

DF Deutsche Forfait Group



Project Finance for Renewable Energies in Emerging Middle Eastern Markets

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Agenda

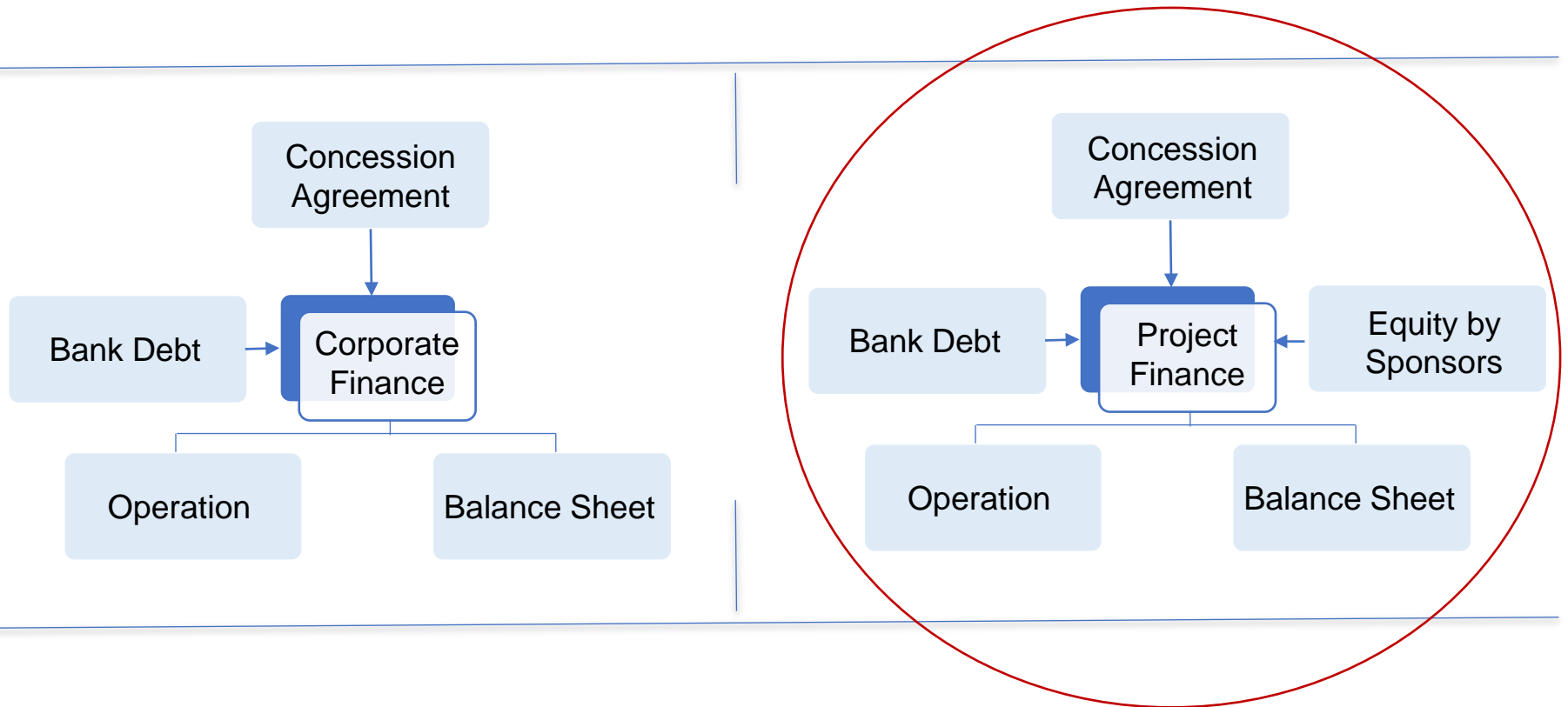
a) Project Structures & Project Finance Structure

b) The relevance between the choice of project finance and business models

c) Emerging Markets in Middle East

d) Renewable Energies and Challenges of Project Finance in Emerging Middle Eastern Markets

Financial structures of the projects:.....



In the structure of project finance...:

**A project company as a core body (SPV/SPE)
a brand-new incorporated vehicle for the specific project**

- has less assets when debt is lent
- reflects the credit risk of the project and not of its sponsor
- is the borrower on behalf of its sponsors

**Major advantages of PF to the parent company are
lower financial exposure and increased availability of capital**

General Specifications of PF

- High levels of debt
- Long tenors
- Limited lender recourse to project sponsors
- Extensive project appraisal
- Considerable legal documentation and investigation
- Reliance on complex financial modelling

Underlying reasons & drivers of Renewable Energy project finance..:

low-carbon energy technologies could be considered as social investments – some retail investors (such as citizens in a community where a wind farm or solar plant is considered) have been shown to take welfare aspects into account for investment decisions

Negative Financial Synergies with Existing Business	Contamination Risk
	Debt Overhang; the availability of secured debt
	Securitization; lower financing cost for a less risky type of business
Market Imperfections	Information Asymmetry between Sponsors and lenders
	Agency conflicts between project owners and contractual parties
	Agency conflicts between project owners and managers
Organizational Structure	Allowing for horizontal joint ventures
	Independence of civic projects

Source: Steffan, 2018

The concepts of business model & the underlying drivers of project finance are interrelated:

