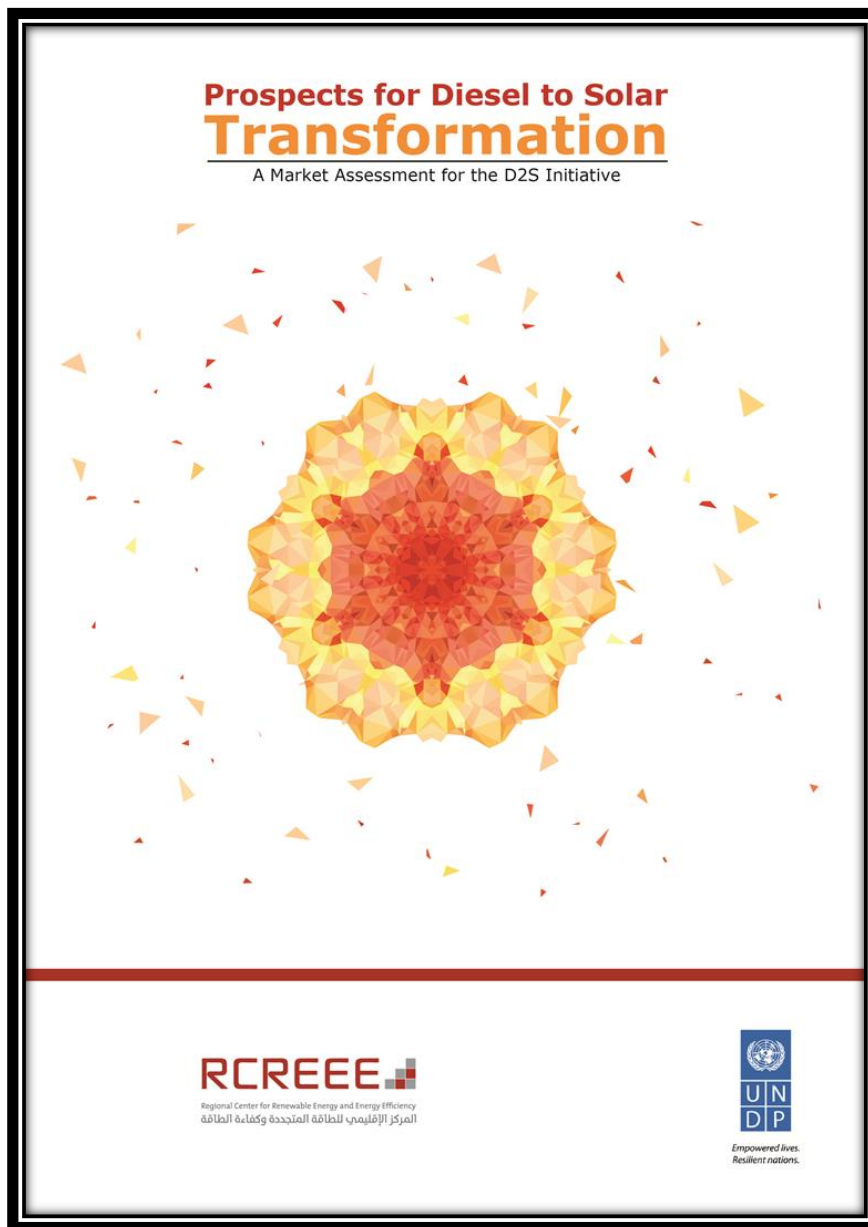
Diesel to Solar (D2S)

