



New Energy Finance Opportunities & Role of DIFC

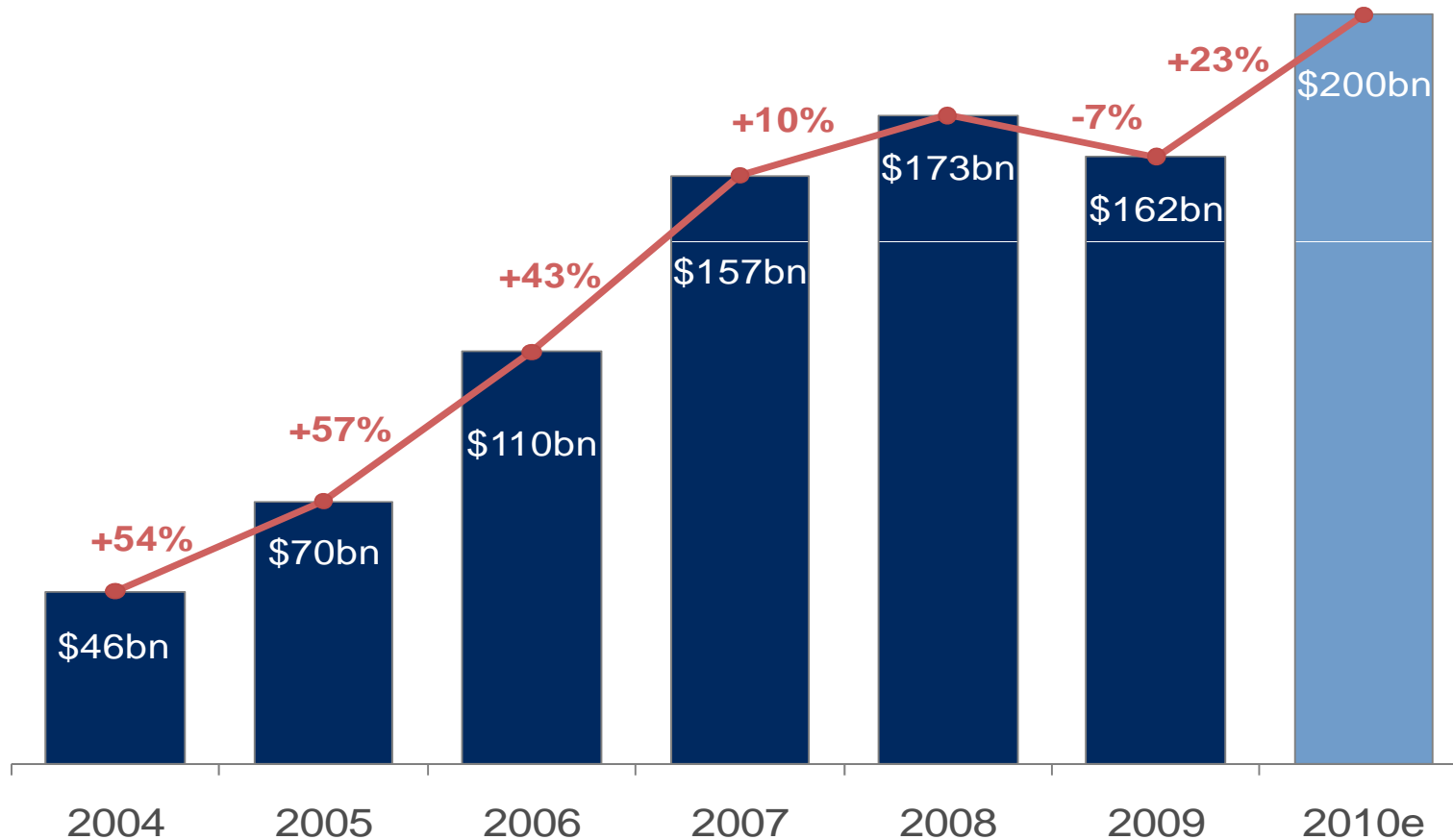
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22nd June 2010



Overview

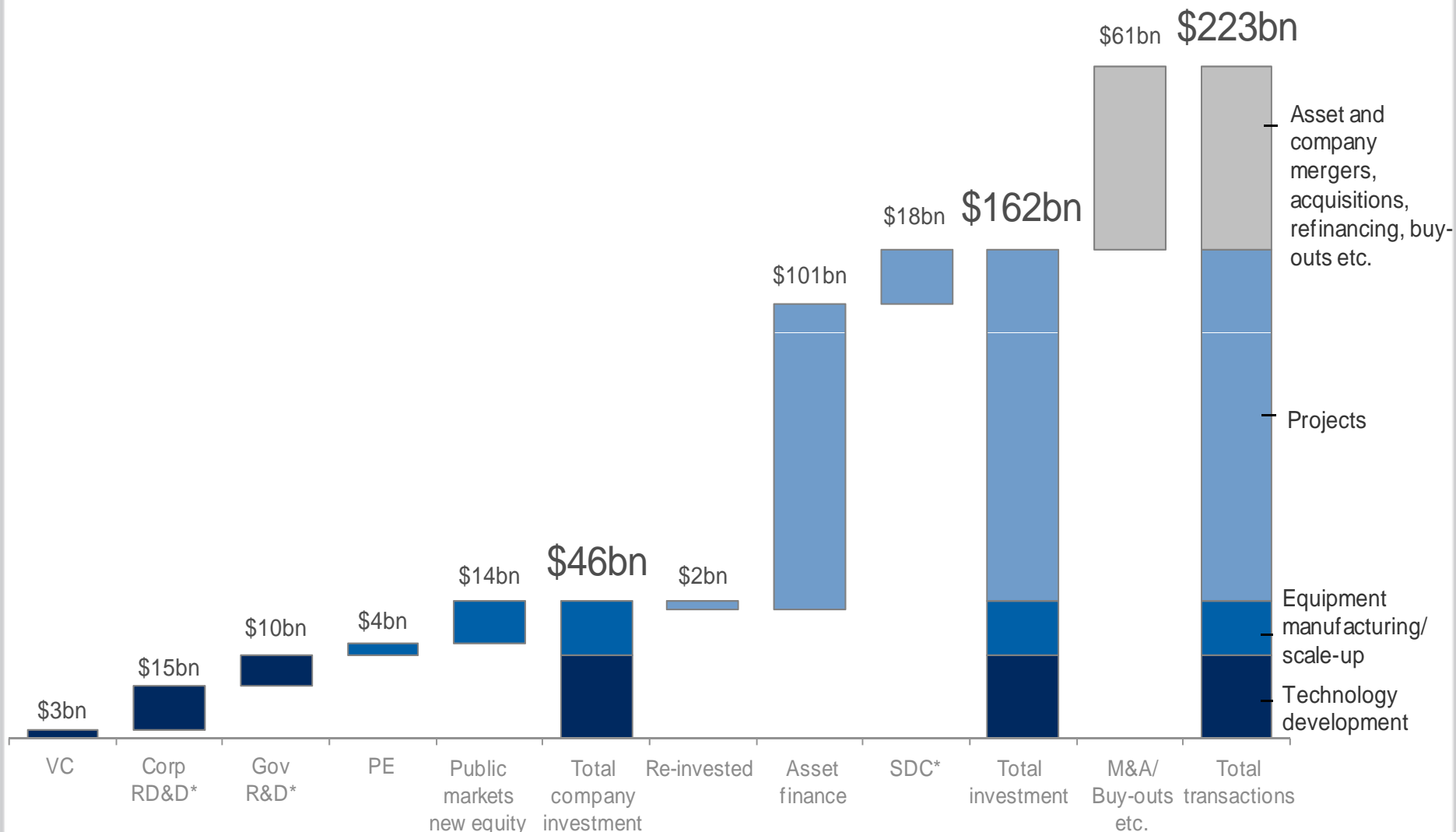
- Climate change, pollution, high carbon prices & policies driving global move towards new energy sources
- ME Oil producing countries are stepping up the efforts to diversify their economies. Alternative energies receiving greater attention.
- ‘Sun Belt’ ME & GCC in particular could play leading role in the development and deployment of solar energy
- UAE is at the forefront of this drive with IRENA, Masdar City, new generation nuclear plants, solar panel on all rooftops
- Alternative energies are not yet competitive with traditional sources especially when externalities are not factored in: need government intervention to effect quantum change in relative prices
- Is it a credible goal in the foreseeable future to create a cluster of green energies in the Gulf?
- DIFC can host: New Energy Finance Cluster; Carbon Exchange