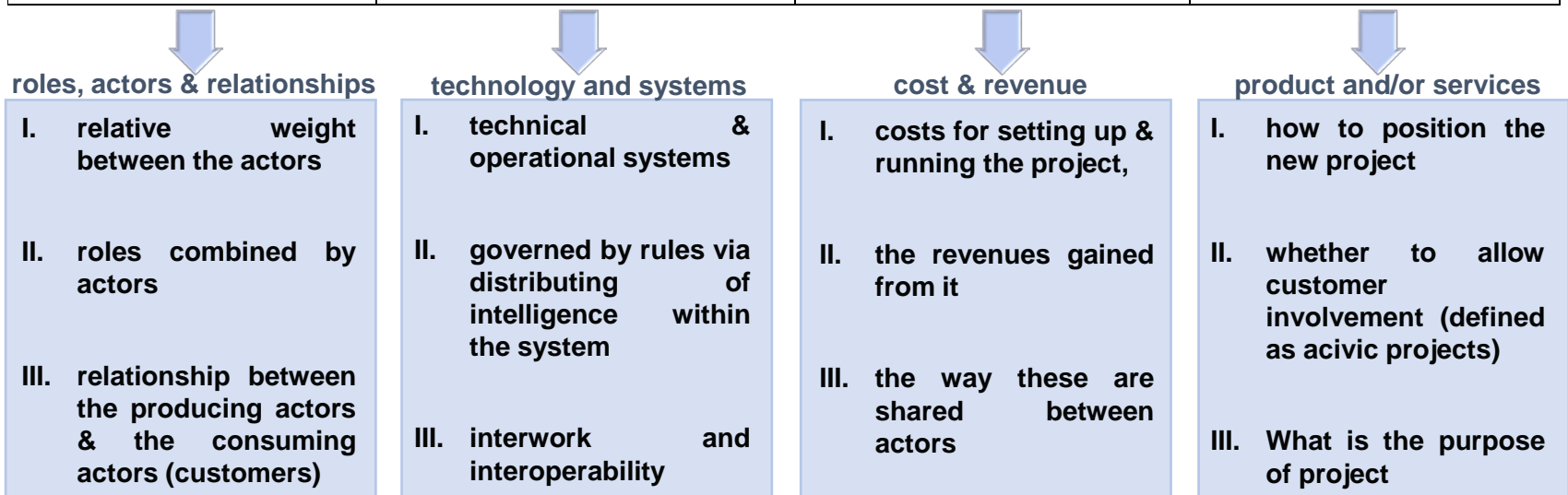
Business model, as the core of the business architecture

- ✓ reflects the firm's strategic choices and trade-offs
- ✓ challenges the logic of value creation through the use of resources
- ✓ determines how the decision-making variables in strategy, structure and economics are interdependent

Source: Ballon, 2007

Business Model Parameters

CONTROL PARAMETERS		VALUE PARAMETERS	
A. Value Network Parameters	B. Functional Architecture Parameters	C. Financial Model Parameters	D. Value Proposition Parameters
A1. Combination of Assets	B1. Modularity	C1. Cost (Sharing) Model	D1. Positioning
A2. Vertical Integration	B2. Distribution of Intelligence	C2. Revenue Model	D2. User Involvement
A3. Customer Ownership	B3. Interoperability	C3. Revenue Sharing Model	D3. Intended Value



Source: Ballon, 2007

Underlying reasons & drivers of Renewable Energy project finance

Depends on:

- Environment:**
- **Country Stability**
 - **Location**

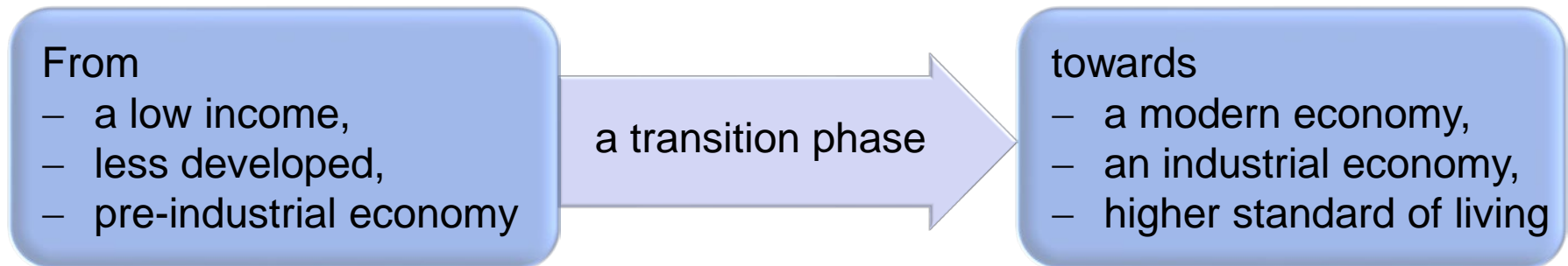
- Project Type:**
- a. **Risk Level**
 - b. **Size**
 - c. **Natural resource availability**
 - d. **Technology Maturity & Developmental Stages**

- Finance & Law**
- **Financial Viability**
 - **National Regulations**
 - **Governmental Supports**
 - **International Supports**

- Sponsor Type:**
- **Project Developers**, Companies focusing on the development, construction and commissioning of renewable energy plants
 - **Industry**, Non-energy industrial company that produces electricity only as side business, typically for own consumption
 - **Regional/municipal utility**, that is (1) owned by the municipality or other regional authorities, and (2) provide public infrastructure services including electricity sales and/or grid operation
 - **Horizontal JV**,
 - **Civic Orgs.**, ...

Emerging Markets

- economy of a developing nation that is becoming more engaged with global markets as it grows
- is in the process of becoming a developed economy
- has some but not all the characteristics of a developed market
- unified currency, stock market, banking system, in the process of industrializing
- do not have the level of developed market and regulatory institutions



they create high returns and can offer greater returns to investors due to rapid growth, but also offer greater exposure to some inherent risks due to their status

Emerging Markets in Middle East

Emerging Markets in Middle East by Each Group of Analysts

No.	Country	IMF	BRICS+ Next Eleven	FTSE	MSCI	S&P	EM bond index	Dow Jones	Russell	Columbia University EMGP
1	<u>Egypt</u>		√	√	√	√	√	√		√
2	<u>Iran</u>		√							
3	<u>Israel</u>						√			√
4	<u>Kuwait</u>			√						
5	<u>Oman</u>						√			
6	<u>Qatar</u>			√	√	√	√	√		
7	<u>Saudi Arabia</u>			√	√					
8	<u>Turkey</u>	√	√	√	√	√	√	√	√	√
9	<u>United Arab Emirates</u>			√	√	√	√	√	√	√





Country Demographic Profile

Country Demographic Data for the Emerging Markets in Middle East

No.	Countries	Area (KM ²)	Administrative Divisions	Population		Average age	Unemployment	
				2019 in Million	Share in ME		rate	date
1.	Egypt	1,010,407	27	99.80	21.86%	24	9.60%	Jun/20
2.	Iran	1,648,195	31	82.10	19.08%	32	10.40%	Sep/19
3.	Israel	20,770	6	9.15	2.03%	30.5	4.50%	Jun/20
4.	Kuwait	17,820	6	4.20	1.01%	36.8	2.17%	Dec/19
5.	Oman	212,460	11	4.86	1.01%	30.6	3.10%	Dec/19
6.	Qatar	11,437	7	2.71	0.51%	32.3	0.10%	Dec/19
7.	Saudi Arabia	2,149,690	13	34.22	7.84%	31.8	5.70%	Mar/20
8.	Turkey	783,562	81	83.15	18.95%	31.5	12.90%	May/20
9.	United Arab Emirates	82,880	9	9.80	2.22%	32.6	2.64%	Dec/19

