



**UAE – An Emerging Centre for Renewable Energy
Presentation @ MEREf Meeting 25.02.10**

UAE – An Emerging Centre for Renewable Energy

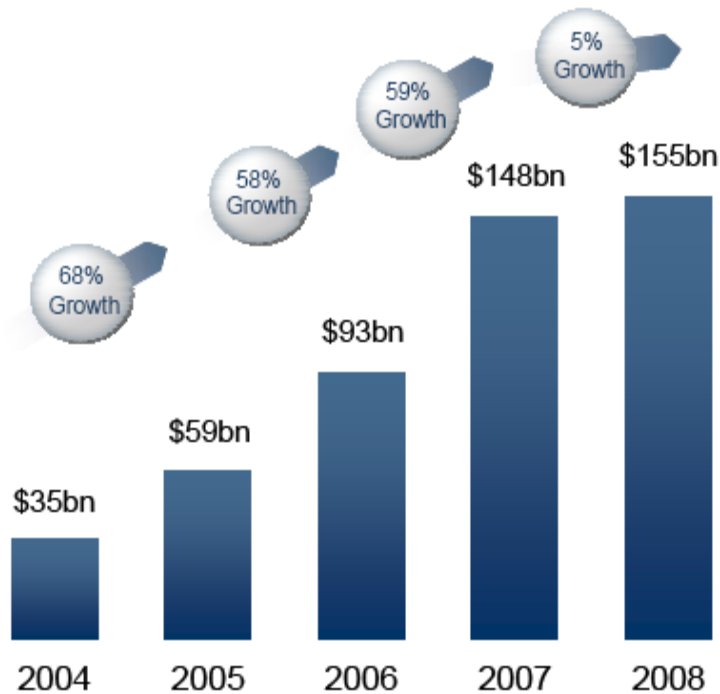
DIFC and the Financial Perspective

Evolving Energy Landscape

- Global impact of Carbon Emissions acknowledged
- However lack of consensus on a global scale on actions and policies
- Copenhagen Summit did not lead to specific targets as expected
- Europe is debating the redundancy of the current regulations in facing the crisis
- Regionally many trends indicate the growing seriousness of the issues
- Emerging economies such as Middle East, India & China show growing interest
 - Higher government involvement including subsidies and tax exemptions
 - Instituting the “Pigouvian tax” or transactional tax on carbon fuel
- Differing voices across the globe - opportunity for the region to set an example

Clean Energy Investment

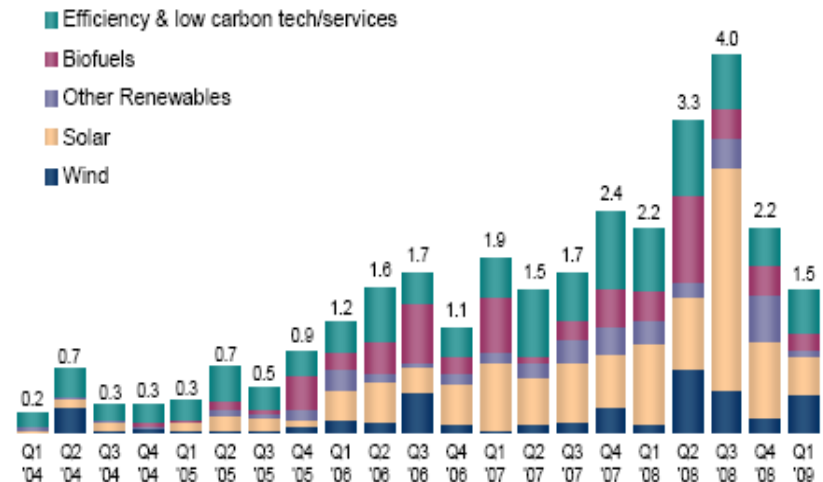
Figure 1: Global Clean Energy Investment, 2004-2008: \$ billion



Estimated total new investment only. Grossed-up and buffered values are based on disclosed deals. Adjusted for reinvestment. Geared re-investment assumes a 1 year lag between VC/PE/Public Markets funds raised and re-investment in projects

Source: New Energy Finance

Figure 2: Clean Energy Venture Capital & Private Equity New Investment in Companies by Sector, 2005 - 2009: \$ billion