Global total new investment in clean energy 2004 – 2010, \$bn



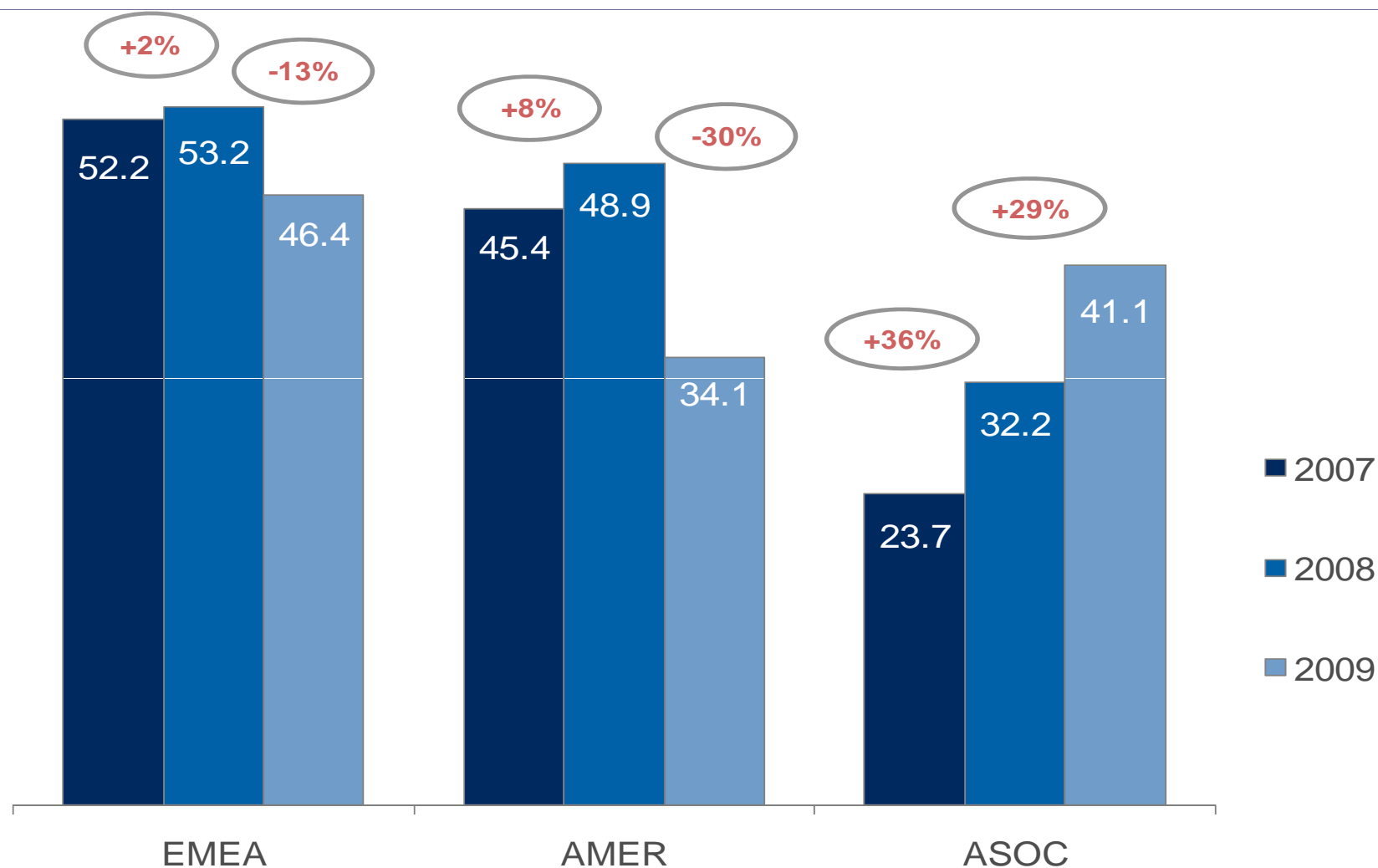
Note: total values include estimates for undisclosed deals. Data based on estimates from industry sources.

Clean energy investment types and flows: 2009 (\$bn)



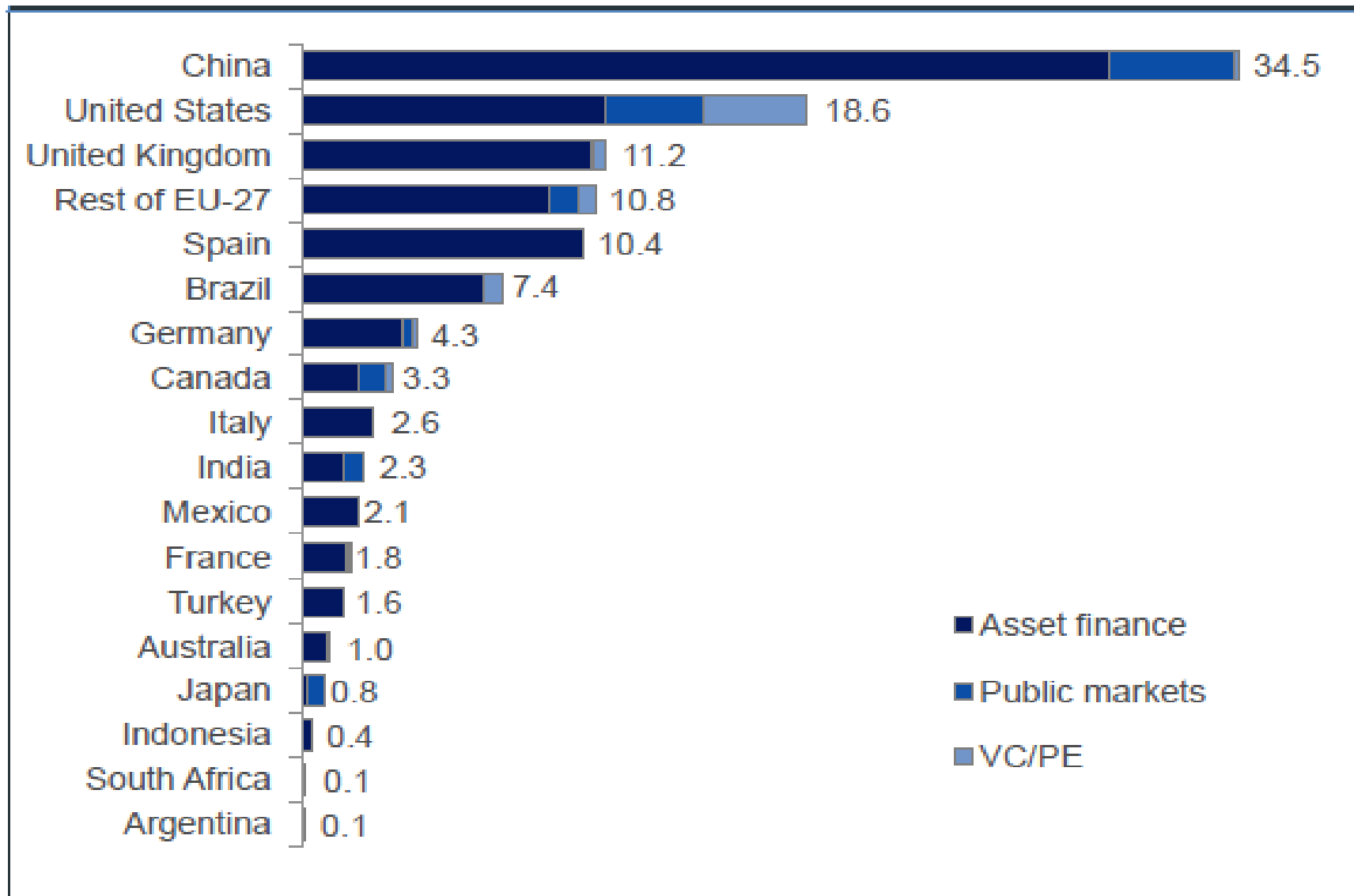
Note: SDC = small distributed capacity. Total values include estimates for undisclosed deals. * data based on estimates from industry sources.