Source: Trading Economics, Wikipedia



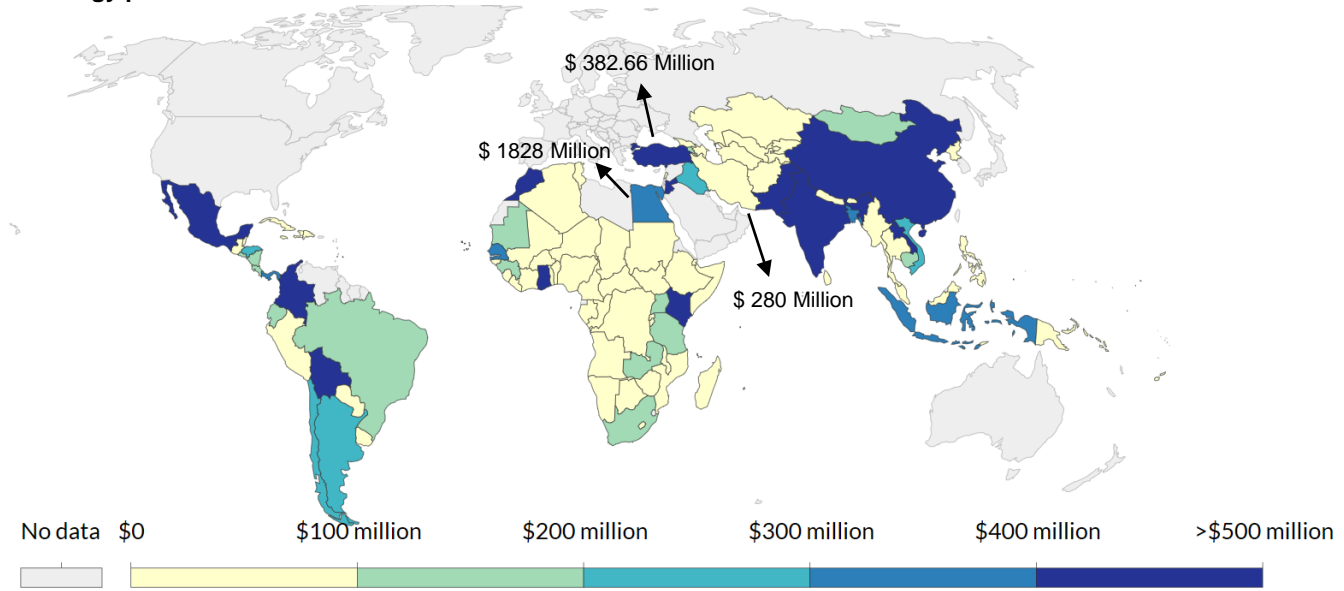


Business & Financial Data

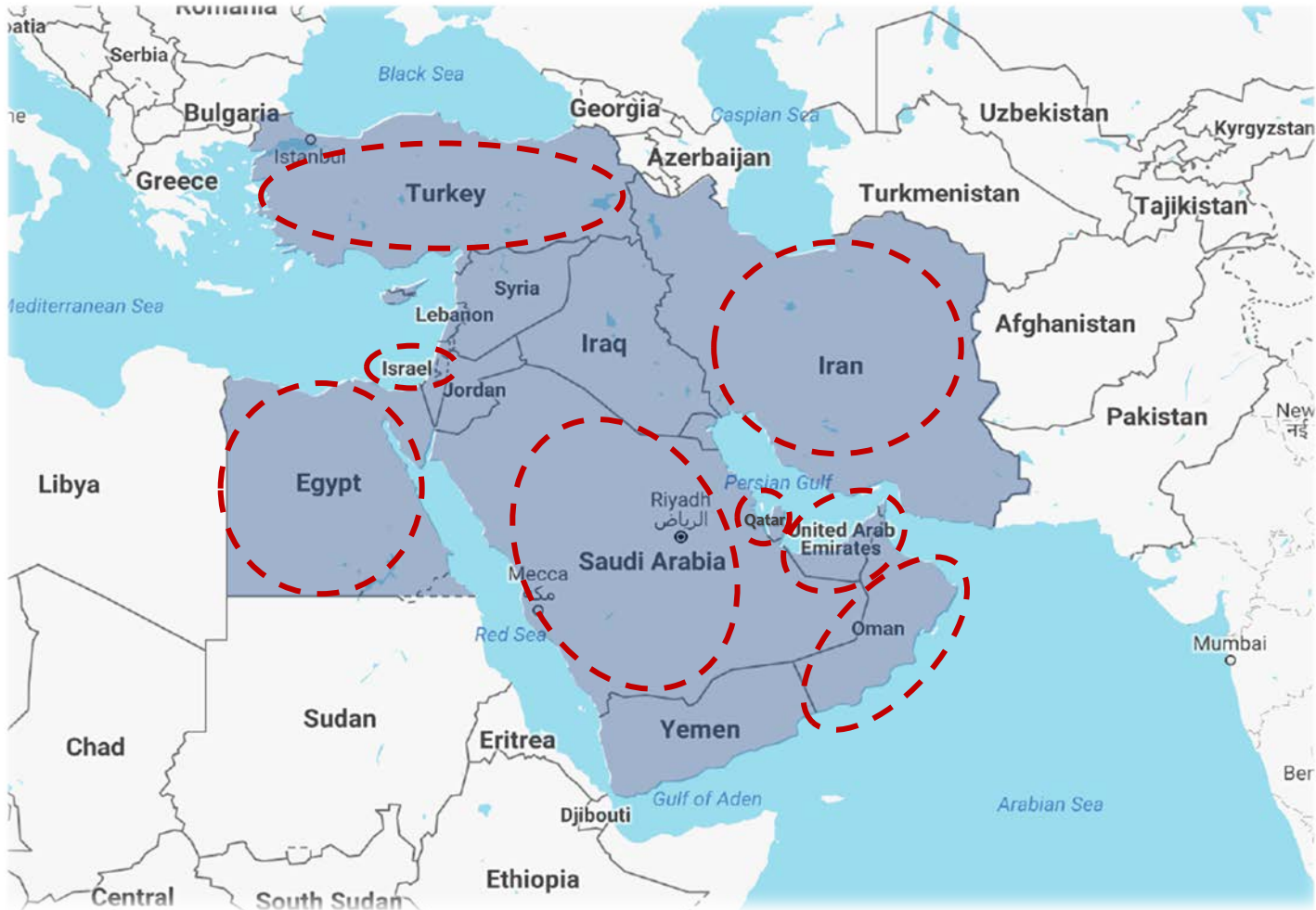
Foreign Direct Investment for the Emerging Markets in Middle East Countries