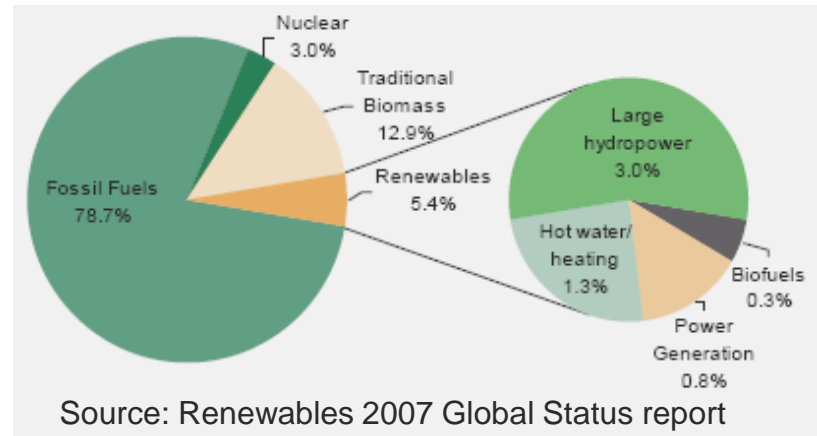


Estimated total new investment only. Grossed-up and buffered values are based on disclosed deals.

Source: New Energy Finance

Scope and Policy Action for Renewable Energy

- Renewables account for only 5.4% of total energy use.
- Principal forum has been the United Nations - Framework Convention on Climate Change (UNFCCC) and the Kyoto Protocol.



Among the main initiatives undertaken are:

- **The UN Climate Change Negotiation** – Led to the Kyoto Protocol and development of the three mechanisms – CDM, JI and Emission Trading
- **Asia Pacific Partnership (APP)**– non-treaty partnership Australia, India, Japan, China, South Korea and the United States in July 2005 to work with private companies to develop clean technologies
- **Contraction & Convergence** - Seen as potentially superseding the arbitrary short-term target setting of the current Kyoto Protocol process.

Global Renewable Energy – Financial Perspective

- Carbon market continues to grow in 2008
- Total value transacted at about US\$126 billion (€86 billion) at the end of the year, double its 2007 value
- US\$92 billion (€63 billion) accounted for by transactions of allowances and derivatives under the EU ETS.
- Certified Emission Reductions (CERs), financial market with spot, futures and options transactions in excess of US\$26 billion
- Represents a five-fold increase in both value and volume over 2007.

	2007		2008	
	Volume (MtCO ₂ e)	Value (MUS\$)	Volume (MtCO ₂ e)	Value (MUS\$)
Project-based Transactions				
Primary CDM	552	7,433	389	6,519
JI	41	499	20	294
Voluntary market	43	263	54	397
Sub total	636	8,195	463	7,210
Secondary CDM				
Sub total	240	5,451	1,072	26,277
Allowances Markets				
EU ETS	2,060	49,065	3,093	91,910
New South Wales	25	224	31	183
Chicago Climate Exchange	23	72	69	309
RGGI	na	na	65	246
AAUs	na	na	18	211
Sub total	2,108	49,361	3,276	92,859
TOTAL	2,984	63,007	4,811	126,345

Global Renewable Energy – Exchanges

- In total 19 carbon exchange initiatives, 11 of which are already trading.
- Located in almost all major geographic region
- Vary from simple matching of buyer and seller (Australian Climate Exchange) to auction markets (Asia Carbon Exchange) and from those limited to European Union Allowances (EUAs) and Kyoto Protocol Certified Emission Reductions (CERs) like the ECX, to those which will soon offer
- By far the largest volume is in EUAs and CERs, particularly CERs destined for the European Union Emissions Trading Scheme (EU ETS).
- Regulatory behaviour of CDM as ‘issuer’ has witnessed long delays in project approval, high costs and apparently arbitrary decision making.
- Hedging activity, particularly between CERs and EUAs, has also emerged to some degree. The carbon market is still overwhelmingly an over-the-counter marketplace
- Facing uncertainty created by repeated political and regulatory interference.