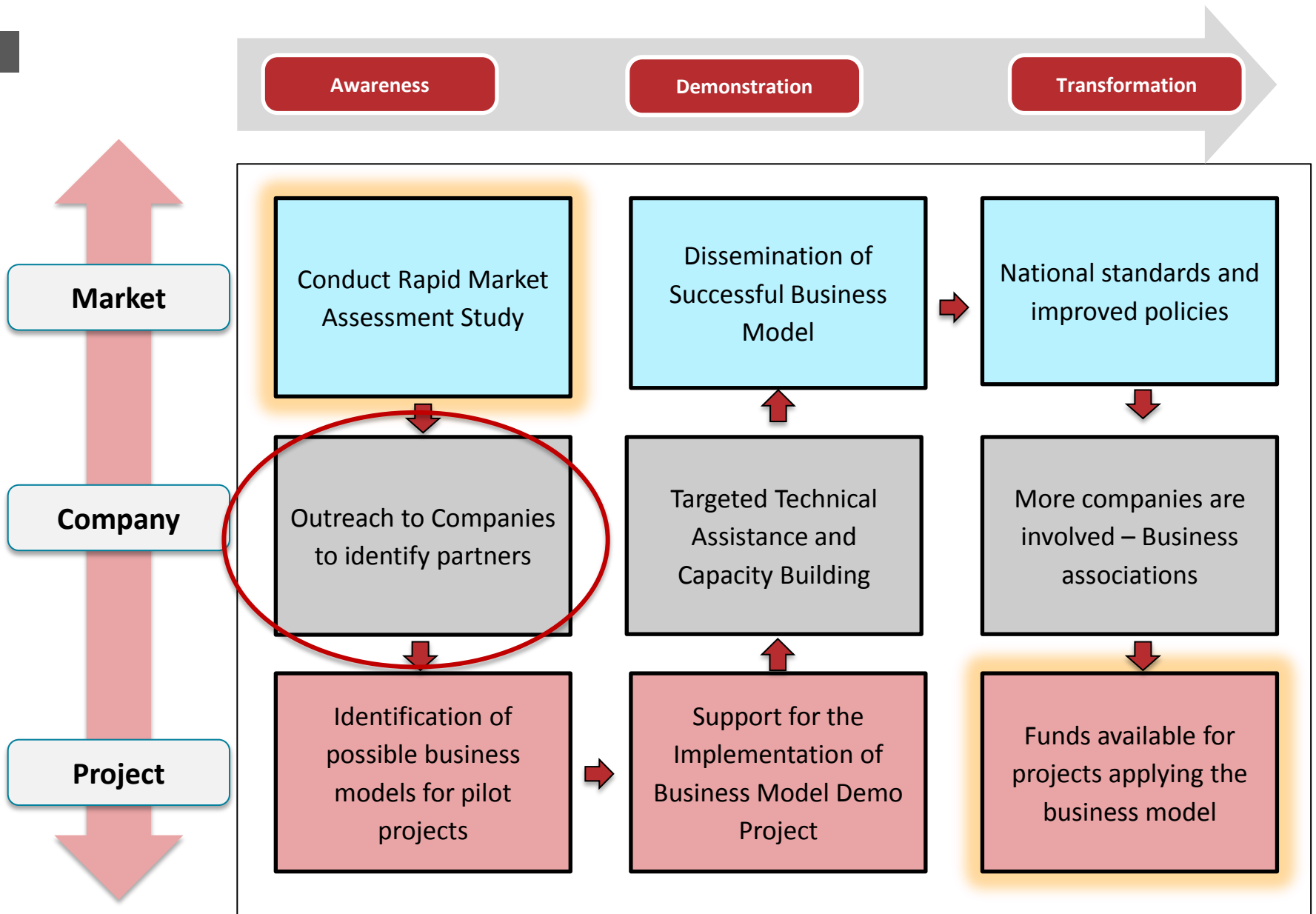
Objective	
The project aims to achieve poverty alleviation and increased food and water security by demonstrating the technical, financial, and economic viability of solar PV energy hybridization of conventional (diesel) power generation for small and medium Off-grid power systems in the MENA region	
Problems Addressed	Focus Countries
<ul style="list-style-type: none"> • Low Awareness • Insufficient Analytical Capacity • Lack of Trust • Lack of Finance 	<div>EgyptSudan</div> <div>DjiboutiYemen</div>
Focus Area	Partners
Decentralized Solar PV	 <i>Empowered lives. Resilient nations.</i>
Intervention Types	
<ul style="list-style-type: none"> • Specialized research and analysis • Promotion and awareness building • Technical Assistance and Capacity Building 	