Egypt	Iran	Israel	Kuwait	Oman	Qatar	Saudi Arabia	Turkey	UAE
\$8,141,300,000	\$3,480,333,000	\$20,788,600,000	\$-21,377,569	\$6,342,262,679	\$-2,186,263,736	\$4,247,084,539	\$13,023,000,000	\$ 50,600,000

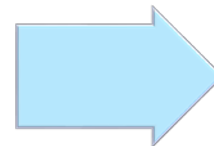
International financing in support of clean energy research and development and renewable energy production



Emerging Markets in Middle East



comprises mountains, deserts, fertile plains irrigated by grand rivers, and seacoasts and climatically, ranges from the temperate Mediterranean coast, to the extreme heat of the arid desert areas or to snowy mountains.

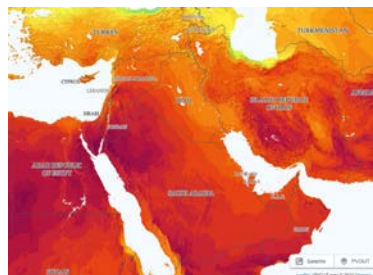


not only most of these countries have been rich in fossil fuels but also source of renewable energies

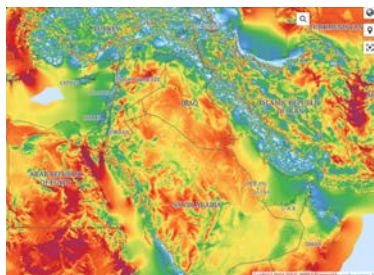
Renewables Availability



Solar Power



Wind Energy



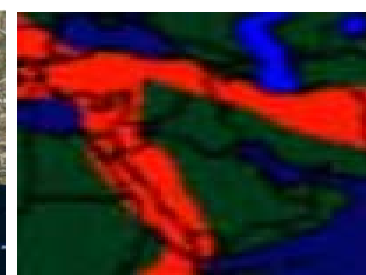
Hydro&Ocean Energy



Bioenergy



Geothermal Energy



Renewable Energy Availability in the Emerging Markets in Middle East Countries

No.	Country	Solar Energy		Wind Energy		Hydro & Ocean Energy		Bioenergy	Geothermal Energy
		Solar PV	CSP	Onshore	Offshore	Tide & Wave	Ocean		
1.	Egypt	↑↑	↑↑	↑	↓	↑↑	↓	↑	↗
2.	Iran	↑	↑	↑↑	↑↑	↑↑	↑	↑	↗
3.	Israel	↑	↑	↑	↑	↑↑	↓	↑	→
4.	Kuwait	↑↑	↑↑	↓	↓	↑↑	↓	→	↓
5.	Oman	↑↑	↑↑	↑	↑	↑↑	↓	→	→
6.	Qatar	↑↑	↑↑	↗	↗	↑↑	↓	→	↓
7.	Saudi Arabia	↑↑	↑↑	↑	↑	↑↑	↓	→	→
8.	Turkey	↗	↗	↑↑	↑↑	↑↑	↓	↑↑	↑↑
9.	United Arab Emirates	↑↑	↑↑	↗	↗	↑↑	↑	→	↓

⇒ **Solar & Wind have high potential, Hydro (Tide & Wave) & Bio comes next**

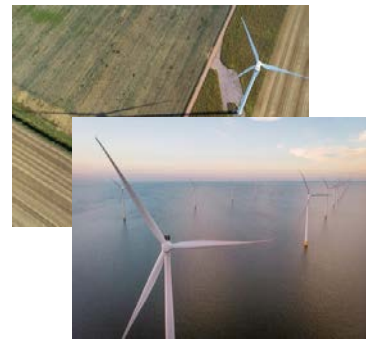


Renewables

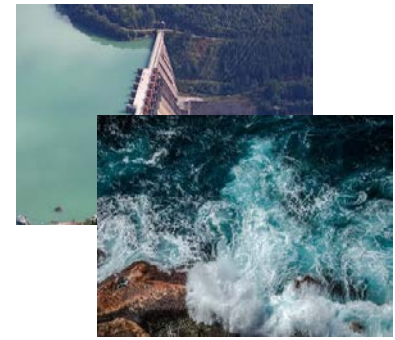
Solar Power



Wind Energy



Hydro&Ocean Energy



Bioenergy



Geothermal Energy



Developmental Stage of Technology, Commercialization & Costs for Renewable Energies

	Solar Energy		Wind Energy		Hydro & Ocean Energy		Bioenergy Power	Geothermal Energy
	Solar PV	CSP	Onshore	Offshore	Tide & Wave	Ocean		
Technology Level	↑	↑	↑	↑	↑	↑↑	↑	↑↑
Technology Integration	↑	↑						
Technology Maturity	↑	↗	↑	↗	↗	→	↗	→
Technology Cost	↑	↑	↑	↑	↑	↑↑	↑	↑↑