New financial investment in clean energy by region 2007-09, \$ Bn

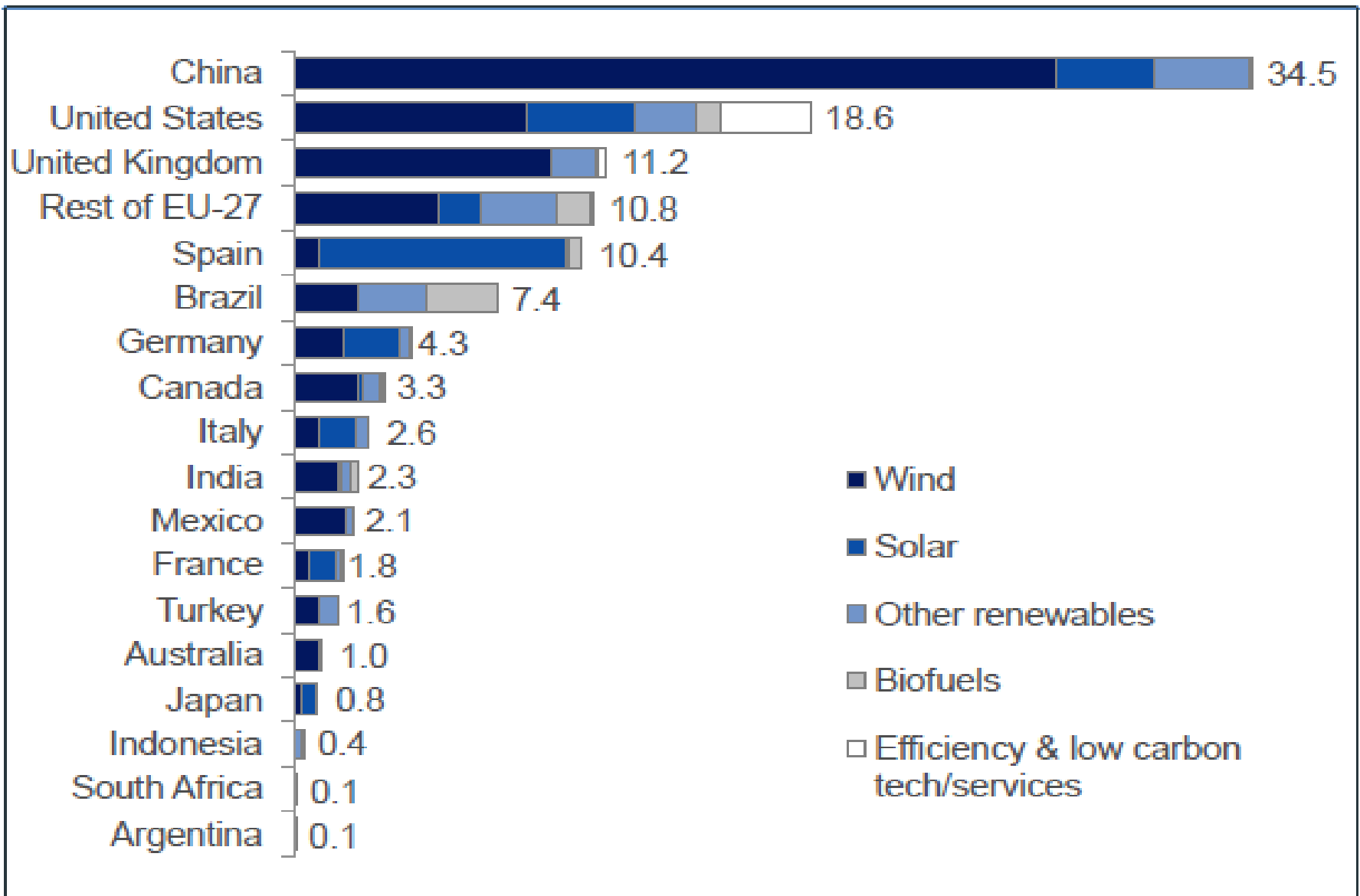


Note: Financial sector investment only (ie excludes corporate R&D, and small distributed capacity). Not readjusted for re-invested equity. Total values include estimates for undisclosed deals.

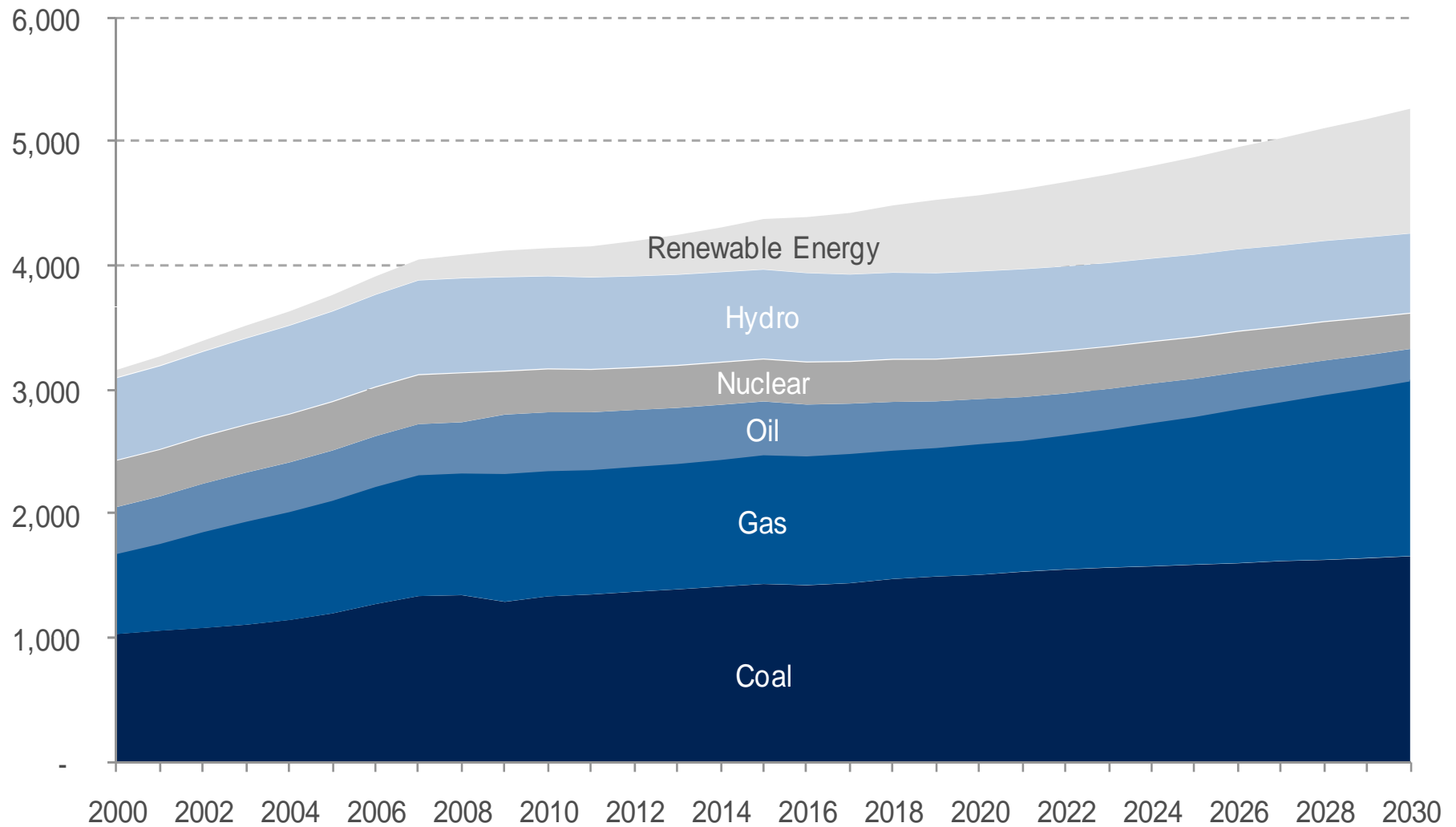
G20 Investment by Financing Type, 2009 (\$ bn)