List of carbon exchanges

Europe

European Climate Exchange , OMX Nordic Exchange , EEX – European Energy Exchange (Eurex), EXAA – Energy Exchange Austria , Bluenext – (formerly Powernext) (NYSE Euronext and Caisse des Depots), Climex (Amsterdam) , Climate Spot Exchange (London)

North America

CCX – Chicago Climate Exchange, The Green Exchange (NYMEX) , CCE – Canadian Climate Exchange (Winnipeg Commodities Exchange) , MCeX – Montreal Climate Exchange, Toronto Stock Exchange

South America

Brazil Mercantile Futures Exchange

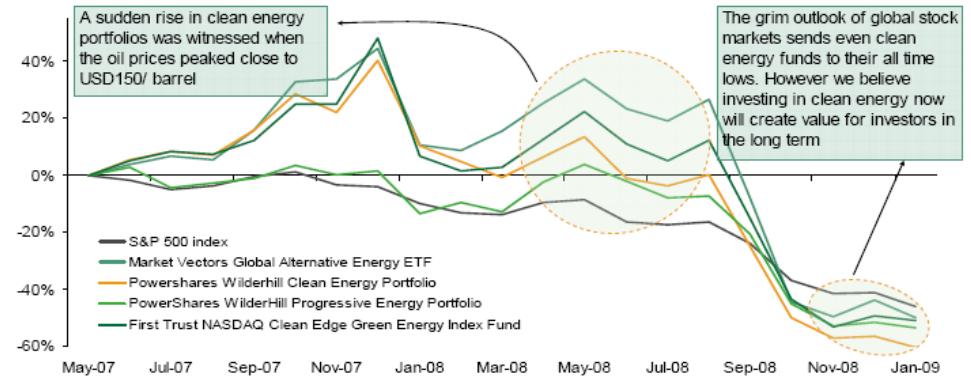
Asia

MCX – Multi Commodity Exchange of India, HKEx – Honk Kong Stock Exchange , ACX – Asia Carbon Exchange (Singapore), Beijing and UNDP Exchange, Tokyo Stock Exchange Group and the Tokyo Commodity Exchange

Global Renewable Energy – Energy Funds

- Investments in renewable energy soared in 2005-07.
- Major contributor were sharp rise in crude prices, which stimulated the search for alternative energy sources.

Figure 45: Returns on alternative energy funds



Source: Bloomberg, NCBC Research

- Movement of renewables in tandem with oil is underpinned by two factors:
 - As conventional energy sources become costlier, the search for alternatives gains momentum
 - Alternative energy becomes cheaper with greater technological innovation stemming from intensified search for alternatives to fossil fuels. This makes renewable energy competitive, compared with traditional sources of energy

Global Renewable Energy – Project Financing

- Financing conditions changed dramatically as a result of the financial crisis.
- Whether it's short-term bank lending or debt securities issuance, project or corporate finance, private placements or tax equity deals,
 - Capital all but dried up in the latter part of 2008.
 - Factors including tax benefits & environmental regulations are the main drivers.
- However more stringent evaluations of operational, financial and credit risk would ensure commercially viable projects being under focus
- Projected dollar value of tax credits at a discount to finance projects — has been a mainstay for the industry
 - Investment banks have been the main, pivotal players in this market.
- Power utilities being willing and able to sign long-term power purchase agreements with renewable energy project developers has been integral to financing projects.

Renewable Energy in the UAE - Opportunities

UAE despite its large reserves of oil has certain distinct opportunities:

- Geography and abundance of resources (Solar power)
- Government initiatives in UAE and the region
 - Masdar and Saudi Economic City
- Reduced dependence on a volatile commodity
- Research and development leading to job creation
- Opportunity to export knowledge and know how

... and...

...Boosting opportunities in financial services through both project financing as well as cap and trade schemes

Solar Energy in the GCC

Table 1: Essential comparisons for analyzing solar power potential

	Avg max day temp (°C)	Avg min night temp (°C)	Avg daily hours of sunshine	Total rainfall per year (mm)
Abu Dhabi, UAE	33.3	21.8	9.5	57
Doha , Qatar	32.4	21.8	9.5	74
Kuwait City, Kuwait	32.2	19.3	8.9	111
Manama, Bahrain	30.8	22.5	9.3	84
Muscat, Oman	32.8	23.4	9.6	103
Riyadh, Saudi Arabia	33.0	18.4	9.3	112
Granada, Spain	20.3	6.8	7.8	483
Lisbon, Portugal	22.4	12.9	4.3	743
Berlin, Germany	13.0	5.2	4.6	576
Reno, Nevada, USA	18.5	1.0	9.8	217
Fukuoka, Japan	20.3	12.3	5.1	1730

Source: Weather2Travel.com, NCBC Research

Largest World CO₂ Emitters (in metric tons)

Showing latest available data.