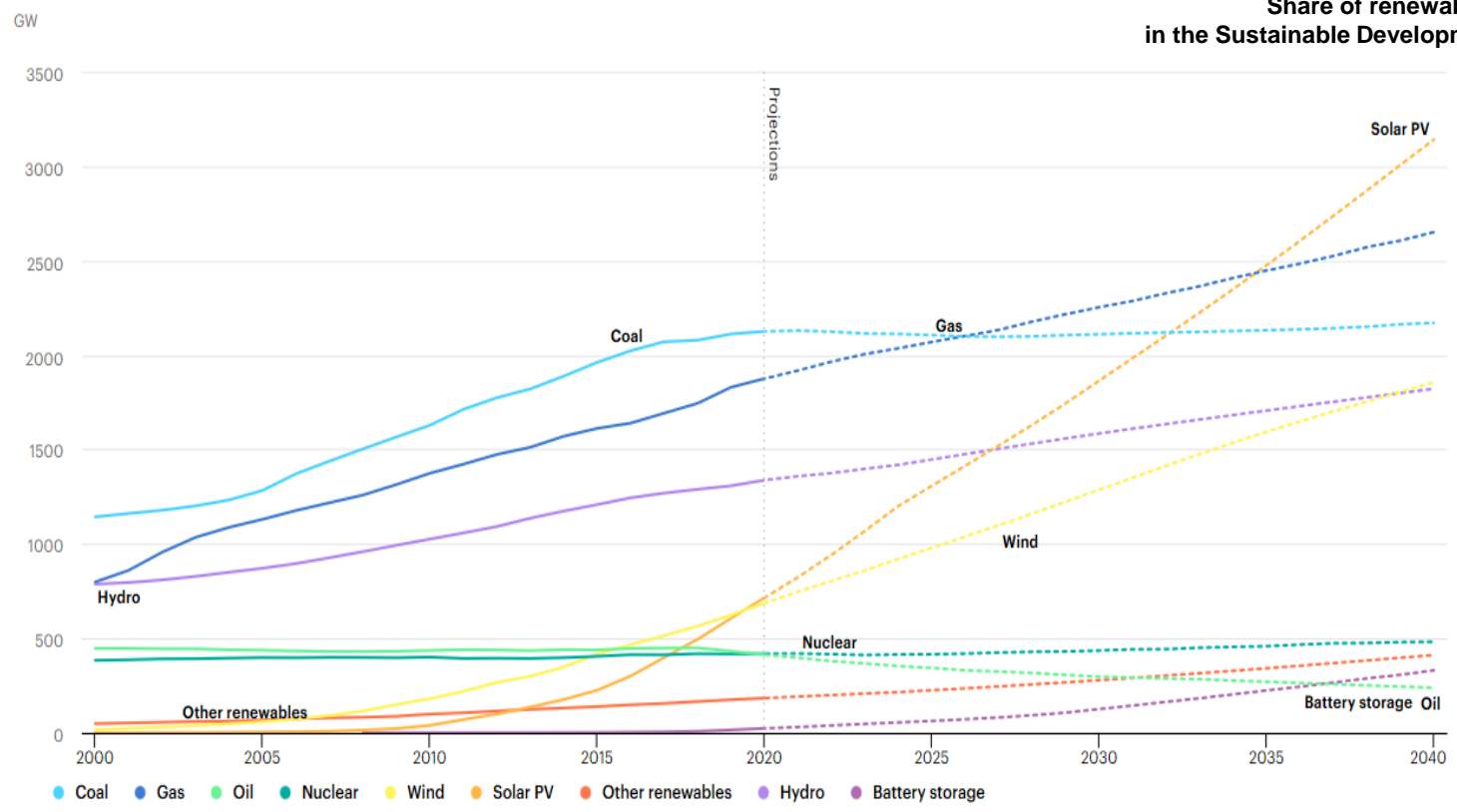
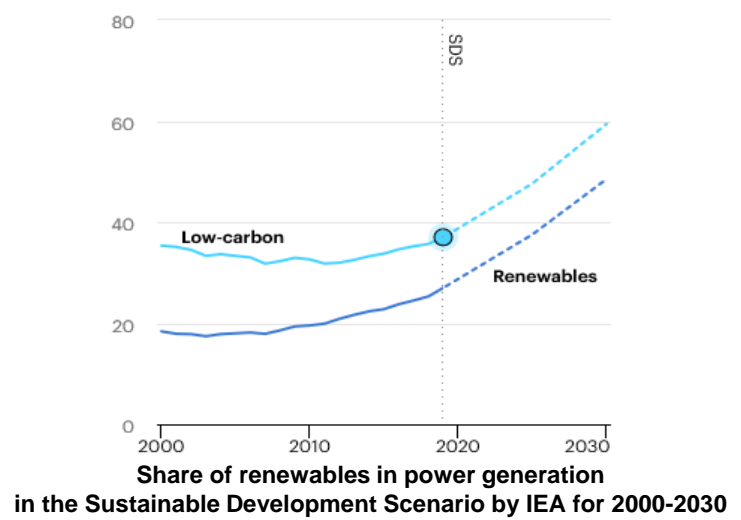
* e.g. the combination of CSP with molten salt thermal storage (TES) to achieve reliable dispatchable power

**e.g. solar PV combined with battery storage systems



Renewables

⇒ All Renewables are predicted to grow within the next years, Solar & Wind will have more sharp growth due to resource availability, technology maturity & technology cost



Installed power generation capacity by source in the Stated Policies Scenario, 2000-2040, IEA



Energy Supply

Total Primary Energy Supply in for the Emerging Markets in Middle East Countries

	Total (ktoe)	Coal	Natural Gas	Nuclear	Hydro	Wind, Solar, etc.	Biofuels & waste	Oil	RE Share
Total Middle East	750,158	3,792	418,173	1,958	1,517	564	917	322 644	
Egypt	92 789	367	47 372	0	1 152	239	1 823	41 836	5.54%
Iran	261 979	1 247	174 574	1 958	1 294	34	516	82 356	0.98%
Israel	23 506	4 964	8 635	0	2*	531	44	9 330	3.84%
Kuwait	34 031	0	18 487	0	0	0	4**	15 540	0
Oman	26 434	0	20 755	0	0	0	0	5 679	0
Qatar	43 150	0	40 676	0	0	0	0	2 474	0
Saudi Arabia	211 321	0	78 009	0	0	13	7	133 291	0.02%
Turkey	146847	40 089	44 232	0	5 006	10 170	3 032	44 318	11.41%
United Arab Emirates	67656	2 130	59 493	0	0	113	45	5 875	0.21%

Source: IEA World Energy balances, 2017 - United Nations Statistics, 2017

*The data is for 2015

**The data is for 1994

Currently the share of renewable energy supply is not high



Due to the available resources & the need for non-oil resources to provide energy, the importance of RE development seems to be essential to the extent that it is sometimes explicitly mentioned in their development plans