G20 Investment by Sector, 2009 (\$, billions)



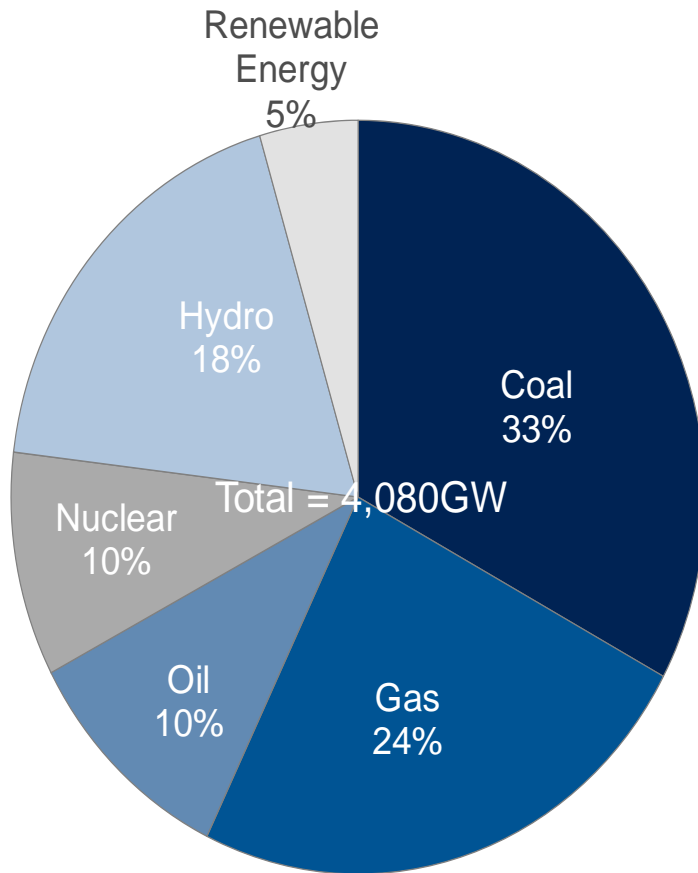
Global installed power generation capacity, by technology 2000-2030, GW -Business As Usual



Source: Bloomberg New Energy Finance GE²M

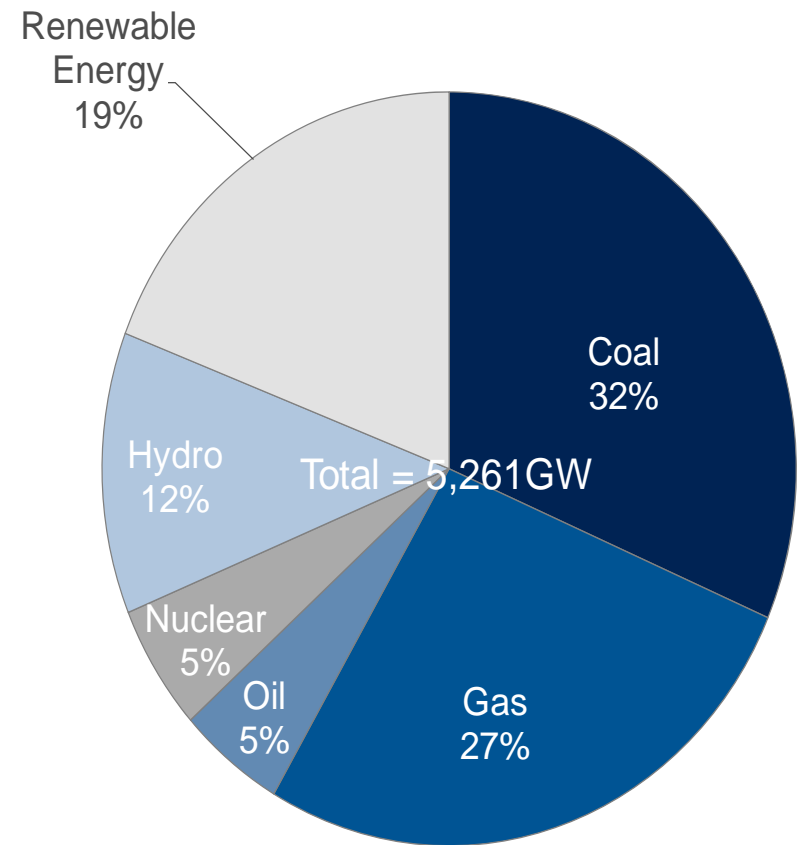
Global installed power generation capacity, by technology

2008



Source: Source: Bloomberg New Energy Finance GE²M

2030



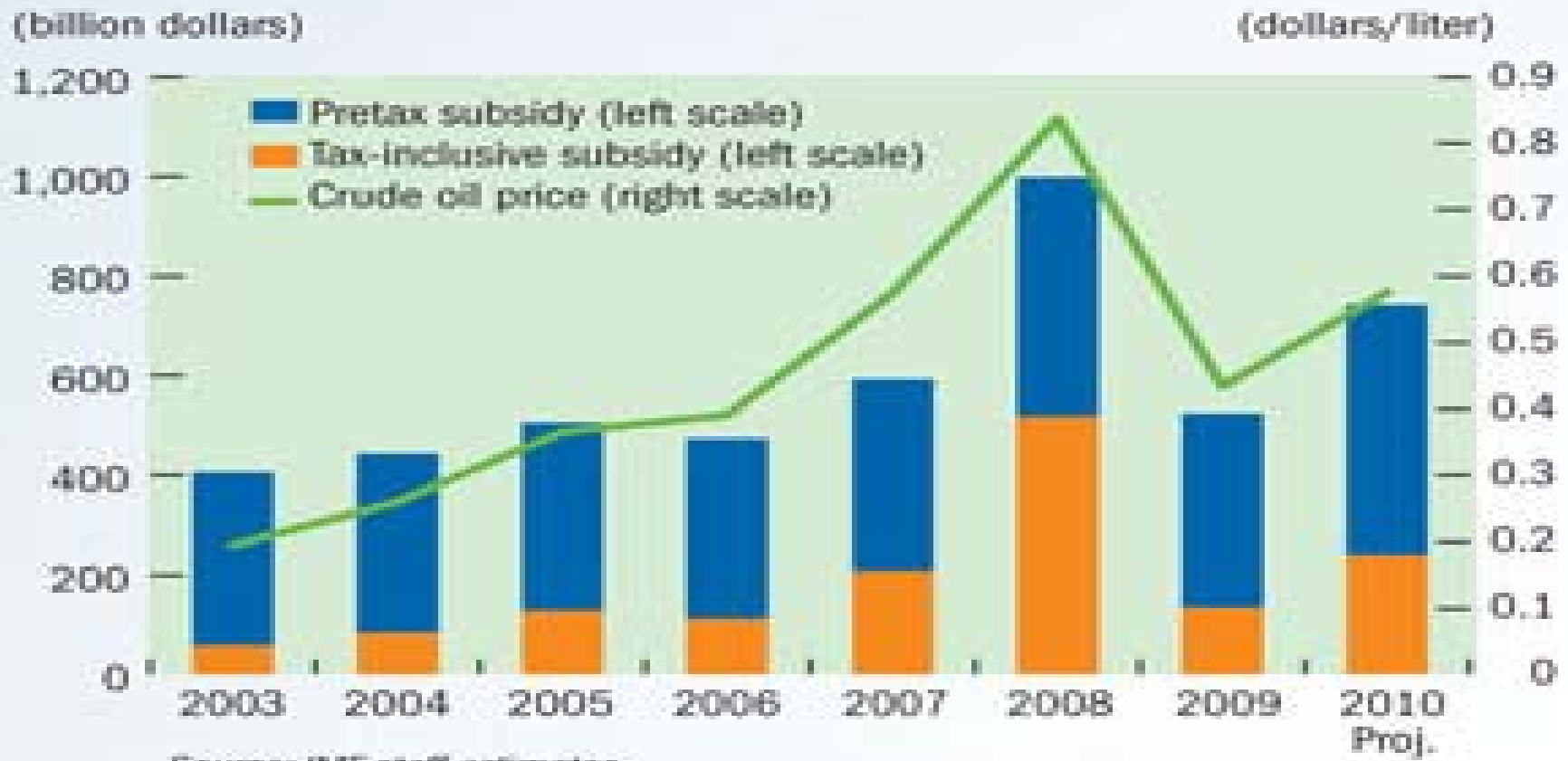
Source:Source: Bloomberg New Energy Finance GE²M

