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EcoPeace Middle East

Advancing a Water / Renewable Energy Exchange for Middle East Water & Energy Security

Munqeth Mehyar

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The WEN Concept and its Key Components

- Desalination & Solar Energy
- Combining the Two for a Better Future & Next Steps

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Post Coal & Steel Agreement
Prosperity in Europe
War Again Unimaginable

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WEN'S 3 Components

1

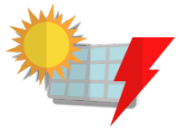
Desalination in Palestine & Israel

2

Solar Energy Fields in Jordan

3

Cross Border Distribution

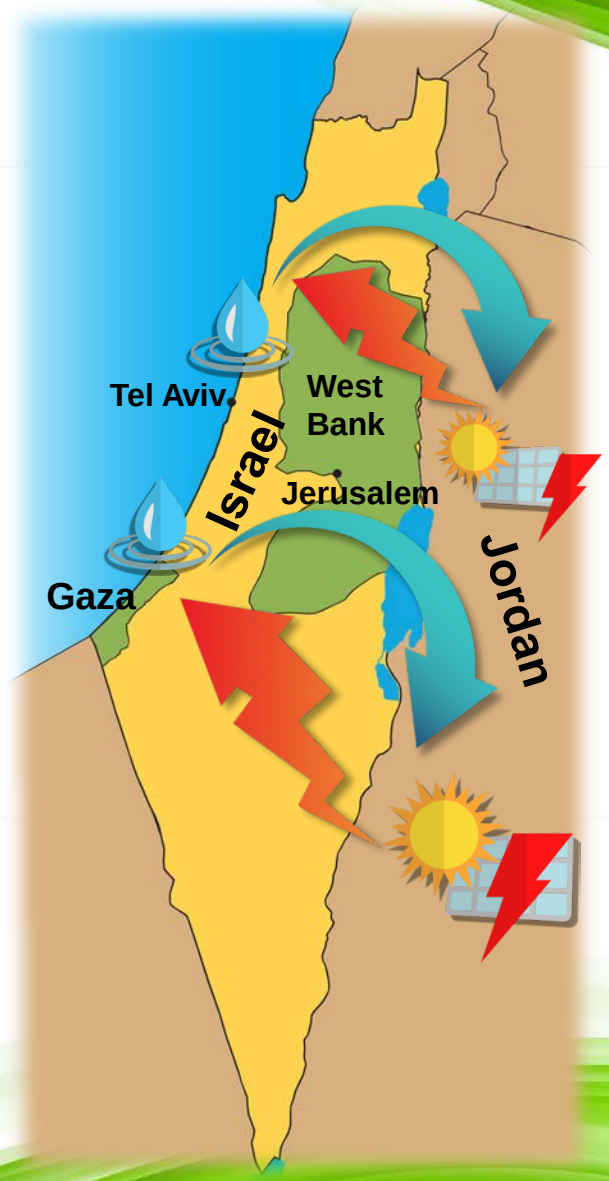


Jordan

Israel & Palestine

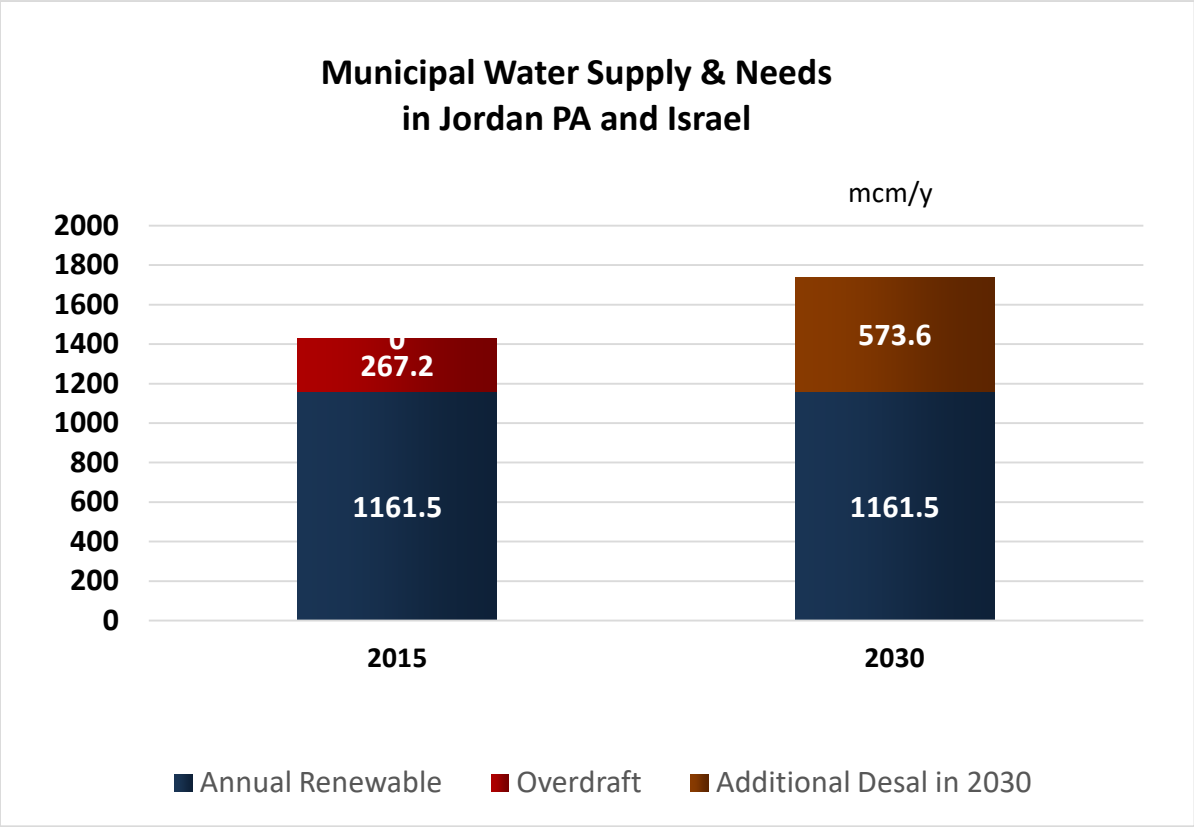
Israel & Palestine

Jordan



Urgency of Water Insecurity in the Region

- Water insecurity threatens national security – regionally and globally



SOURCE: WEN Pre-feasibility Study

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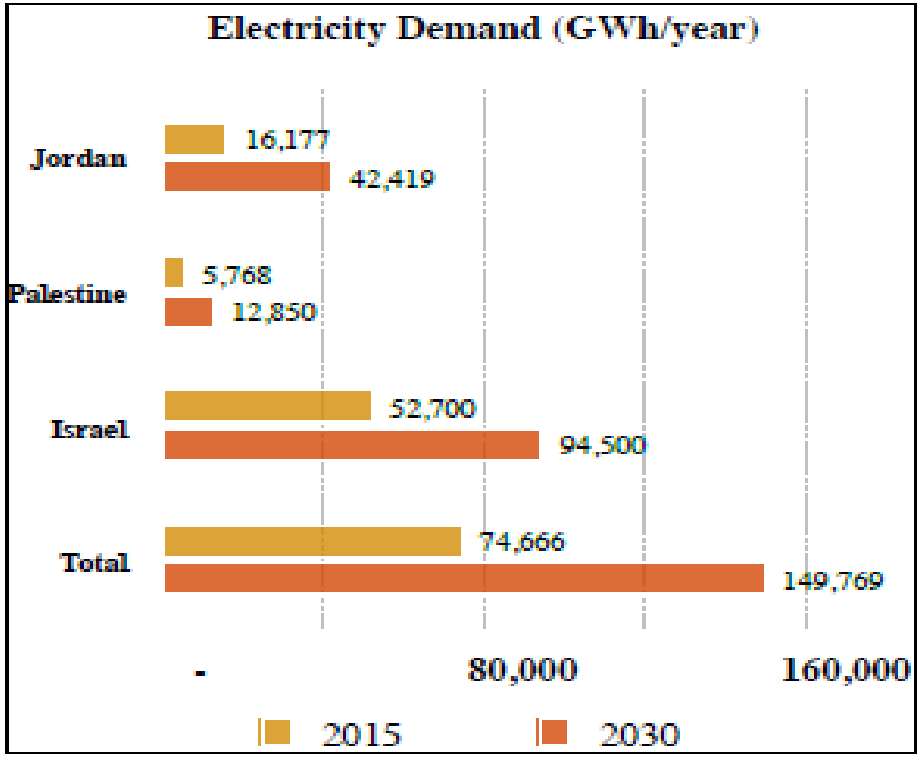
From 2015 to 2030, Electricity Demand is expected to more than double in the region

- WEN advances both water and energy security, region wide.