Economic Data

Economic Data of the Emerging Markets in Middle East Countries based on GDP

No.	Countries	GDP USD Billion	GDP Per Capita USD	GDP Per Capita PPP USD	GDP Annual Growth Rate	GDP Growth Rate in 5 years
1.	Egypt	303.20 Dec/19	3008.80 Dec/19	11763.30 Dec/19	5% Mar/20	5.72%
2.	Iran	445.34 Dec/17	6948.70 Dec/17	14535.90 Dec/17	-10.1% Mar/19	7.66%
3.	Israel	395.10 Dec/19	35293.40 Dec/19	40161.90 Dec/19	-6.9% Mar/20	6.48%
4.	Kuwait	134.76 Dec/19	32697.33 Dec/19	49846.10 Dec/19	-1.1% Dec/19	-5.39%
5.	Oman	76.98 Dec/19	14992.60 Dec/19	27896.30 Dec/19	2.2% Dec/18	-5.71%
6.	Qatar	183.47 Dec/19	62021.10 Dec/19	92651.10 Dec/19	0.9% Mar/20	-19.43%
7.	Saudi Arabia	792.97 Dec/19	20542.20 Dec/19	46962.10 Dec/19	-1% Mar/20	3.71%
8.	Turkey	754.41 Dec/19	14999.00 Dec/19	28167.40 Dec/19	4.5% Mar/20	
9.	United Arab Emirates	421.14 Dec/19	41420.50 Dec/19	67119.10 Dec/19	1.6% Dec/19	3.99%

Source: Trading Economics Estimation, IMF (International monetary fund)



Fragile State

Fragile State Indicator for the Emerging Markets in Middle East Countries

No.	Countries	2020 score	Rank	Status	Change from 2019
1.	Egypt	86	35	high warning	2.4 improved
2.	Iran	83.4	44	high warning	0.4 worsened
3.	Israel	75.1	69*	elevated warning	1.4 improved
4.	Kuwait ←	50.9	131	stable	2.3 improved
5.	Oman ←	48.8	134	More stable	2.0 improved
6.	Qatar ←	43.7	141	More stable	1.7 improved
7.	Saudi Arabia	68.8	94	warning	1.6 improved
8.	Turkey	79.1	59	elevated warning	1.2 improved
9.	United Arab Emirates ←	38.1	152	Very stable	2.0 improved

Source: Fund for peace

Very high alert> High alert> Alert> High warning> Elevated warning> Warning> Stable> More stable> Very stable> Sustainable> Very sustainable

*weighted average

⇒ **normal pressures that a state experience, those pressures are not pushing a state towards the brink of failure**

*Twelve conflict risk indicators are used to measure the condition of a state e.g. security apparatus, factionalized elites, group grievance, economic decline and property, uneven economic development, human flight and brain drain, state legitimacy, public services, human rights and rule of law, demographic pressures, refugees and internally displaced persons, external intervention



Country Risk

more political uncertainty in emerging markets=>economies may be more prone to booms & busts

Country Risk Classification for the Emerging Markets in Middle East Countries

No.	Countries	Classification
1.	Egypt ←	5
2.	Iran	7
3.	Israel	NA
4.	Kuwait ←	2
5.	Oman ←	5
6.	Qatar ←	3
7.	Saudi Arabia ←	2
8.	Turkey ←	5
9.	United Arab Emirates ←	2

⇒ **stable & foreseeable cash flow stream for a long period of time**

Source: OECD, Jun 2020

*Country risk refers to the economic, political and business risks that are unique to a specific country and refers to the uncertainty associated with investing in a particular country, and more specifically the degree to which that uncertainty could lead to losses for investor.



Credit Rating

Credit Rating for the Emerging Markets in Middle East Countries

No.	Countries	S&P	Moody's	Fitch	DBRS	TE	Status
1.	Egypt	B	B2	B+	-	30	<u>Highly speculative</u>
2.	Iran	-	-	-	-	15	<u>Extremely speculative</u>
3.	Israel ←	AA-	A1	A+	-	81	<u>Upper medium grade</u>
4.	Kuwait ←	AA-	Aa2	AA	-	88	<u>High Grade</u>
5.	Oman	BB-	Ba3	BB	-	43	<u>Non-investment grade - speculative</u>
6.	Qatar ←	AA-	Aa3	AA-	-	85	<u>High Grade</u>
7.	Saudi Arabia	-	-	-	-		
8.	Turkey	B+	B1	BB-	BB	36	<u>Non-investment grade - speculative</u>
9.	United Arab Emirates ←	AA	Aa2	AA	-	90	<u>High Grade</u>

Source: Trading Economics Estimation

⇒ **higher credit rating as a safer investment with higher potential investment opportunities**

*investment grade: BBB- or higher in S&P and Fitch, Baa3 or higher for Moody's and BBB or higher for DBRS
 speculative grade: BB+ and below in S&P and Fitch, Ba1 and below in Moody's and BB and below for DBRS



Business & Financial Data

Business & Financial Data for the Emerging Markets in Middle East Countries

No.	Countries	Ease of Doing Business 2019	Social Security Rate for Companies 2019	Competitiveness 2019	Interest Rate for 2020	Loan Growth 2020	Tax for 2020		Inflation Rate Q3/20	Corruption Rank 2019
							Corporate Tax Rate	Personal Income Tax Rate		
1.	Egypt	114	26%	93	9.25%	7.22%*	22.5%	22.5%	6.5%	106
2.	Iran	127	NA	99	18%	NA	25%*	10-25%*	30%	146
3.	Israel	35	7.6%	20	0.1%	3.29%	23%	50%	1.1%	35
4.	Kuwait	83	11.5%	46	1.5%	4.06%	15%	0	2.5%	85
5.	Oman	68	NA	53	0.5%	1.5%	15%	0	1.5%	56
6.	Qatar	77	0	29	2.5%	11.5%	30%	0	1.9%	30
7.	Saudi Arabia	62	12%	36	1%	13.2%	20%	0	6.2%	51
8.	Turkey	33	22.5%	61	8.25%	9.75%	22%	35%	9.1%	91
9.	United Arab Emirates	16	12.5%	25	1.5%	5.8%	0%	0	-0.5%	21

Source: Trading Economics

*local sources



Laws & Regulations

EGYPT

- Egypt Renewable Energy Law
- Egypt renewable energy tax incentives
- Feed-in tariff for wind and solar PV projects
- Renewable energy custom tax reduction for renewable equipment
- Egyptian Solar Plan
- New National Renewable Energy Strategy