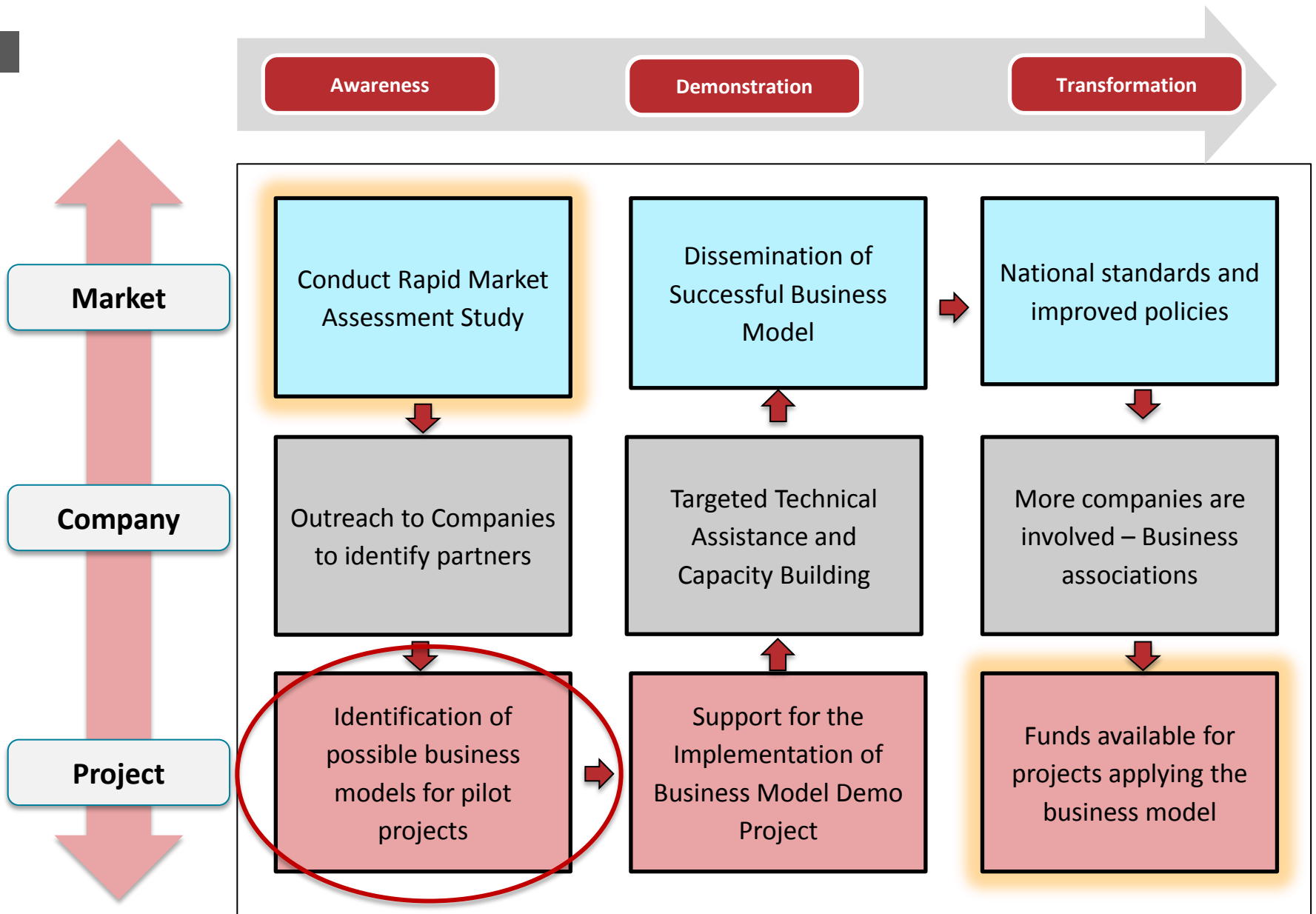
- Four countries: Egypt, Djibouti, Sudan and Yemen
- Mixed primary and secondary sources
- Identifies the most promising applications

Category	Annual Diesel Consumption	Potential (MW)
Utility Electricity	130.99	178.7
Private Electricity	291.85	370.3
Irrigation/Agribusiness	5473.17	4468.5
Single-Activity Electricity	17.82	5
Total	5976.23	5022.6