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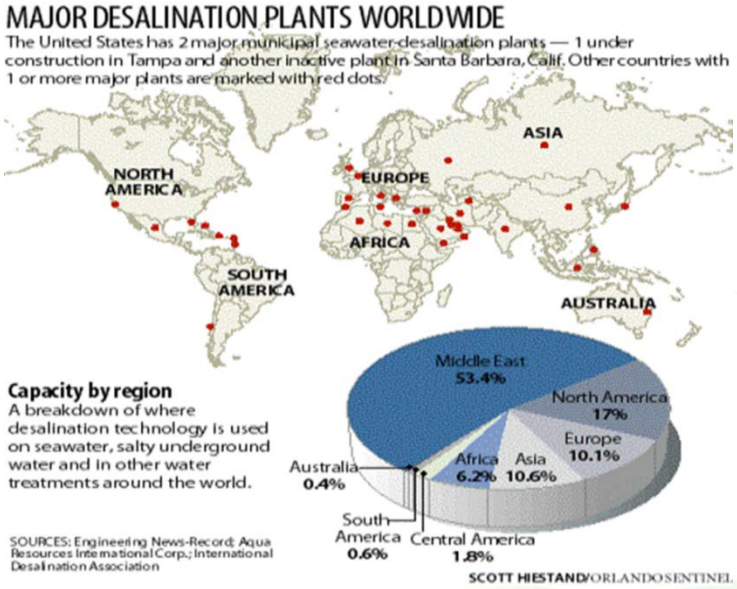
The Growth of the Desalination Industry Globally

In 2015 - 18,426 desalination plants - in 150 countries.

Desal is becoming increasingly competitive with other sources of water.



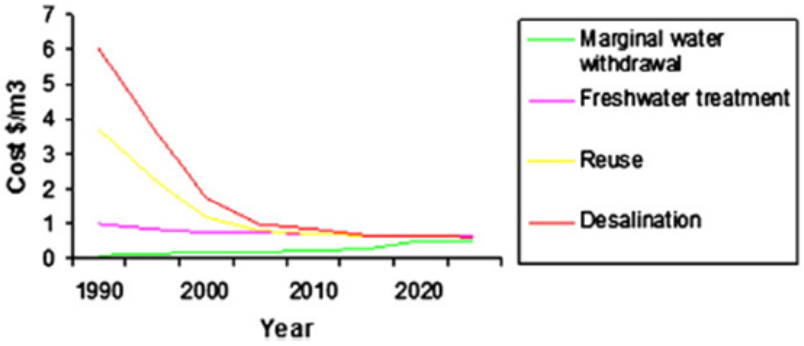


Fig. 3. Water resources cost trends [12].

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Why Desalination in Israel & Palestine?

Israel is acknowledged as World Leader in desalination and water technology

- Israel's 5 Desalination Plants provide extensive know-how and experience in all operational aspects (Production, Costs, Downtime, transfer)
- Israel's 5 desalination plants are among the World's top 10.

Gaza is also on the Mediterranean Coast and has the same positional comparative advantage as Israel.

- Already a large desalination plant planned for Gaza coast.
- Water produced in Gaza in addition to Jordan, could also be sold to Israel's western Negev and West Bank.

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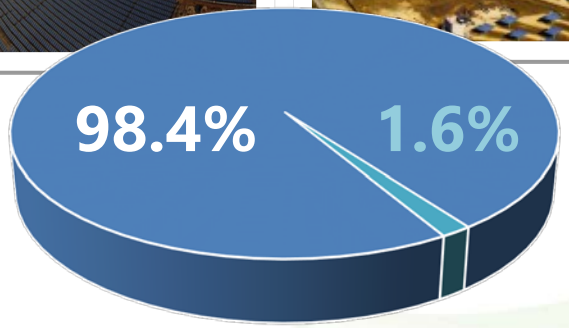
Worldwide Electric Capacity of Solar Power by Technology (2016)