IRAN

- Renewable portfolio standards
- Supplying 20% of electricity consumed from renewable sources
- Renewable Electricity Compliance
- Renewable Energy Development Fund
- Financial Support & FIT

ISRAEL

- Policy on the integration of renewable energy sources into the Israeli electricity sector
- Feed-in-tariffs for Solar PV and Wind sourced power
- Renewable energy targets and promotion policy
- Regulation on Domestic Solar Water - Heaters

KUWAIT

- Renewable Energy Target
- National Renewable Resource Assessment Mapping
- Development and Deployment of Utility Scale Renewable Power Plant
- Innovative Renewable Energy Research Program
- Renewable Energy Building and Site Integration

OMAN

- Residential PV Initiative in Oman

QATAR

- capture and storage for EOR

SAUDI ARABIA

- Vision 2032
- Royal Decree of 17/04/2010 on the King Abdullah City for Atomic and Renewable Energies (KARARE)

TURKEY

- Renewable Energy Law
- Law on Geothermal Resources and Natural Mineral Waters
- Law on Utilization of Renewable Energy Resources for the Purpose of Generating Electrical Energy
- Electricity Market Licensing Regulation

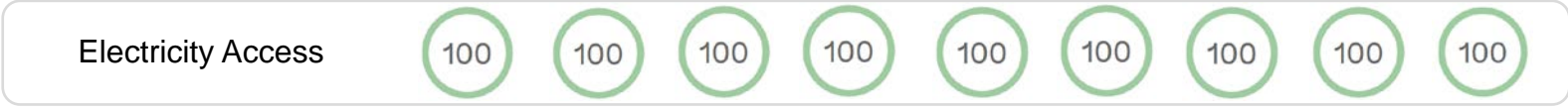
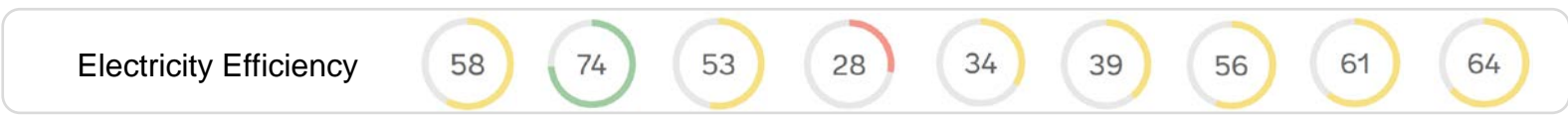
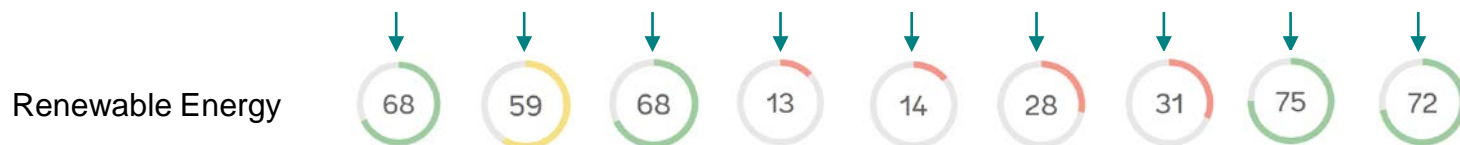
UAE

- Renewables Standards
- Overseas Renewable Energy Development Assistance Programme
- Energy Efficiency Target
- National Renewable Energy Resource Assessment and Mapping (Atlas)
- Solar water heating regulation
- Overseas Renewable Energy Investment Strategy



Laws & Regulations

Law & Regulatory	Countries	Egypt	Iran	Israel	Kuwait	Oman	Qatar	Saudi Arabia	Turkey	UAE
1. Legal framework for renewable energy		100	100	100	50	0	50	50	100	100
2. Planning for renewable energy expansion		71	53	41	24	40	47	42	91	69
3. Incentives and regulatory support for renewable energy		40	58	75	0	0	10	13	56	92
4. Attributes of financial and regulatory incentives		92	58	92	0	17	0	50	83	67
5. Network connection and use		66	36	49	0	12	0	13	66	37





PF Players

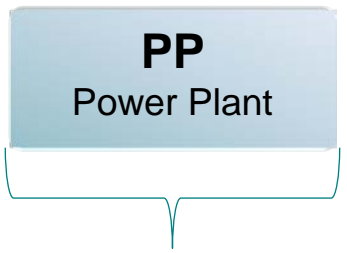
Key Players & Contractors in Project Finance

party	Type of contract
Government	Permits & Licenses
Land Owners	Land-Rights Contract
Constructor	Construction Contract
Lenders	Loan Agreements
Equity Investors	Shareholders Agreement
Input Supplier	Input Supply Contract
Grid Operator	Connection Agreement
Customer	Revenue Contract

Source: Barroco & Herrera, 2019



Financial Models

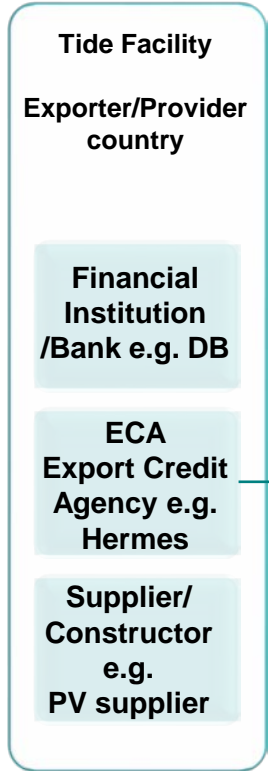


**There is no Collateral
A Limited Recourse
Recourse to Project Company's Asset**

15 % Equity + Premium risk



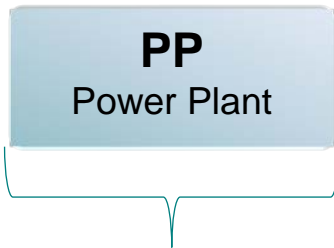
85% ?