Business Models for PV in Egypt

by
Matthias Namgalies

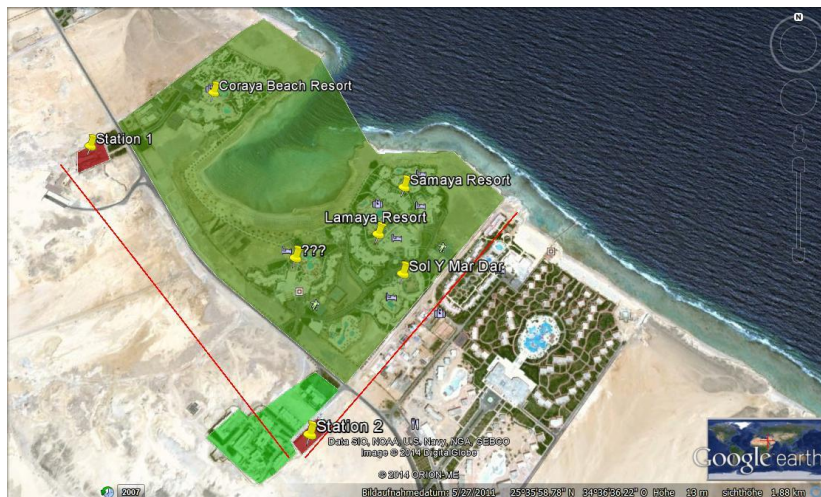
submitted to the
Faculty of Electrical Engineering and Computer Science
University of Kassel, Germany
and the Faculty of Engineering
Cairo University, Giza Egypt

In partial fulfillment of the requirements for M.Sc. degree in
Renewable Energy and Energy Efficiency for the MENA Region

REMENA

15th of May 2015

Examiner: Prof. Dr. sc. techn. Dirk Dahlhaus University of Kassel, Germany
Examiner: Prof. Dr. Adel Khalil University of Cairo, Egypt
Supervisor: Amer Barghouth RCREEE, Egypt
Supervisor: Dr. Benjamin Schulz Consultant, Germany



		B	C	F	G	H	I	J	K	L	M
Technical Parameters	Unit	WORST	BASE	BEST							
Nominal Capacity	MW	0.3	0.3	0.3							
Energy Yield	kWh/kWp.a	1700	1900	2000							
Degradation Factor	%	1.4%	1.2%	0.8%							
Area of Plant	km2	0.008	0.005	0.004							
Cost Parameters	Unit	WORST	BASE	BEST							
CAPEX	€/kW	1,540	1,400	1,330							
Fixed O&M	€/kW/year	77.00	28	26.60							
Variable O&M	€/MWh	0	0	0							
Plant Insurance	€/kW	30	20	15							
Land Lease	% of output	2%	2%	2%							
O&M Escalation	%	2.0%	2.0%	2.0%							
Depreciation Period	year	15	10	5							
Tax Rate	% of Revenue	1%	1%	1%							
Revenue Parameters	Unit	WORST	BASE	BEST							
PPA price	EGP/kWh	0.7	1.3	1.4							
PPA Duration	years	10	15	20							
Annual PPA price Escalator	%	0%	0%	0%							

Amer:
Mr. Namgalies will further
examine this number
based on meteorological
data and input from

Amer:
We used a high degradation factor
information provided from Matthias
based on workshop at Tuv