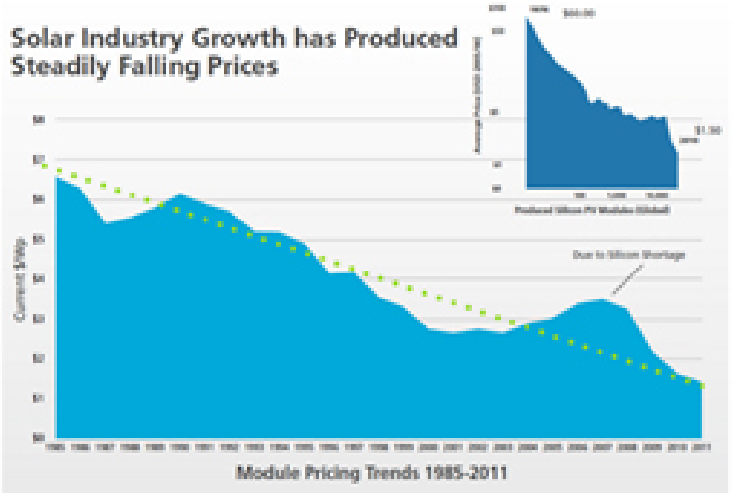
- 98.4% of solar energy produced world-wide uses Photovoltaic Technology.
- There is much experience, knowledge, knowhow etc to rely on.

Photovoltaic Panels (PV)

Concentrated Solar Power



Steadily falling prices



SOURCE: International Energy Agency

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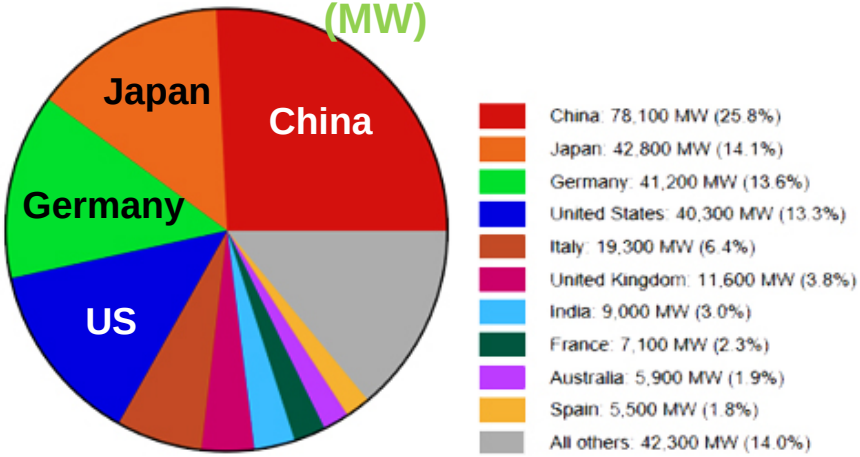
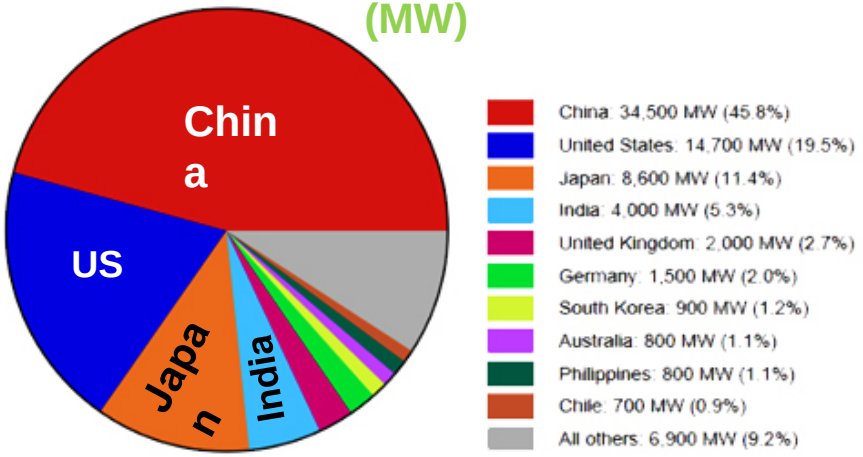
Photovoltaic Solar energy is being adopted….

- Leading & largest economies (US, Germany, Japan).
- Fastest growing economies (India, China).