Externalities and Subsidies

- **In order to boost the share of new energy generation governments need either to introduce taxes on traditional sources and/or subsidize research and deployment of new energy sources.**
- **In the MENASA and the GCC this course of action has received scant attention, with carbon energies receiving substantial subsidies.**
- **Major policy reform is required. If Business As Usual: interest in renewable energies will be largely confined to showcase projects with little private sector incentives to join the venture**

In 2003, global consumer subsidies for petroleum products totaled nearly \$60 billion; reached almost \$250 billion in 2010 (IMF).

Petroleum product subsidies are increasing again with the rebound in international oil prices.

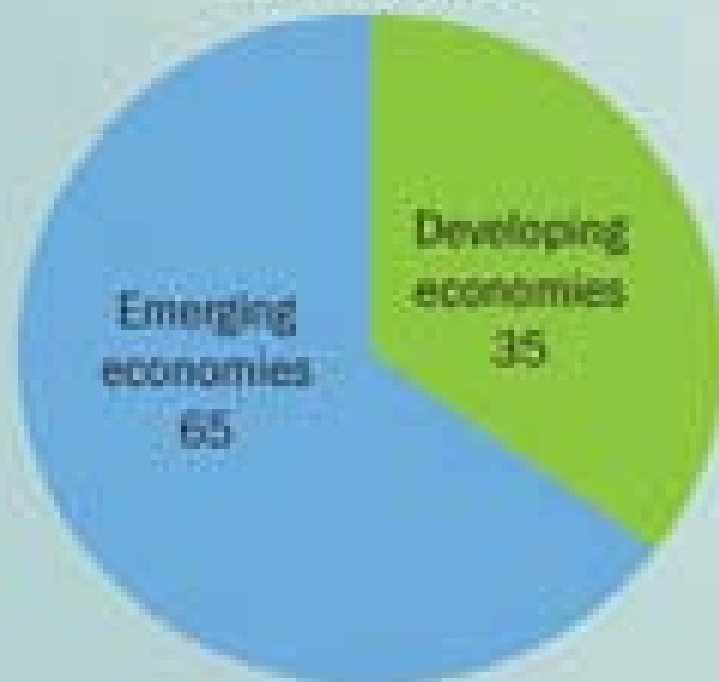


Source: IMF staff estimates.
Note: Subsidy estimates are based on year-end prices and annual fuel consumption. Estimates for 2008 and 2009 are based on midyear prices.

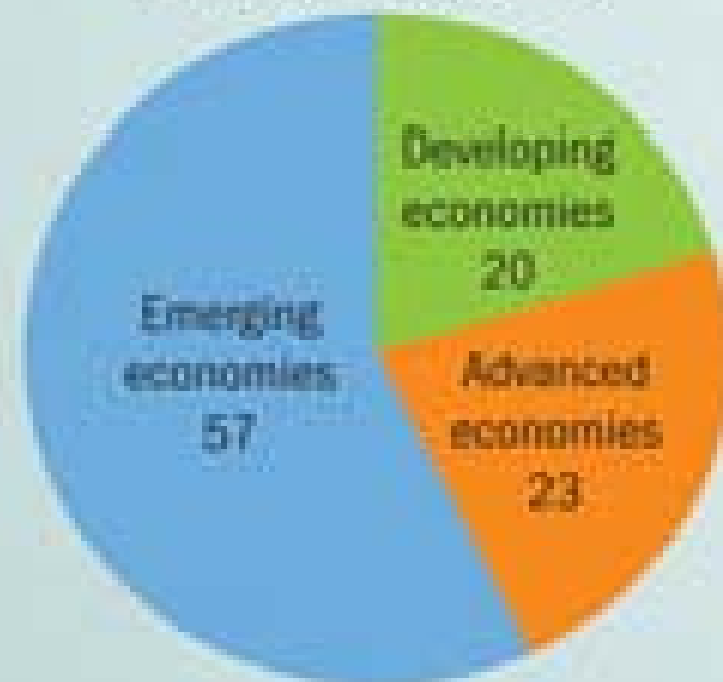
Emerging and developing economies account for all pretax subsidies, whereas advanced economies account for 23 percent of tax-inclusive subsidies.

(percent of petroleum product subsidies by country group, 2010)

Pretax subsidies



Tax-inclusive subsidies



Source: IMF staff estimates.

Petroleum Subsidies are Costly, Inequitable, and Rising! IMF

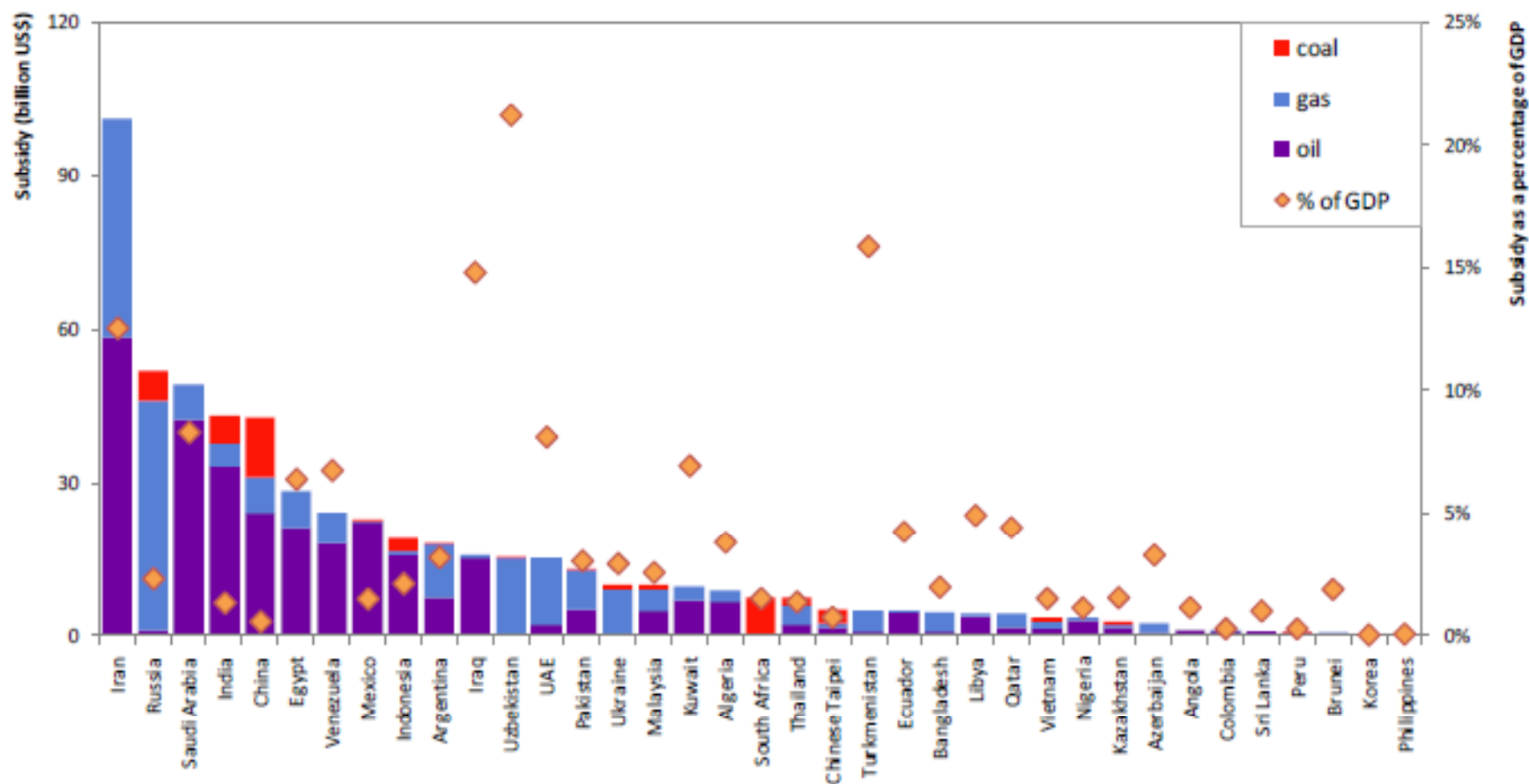
Most of the benefits from subsidies go to the richest households.