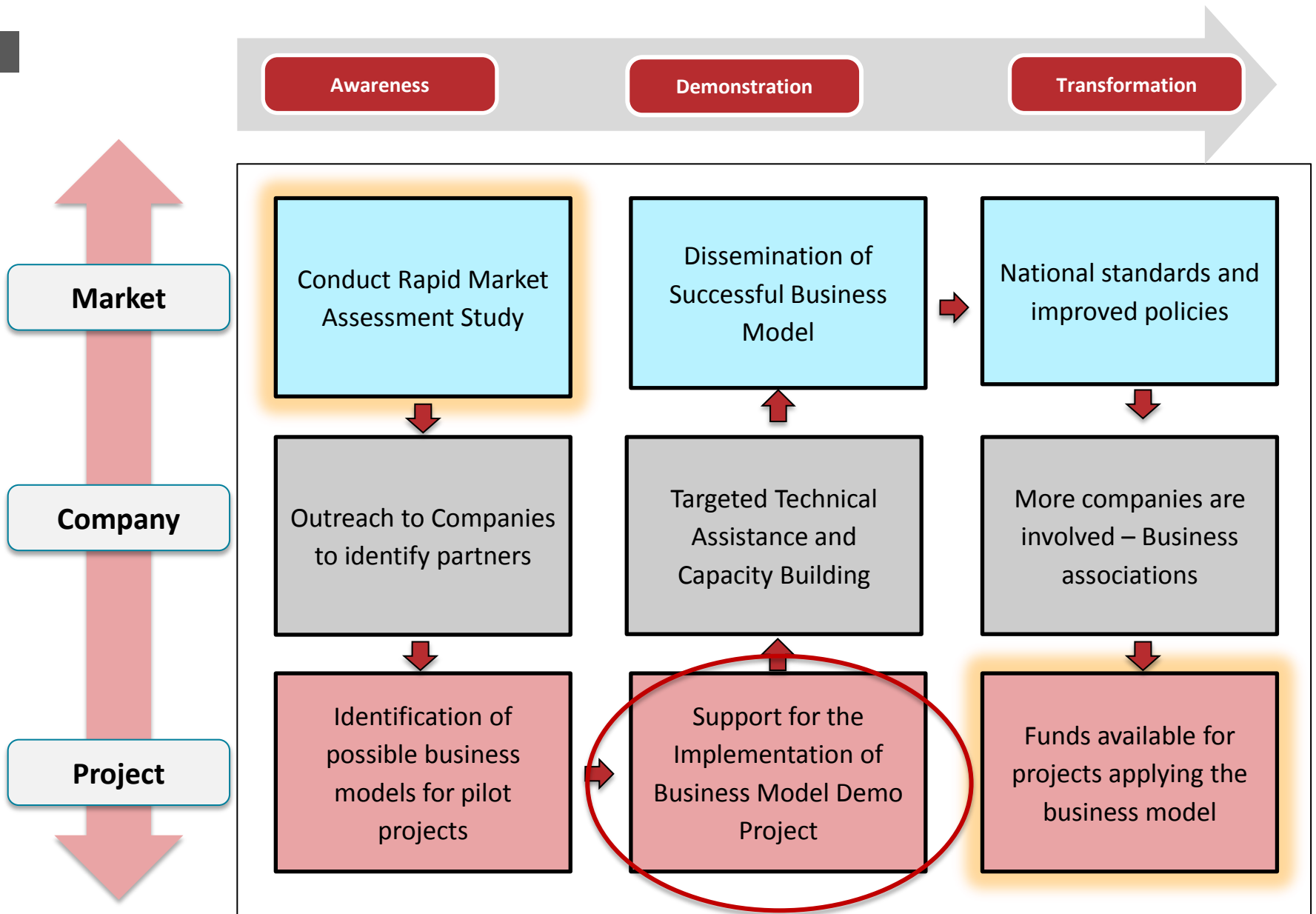
The BSW recommends using 0.8%
factor for Jordan. Nothing for Egypt

Amer:
Karm Solar and Axel said that O&M is approximately 1%
of capex per year. However, Matthias and Amer did a
back of the envelope calculation which can be found in
Calculations worksheet and seems to suggest that O&M
is at least double that figure