Top 10 countries based on Total PV Capacity in 2016 (MW)



Top 10 countries based on Added PV Capacity in 2016 (MW)



- Once tested and proven in a given country, the Solar Energy sector grows very quickly, almost exponentially (e.g. India and China).
- Therefore, early presence in given market has great economic value.
- **Being an early player – pays off fast.**

SOURCE: International Energy Agency

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Why produce solar energy in Jordan?

Optimal Conditions for Solar Power production:

- Higher Irradiation Levels then at Top World Solar Fields

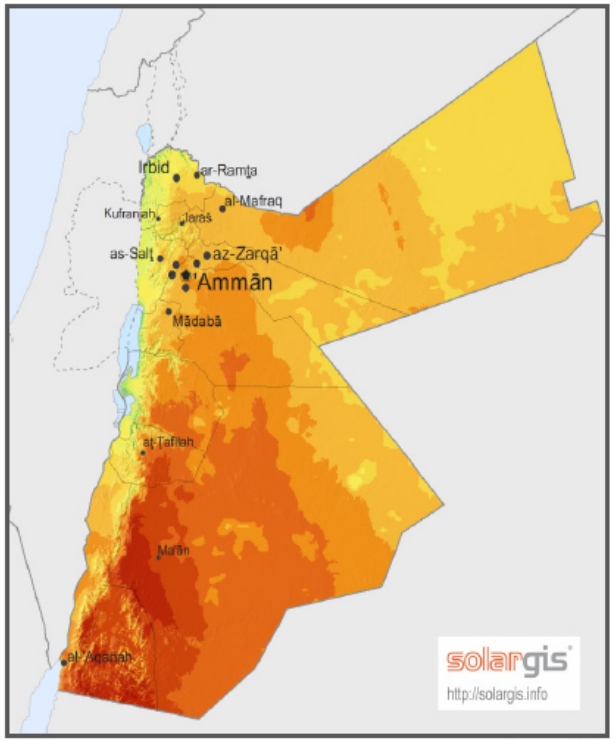

Figure 6. Direct normal radiation in Jordan
Source: SolarGIS

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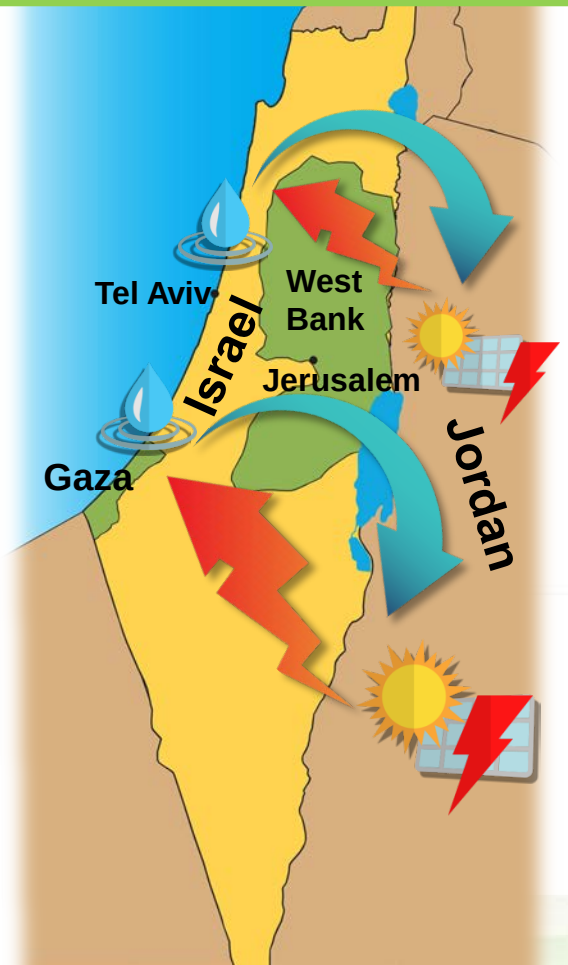
Optimising Cross-Border Solar and Desalination Benefits



- Optimising locations for shorter water piping & power lines
- Reduced security risk
- Lower water & energy prices