- Credit Worthiness of sponsor
- Minimum Coverage (15% at least)
- Premium risk



Financial Models



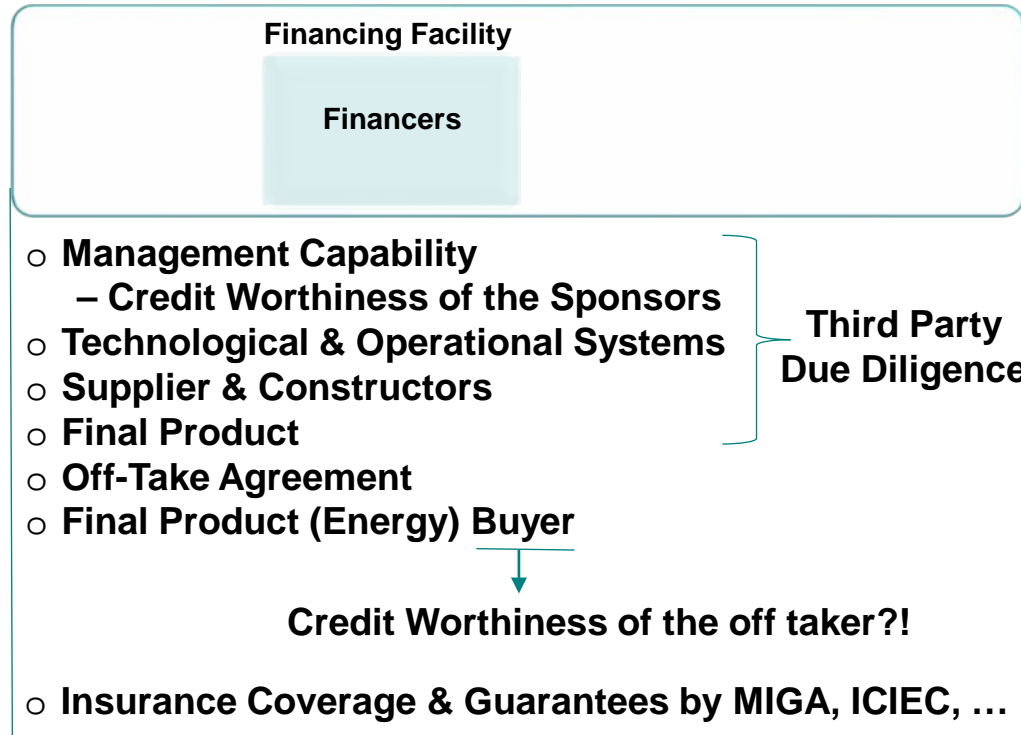
**There is no Collateral
A Limited Resource
Recourse to Project Company's Asset**



15 % Equity + Premium risk



85% ?

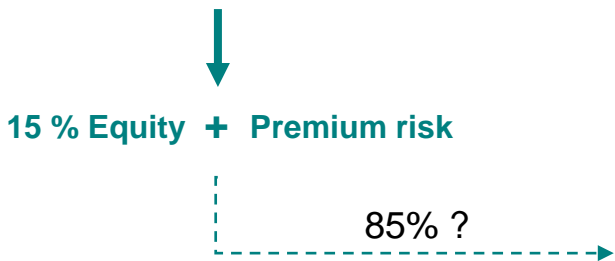




Financial Models

PP
Power Plant

There is no Collateral
A Limited Recourse
Recourse to Project Company's Asset



Bond Issuance

Bond issued by Project Company

○ **Equity** >/<

- **Management Capability**
– Credit Worthiness of the Sponsors
- **Technological & Operational Systems**
- **Supplier & Constructors**
- **Final Product**
- **Off-Take Agreement**
- **Final Product (Energy) Buyer**

Credit Worthiness of the Bond?: S&P/ Fitch/ Moody's/ DBRS

Investment Grade

X%

Non - Investment Grade
Suspicious

↓

High Yield Bond
Higher Interest Rate to absorb more investors

X+Y%










----- Credit Spread -----

Credit Enhancement:

- ✓ More Guarantee by Sponsors & Project Owners
- ✓ More Equity



Overall View

	Income Group:	GDP annual Growth rate:	Country Risk:	Investment Grade:	Fragility Score:	Ease of Doing Business	RE Law Score:	RE Resources:	RE% of Energy Consumption:
 Egypt, Arab Rep.	Lower middle income	5%	5 Medium	Highly Speculative	86 Highly warning	114 low	68	Solar, On shore Wind, Hydro & Bio	5.54
 IRAN	Upper middle income	-10.1%	7 High	Extremely Speculative	83.4 Highly warning	127 low	59	Solar, Wind, Hydro & Bio	0.98
 ISRAEL	High income	-6.9%	NA	Upper Medium Grade	75.1 Elevated warning	35 Very low	68	Solar, Wind, Hydro & Bio	3.84
 KUWAIT	High income	-1.1%	2 Low	High Grade	50.9 Stable	83 High	13	Solar & Hydro	0
 OMAN	High income	2.2%	5 Medium	Speculative	48.8 More Stable	68 Medium	14	Solar, Wind & Hydro	0
 QATAR	High income	0.9%	3 Medium	High Grade	43.7 More Stable	77 Medium	28	Solar, Wind & Hydro	0
 Saudi ARABIA	High income	-1%	2 Low	NA	68.8 warning	62 Medium	31	Solar, Wind, Hydro & Bio	0.02
 TURKEY	Upper middle income	4.5%	5 Medium	Speculative	79.1 Elevated warning	33 High	75	Solar, Wind, Hydro, Bio & Geothermal	11.41
 UAE	High income	1.9%	2 Low	High Grade	38.1 Very Stable	16 Very High	72	Solar, Wind & Hydro	0.21



Overall View

- In the current situation, long term financing is less acceptable for banks and financial institutions, especially for the high risk countries (6/7).
- ECAs could play critical roles to provide guarantees for non recourse and limited recourse renewable energy project finance.
- “A relatively recent development is the increasing use of project finance for renewable energy projects such as solar and onshore wind, many of which are smaller in scale and less complex than conventional power plants that traditionally used project finance”. This can be a point to develop such projects in emerging middle eastern countries!
- The importance of private sponsors for renewable energy is also higher, Higher Risk Higher Return.



Covid-19, RE & Emerging Markets

- emerging markets are confronting a sharp tightening in global financial conditions;
- renewables are not immune to the Covid-19 crisis, but it is said that they more resilient than other fuels;
- possible delays in construction activity due to supply chain disruptions, lockdown measures and social-distancing guidelines, and emerging financing challenges.
- given supportive government policies, growth is expected to resume in 2021 as most of the delayed projects coming online; the role of smart contracts & digitalized paper process are not negligible.
- Compared to 2019 levels, it is not expected to fully recover in 2021 as small investors reprioritize investment decisions.

Thanks for your attention

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