Amer:
Cristof said 22 euros per kWp/year. CAR and business interruption

Tarek el Amad said \$9 for war, CAR, sabotage and business
interruption

Tarek Akel said 20 euros is a good conservative assumption, could
be higher





RCREEE – Lahami Bay PV Site Visit

Report on PV Plant Installation Check of
Lahami Bay Pilot Power Plant

on March the 19th, 2015

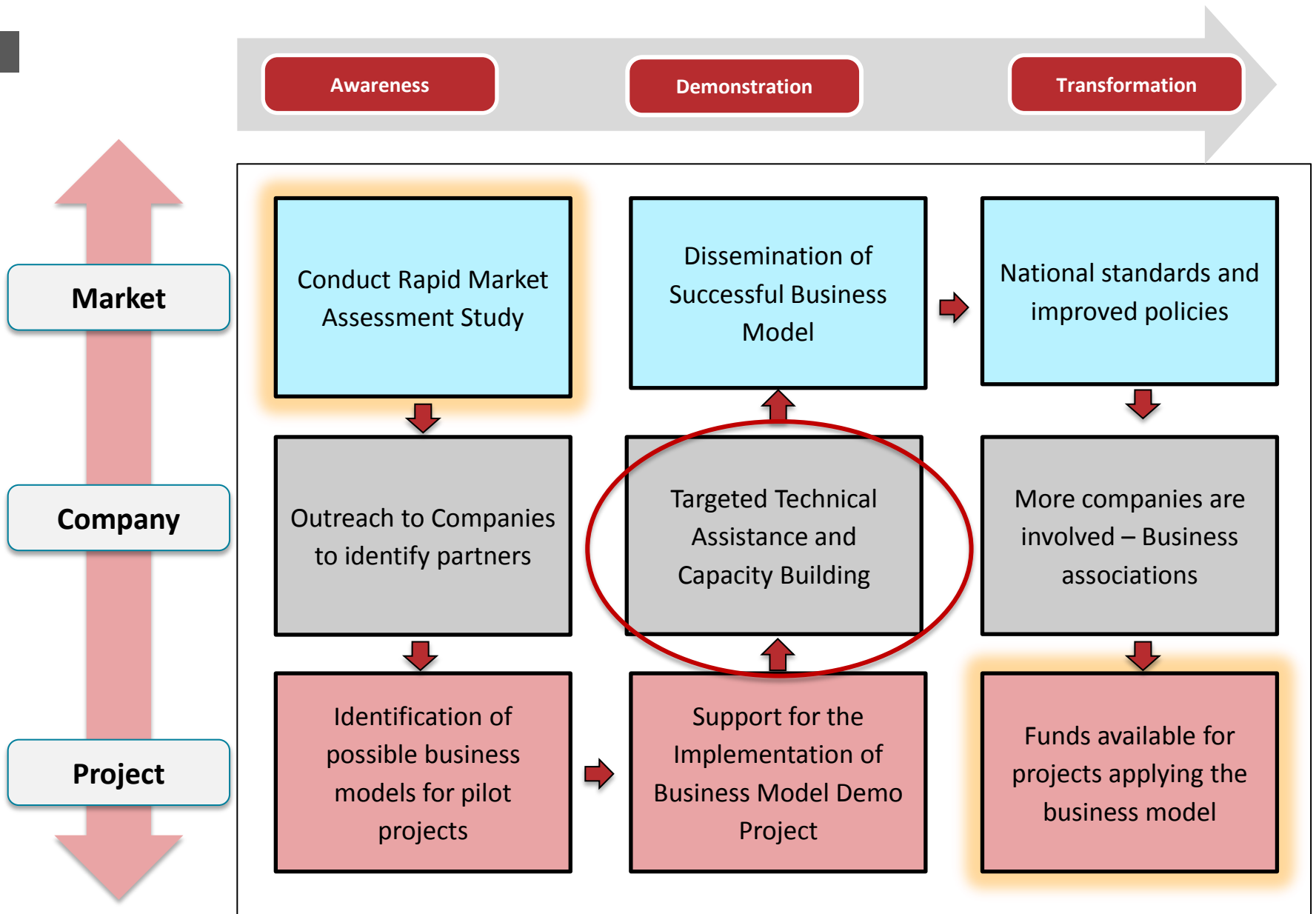
Site Visit & Report by Matthias Namgalies, Visiting Researcher at
RCREEE

23rd of March 2015



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SOLAR PUMP SYSTEMS IN EGYPT

Practical Guidelines for Self-Assessment



Exercise 3

Cost (\$)	Operating Costs	Cost (\$)/year
1000	Cleaning & Monitoring Staff Salaries	35
300	Battery Service	175
150		
500		
450	Total	200
2750		