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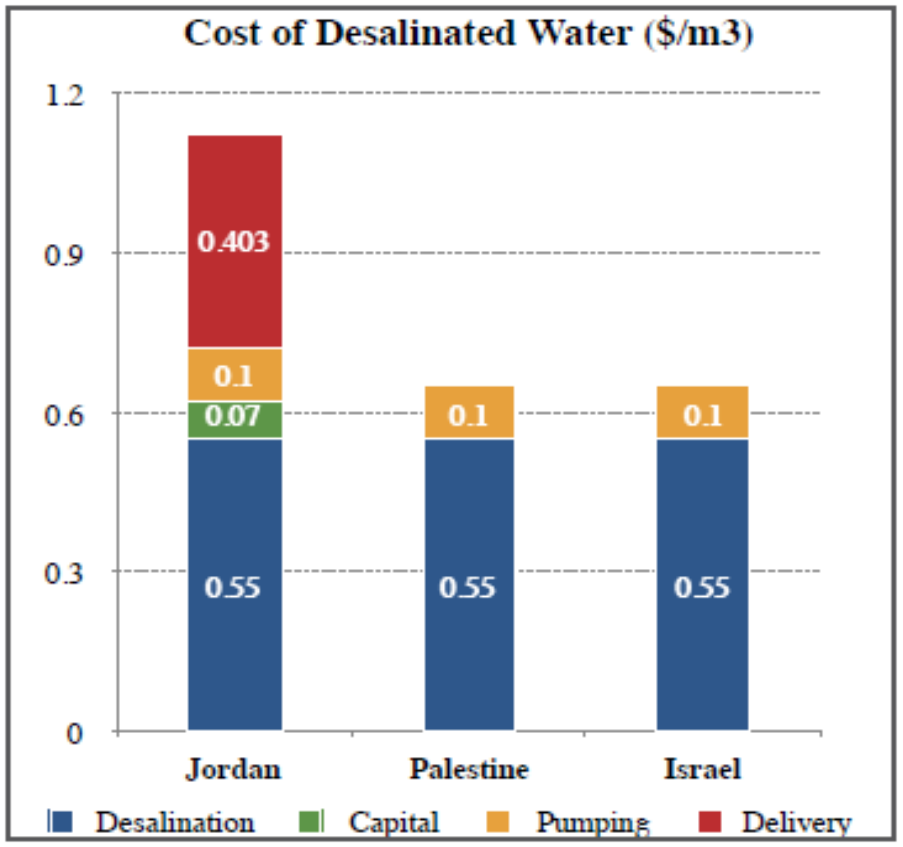
Water Economics

Supply to Jordan under WEN is lowest marginal cost of new water to Jordan



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Electricity Economics

- PV electricity costs from Jordan range from **US$ 0.05 per kWh** to **US$0.07 per KWh.**
- These values are competitive with fossil fuel produced electricity including natural gas in Israel at **US$0.08 per KWh.**
- **Jordan supplying 20% of region's electricity increases Jordan's GDP by 3-4%, provides needed revenue to purchase all the water it needs and still left with $1.4 billion in revenue annually.**

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Regional Benefits Expected from WEN

Environmental					
	Reduced GHG Emissions	Reduced Local Air Pollution	Reduced Pressure on Open Spaces	Reduced Pressure on Freshwater Aquatic Ecosystems	Reduced Pressure on Marine Ecosystems
Jordan	++	++	–	*0*	++
Palestine	++	++	++	+	–
Israel	++	++	++	+	–

++	Major benefits
+	Benefits
0	Neutral/no impact
–	Minor disadvantage
– –	Major disadvantage

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Regional Benefits Expected from WEN

Geo-Political								
	Achieving Water Security	Achieving Energy Security	Diversification of Energy Sources	Reduced Dependence on Israel	Promoting Regional Stability	Integration with Arab world	Improved International Standing	Improved Chance of Achieving Reallocation of Water Rights
Jordan	++	++	0	–	++	+	+	0
Palestine	++	++	++	++	++	++	+	++
Israel	0	+	++	0	++	++	++	0

++	Major benefits
+	Benefits
0	Neutral/no impact
–	Minor disadvantage
– –	Major disadvantage

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Next Steps to Advance WEN

- Road show with government representatives held in Brussels and Berlin – next planned in Washington DC.
- Letter of support from Israel received - Jordan and Palestine in process.
- Seek private sector leadership as investors / partners in WEN
- Seek IFI support for full feasibility study and pilot proof of concept.
- Seek sovereign risk fund guarantees.

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THANK YOU

For more information visit

www.ecopeaceme.org