(percent of petroleum product subsidies by income group)



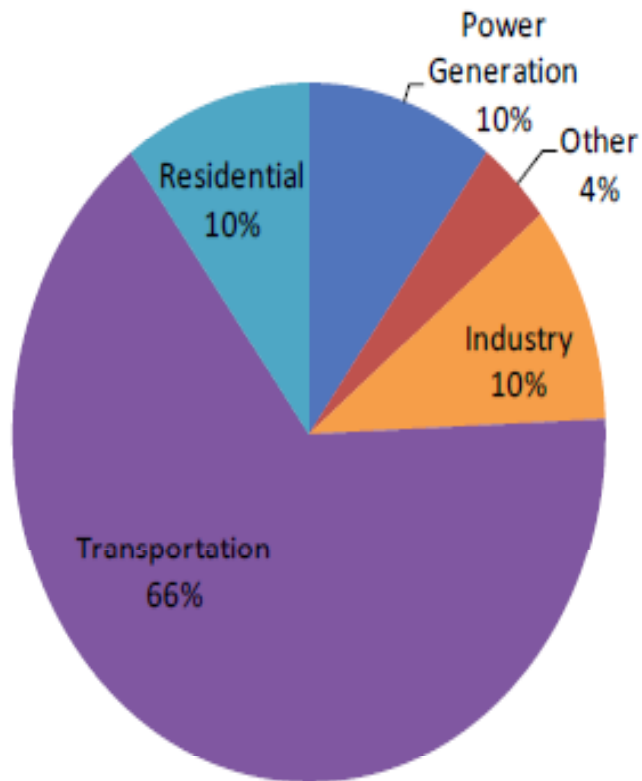
Source: IMF staff estimates based on averages of available country estimates using country-level household surveys over various years.

Fossil Fuel Subsidies: by Economy & Share of GDP, 2008 (IEA)



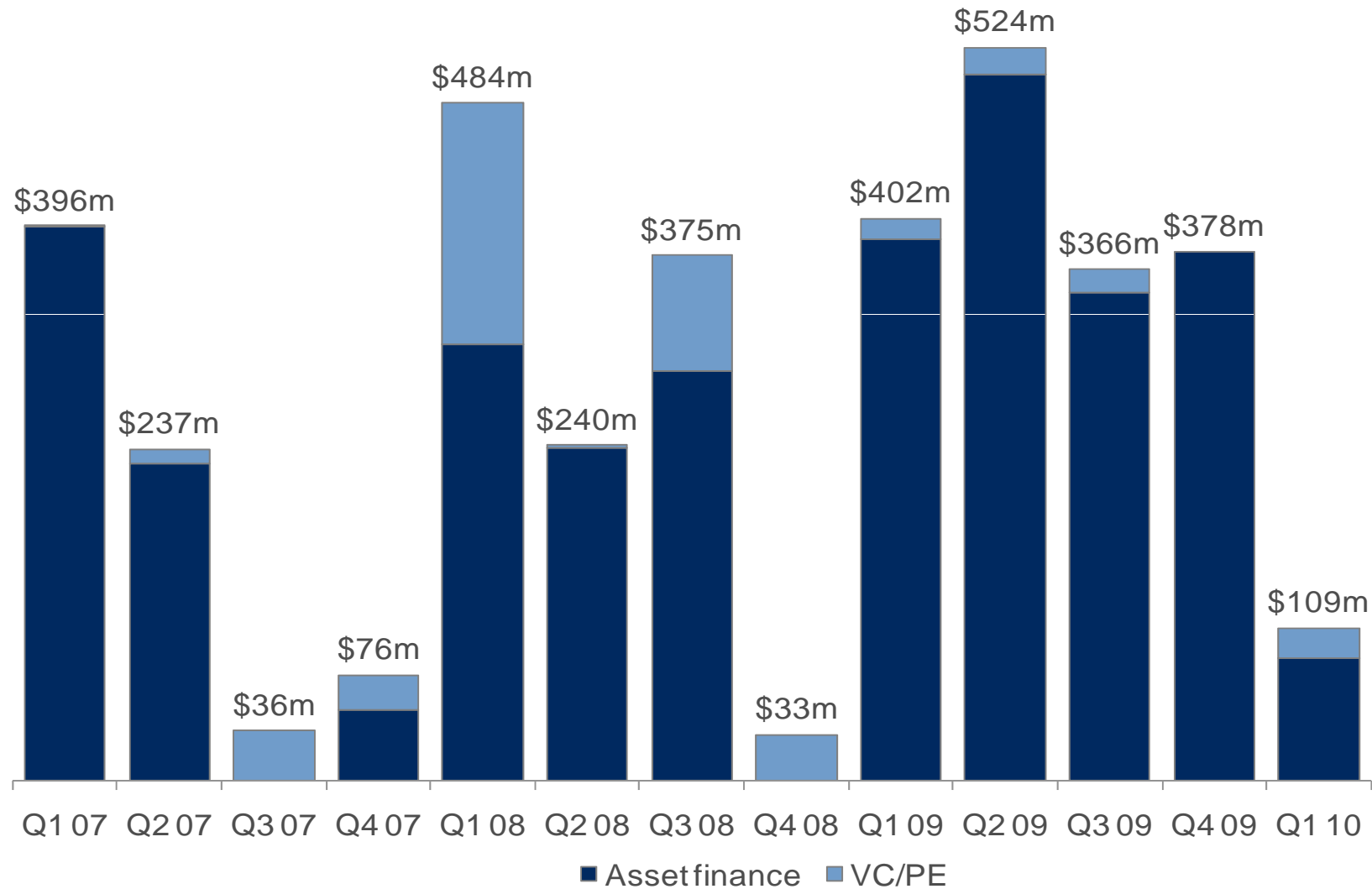
Global subsidized consumption of fossil fuels amounted to US\$ 557 billion in 2008. Of the countries surveyed this represents 2.1% of GDP (PPP) on average

Oil savings resulting from subsidy phase out, 2020 (IEA)



Compared to a baseline in which subsidy rates remain unchanged, global subsidy phase out would cut global oil demand by 6.5 mb/d in 2020

Middle East region clean energy financial investments, 2007-Q1 2010



Developing Renewable Energy in the MENASA Region

- Attention to date has focused on wind energy and solar energy. Geothermal and ocean energy resources have not yet been analysed
- Area's climate and geography do not favour the development of hydroelectric power or biomass energy (other than with respect to urban waste).
- Egypt, Jordan, Morocco, Syria and Tunisia have carried out wind mapping and have started to develop commercial wind power projects at suitable locations.
- Some tests have been carried out in other countries (KSA, UAE), and Oman and Bahrain have announced pilot schemes, but limited wind speed data exist in MENASA.
- A large part of the Middle East falls within the so-called 'sun belt', which benefits from the most energy-intensive sunlight on the globe (in terms of both heat and light).