Rank	Countries	Amount ▼	
# 1	Qatar:	40.6735 per 1,000 people	
# 2	United Arab Emirates:	28.213 per 1,000 people	
# 3	Kuwait:	25.0499 per 1,000 people	
# 4	Bahrain:	20.0253 per 1,000 people	
# 5	United States:	19.4839 per 1,000 people	
# 6	Luxembourg:	17.977 per 1,000 people	
# 7	Trinidad and Tobago:	16.8278 per 1,000 people	
# 8	Australia:	16.5444 per 1,000 people	
# 9	Canada:	15.8941 per 1,000 people	
# 10	Singapore:	13.8137 per 1,000 people	

GCC per Capita Carbon Emissions



Initiatives in the UAE

- UAE led by Abu Dhabi one of the first countries in the Gulf region which has seized onto the opportunity
- In 2006 Abu Dhabi Future Energy Company, commonly known as Masdar was established
- Positioned UAE among the world's leading countries in clean technology and energy.
- The ambitious USD22bn project is scheduled for completion in 2013
- Masdar City will be the world's first zero-carbon city powered completely by renewable energy.
- Importance of Masdar project acknowledged through Abu Dhabi's recent selection as the international headquarters of IRENA
- Further in 2008, Abu Dhabi announced its national nuclear policy and is now well on the way to making the UAE the first Arab state with a civilian nuclear energy program led by the Emirates Nuclear Energy Company (ENEC).

The Various Forces Contributing to the Growth

Establishment of IRENA with 143 member countries in Abu Dhabi has the opportunity to be the ideal standard setting body in the region

Standard Setting Bodies

Government Initiatives/ Platforms provided

The Masdar Initiative has already attracted a lot of interest from across the globe and is backed by a government which seeks to make considerable headway

The DIFC today has majority of the global banks, law firms and market platforms of global standards who have large stakes in the renewable energy markets

Financial Institutions (such as Investment Banks, ACP and platforms)

Private Organizations and Technology providers

Technology providers in CCS, Solar, Hydro and Wind power such as Aon. Private energy players such as BP, Shell and Aramco which have shown interest in investing in the R&D

Given UAE's advantage on all of the above fronts provides a distinct opportunity

Clean Technology R&D and Renewable Energy Financing Opportunities

- A collaborative effort between various stakeholders
 - such as IRENA, MASDAR, DIFC and private players.
- MASDAR objective to drive commercialization and adoption of clean technologies has already attracted players from all across the globe
- IRENA could help the forum in getting access to experiences on best practices and lessons learned regarding policy frameworks and other efficiency measures.
- A high proportion among the cluster of clients based in the DIFC are already exposed to the renewable energy markets.
- These clients are operating in the renewable energy sector on various international platforms. DIFC would be an ideal platform for regional firms interested in investing in renewable energy projects.
- DIFC has recently signed MoU with MIGA which would guarantee support to companies investing in developing member countries which could guarantee projects related to renewable energy from bodies both within and outside the UAE.
- The forum could work actively together to attract more funds into developing technology in areas such as solar energy with private players which could later be exported
 - To countries with huge capacities such as China and India

Establishing a carbon exchange in the DIFC/UAE

Opportunities

- MENA region potentially a 5B\$ market.
- Many climate exchanges around the world however not a single carbon exchange in the DIFC or MENA region
- The MENA & DIFC regions would be considered a voluntary market.
- Initiatives such as the 2 million CER's from DEWA could be helped by such a platform.
- DIFC could be a regional exchange which could provide a bigger opportunity for growth
- Carbon Exchange would require the following elements to work together
 - Index to ensure the quality of participants and ensure investor confidence: S&P-Hawkamah ESG Index created in collaboration with IFC is the first in the region
 - High activity from players – Lot of interest already among private players and DIFC has the banks and service providers to structure such deals.
 - DIFC along with other governmental and private bodies can provide a legal framework and physical infrastructure for carbon credit trade, and thereby increasing transparency, raising awareness, as well as building partnerships with the private sector for investments of CMD projects.



Thank You