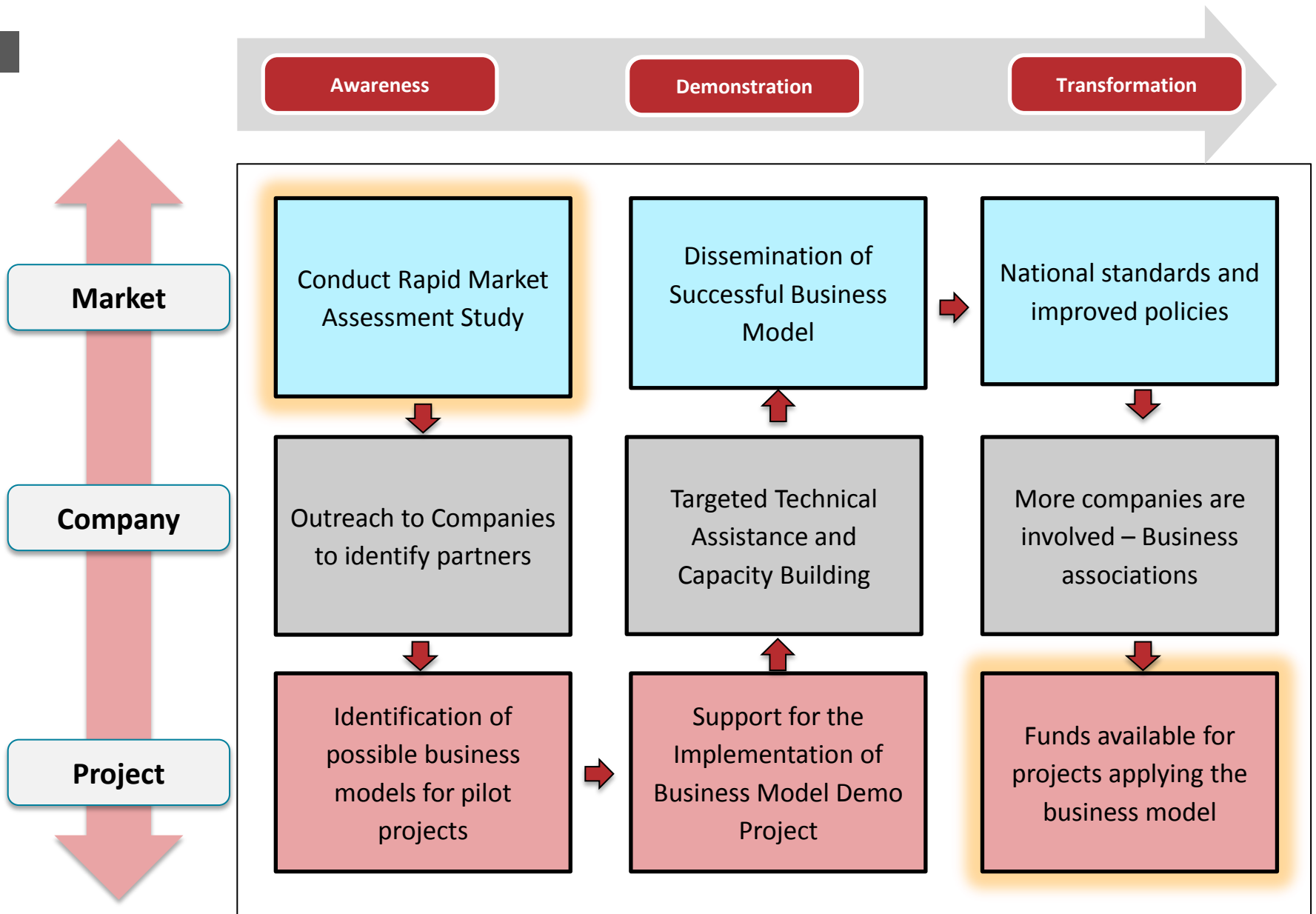
are expected to rise by 10% every year.

to be replaced every 10 years.

to be replaced every 5 years.

RaSeed giz





Private Investments Promotion Program

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