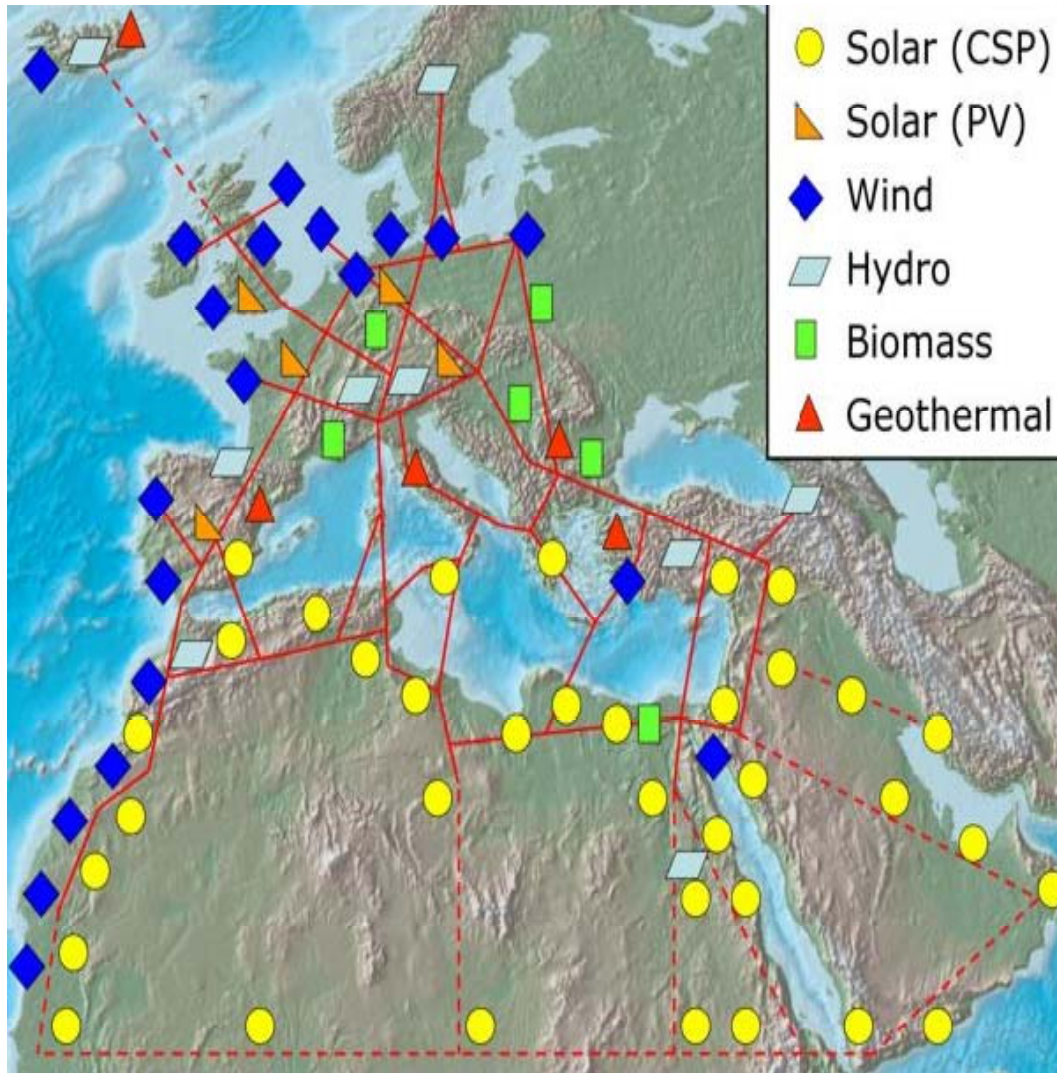
UAE – Potential Clean Energy Technology Centre

- GCC - one of the most energy-intensive regions in the world
- UAE -one of the first countries in the region which has seized onto the opportunity
- In 2006, Masdar was established positioning the UAE among the world's leading countries in clean technology and energy.
- Replete with extensive solar architecture and complete recycling of the waste generated within the confines of the city, Masdar City promises to herald a new era of sustainable 'green' habitation.
- Importance of the Masdar project acknowledged by Abu Dhabi's selection as the international headquarters of **IRENA**
- In 2008, UAE announced its national nuclear policy and is on the way to becoming first Arab state with a civilian nuclear energy program (ENEC) and several operating plants by the 2020s.

Emerging Opportunities :Water Desalination Using Solar Energy

- Water desalination indispensable strategic choice to secure potable water
- KACST (King Abdul Aziz City for Science and Technology, Saudi Arabia) in collaboration with IBM Corporation developing advanced nanotechnologies in fields of water desalination and solar energy technologies
- Advanced technologies that reduce the cost of producing solar energy and increase the amount of desalinated water.
- Initiative would be executed in three phases within a period of nine years:
 - First phase targets building a plant for desalinating water by Reverse Osmosis.
 - Second phase targets constructing a desalination plant capacity of 300,000 cubic meter per day
 - Third phase targets constructing a number of water desalination plants operated by solar energy for all parts of the KSA.

Desertec , Mediterranean Solar Plan, World Bank – 100GW+, EUR 400bn+ energy and transmission concepts for MENA region



Desertec envisions a network of HVDC cables connecting 100GW of desert generation sites to EU grid by 2050.

Industrial Initiative has 17 'shareholders', including Deutsche Bank, Siemens, ABB, Cevital (Algeria) and NAREVA (Morocco).

Mediterranean Solar Plan, sponsored Union for the Mediterranean, smaller at 20GW. No financial backers

World Bank MENA Solar plan is the best defined – 1GW of projects, \$750m in soft loans – but no projects.

None of the above are any more than concept. Those elements that do come to fruition will likely do so in a bilateral, not multilateral fashion.

Regulatory and financial incentives used globally

- Broadly divided into three categories:
 - Regimes based on a feed-in tariff, which guarantee a minimum price for such electricity, or Purchase Power Agreements
 - Regimes based on a minimum requirement for the production of electricity from renewable sources
 - Tax incentives, direct grants and indirect support for renewable energy developments, such as finance guarantees and soft loans.
- MENASA need to assess policy incentives to encourage development of the industry: establish 'CleanTech Funds'

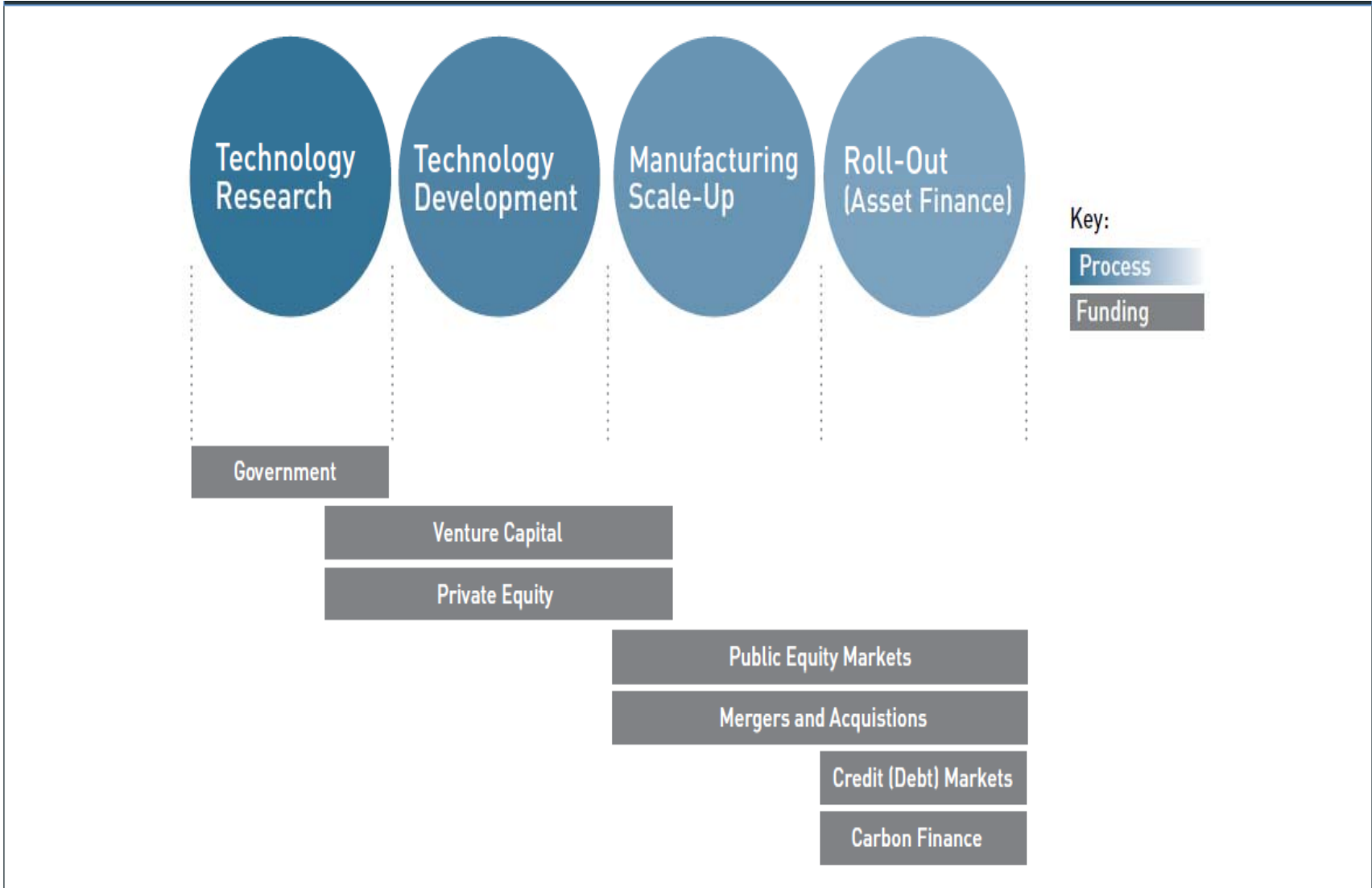
Key Challenges for MENASA

- Overall cost disadvantage for renewals in generating electricity as compared to subsidised fossil fuels.
- Systems based on tax incentives are of limited use in the MENA region due to the low tax base.
- Not realistic to expect private sector investors to develop a renewable energy project
- No minimum requirements for new energy production
- Lack of regulatory frameworks that traditionally have closed the gap between the costs of different energy sources.
- No 'carbon tax', which is gaining increasing support
- Behavioral and business mind set needs to be changed

Role of the DIFC

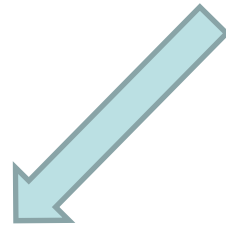
- Considerable resources are available for New Energy Finance from public and private sources
- Sizeable high profile initiatives are underway around the world: as a result wind energy costs are almost on par with traditional sources while solar energy moved from experiment to mainstream
- The DIFC has an important role to play for the development of green energies in the MENASA region:
 1. Cluster of New Energy Financing
 2. Carbon Trading and Emission Markets

Clean Energy Financing continuum

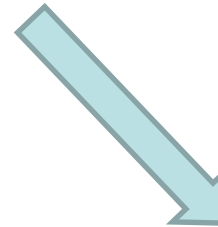


How can DIFC Contribute to the growth of this sector?

DIFC has critical mass of industry & financial players, with supportive legal , regulatory & market infrastructure



Developing a New Energy Finance Cluster providing end to end solutions including project management, financing and providing financial infrastructure



Establishing a Carbon Exchange in DIFC

Establishing a Carbon Market

- MENASA region could be a potential 8B\$ market: but no carbon exchange
- Without government intervention to introduce emission caps the market will always be restricted: MENASA & DIFC region would be considered a voluntary market
- However, the DIFC could be a regional exchange which could provide a bigger opportunity for growth. DME could be a strategic partner in setting up such a platform.
- Clean Energy technology funds could be created by players and launched on the platform provided by DIFC.
- This would provide a wider access to regional and local players willing to invest in the sector.

Carbon Certificates and Emission Markets

- **MENASA/GCC countries introduce carbon certificates to price the externalities for pollutants and greenhouse gas emissions, while promoting the creation of a carbon credit market.**
- **It would be a signal that the mindset has changed and that ambitions are backed by deeds.**
- **At the same time a market based mechanism would force companies and factories to rethink their priorities towards emission cuts and more efficient use of energy.**
- **Resources would be attracted to Clean Technologies, one of the leading sources of innovation in the XXI century**

MENASA New Energy Transformation Challenge

- **BP Gulf oil spill likely to become a ‘defining moment’ for energy policies on a global basis**
- **MENASA countries need to focus on New Energy Technologies & New Energy Finance**
- **This requires major policy reforms, including phasing out of costly, inequitable and rising fossil fuel energy subsidies and providing regulatory & financial incentives for New Energy Tech & New Energy Finance**
- **UAE with IRENA & MASDAR can emerge as New Energy Cluster for MENASA**
- **DIFC can emerge as:**
 - **MENASA centre for New Energy Technologies & New Energy Finance**
 - **MENASA Carbon Exchange**

Glossary of Terms

- **EEG:** Erneuerbare-Energien-Gesetz (EEG) or the Renewable Energy Law in Germany
- **Feed-in tariffs/ Clean energy cash-back scheme:** It is a government scheme that will pay long-term, guaranteed payments to homes, businesses and communities for generating electricity from small-scale renewable electricity systems. The Clean Energy Cash-back scheme - or feed-in tariff - will pay householders for generating renewable electricity from small-scale green energy systems such as solar panels and micro-wind turbines. The scheme is also open to others including businesses, communities, farmers, schools and hospitals who want to generate green electricity from renewable installations up to 5MW in size.
- **HVDC:** High voltage direct current is used to transmit large amounts of power over long distances; there are smaller power losses and the construction cost of a HVDC line is less than that of a more conventional high voltage alternating current line.
- **LCOE:** Levelized Cost Of Energy is a cost of generating energy or an economic assessment of the cost of the energy-generating system including all the costs over its lifetime. A net present value calculation is performed and solved in such a way that for the value of the LCOE chosen, the project's net present value becomes zero. This means that it is minimum price at which energy must be sold for an energy project to break even.
- **Kilowatt-hour (kWh):** A kilowatt-hour is the basic unit for measuring the generation and consumption of electrical energy. A megawatt-hour (MWh) of electricity is equal to 1,000 kilowatt-hours. A kilowatt and a megawatt are units of generation capacity. A petawatt-hour (PWhr) is equal to one mn bn (10^{15}) watt-hours.
- **Renewable energy certificate:** A renewable energy certificate (REC), also known as a green tag or tradable renewable certificate, represents the environmental, social, and other positive attributes of power generated by renewable resources. For eg, RECs may represent the emissions avoided by renewable power generation compared with those of conventional sources. RECs can be purchased separately from electricity service.