



Tech Talk - The ExxonMobil Future: A Review

Posted by [Heading Out](#) on March 24, 2013 - 5:35am

It is the time of year when the major oil companies issue their predictions for the future, and h/t Art Berman, ExxonMobil just released their view of the world, looking forward to 2040. And this is [downloadable](#). If I remember correctly, I first viewed their future projections [back in 2011](#) and with a two-year step, it might be more interesting to see how differences in their world view have evolved in that period.

By 2040, EM anticipates that the global population will be approaching nine billion, up by around 25% from current numbers. Of that nearly two billion additional folk most are expected to be born in the developing countries such as India and in Africa, with the former gaining 300 million and the latter 800 million. Because the majority of the growth occurs in these countries, and the improvement in living standards and working conditions are more energy intensive, (whether air conditioning or iPhones) from a lower base and demand growth is concentrated more in electrical energy demand than that of transportation fuels.

EM continues to believe that, while the economies of the OECD nations will contribute significantly to global growth, with economic output increasing by 80% over the 27-year period, energy demand will remain stable. Growth in demand for power will come from the rest of the world, powering an average 2.8% growth in the global economy over that interval.

Perhaps the greatest change has been in the amount of energy that the company anticipates will not now be needed in that future, as improving energy efficiency cuts back the amount that must be supplied. If we look at the energy projections through 2030 that were made by BP and EM back in 2011, the total growth was expected to continue in an almost linear mode through 2030.

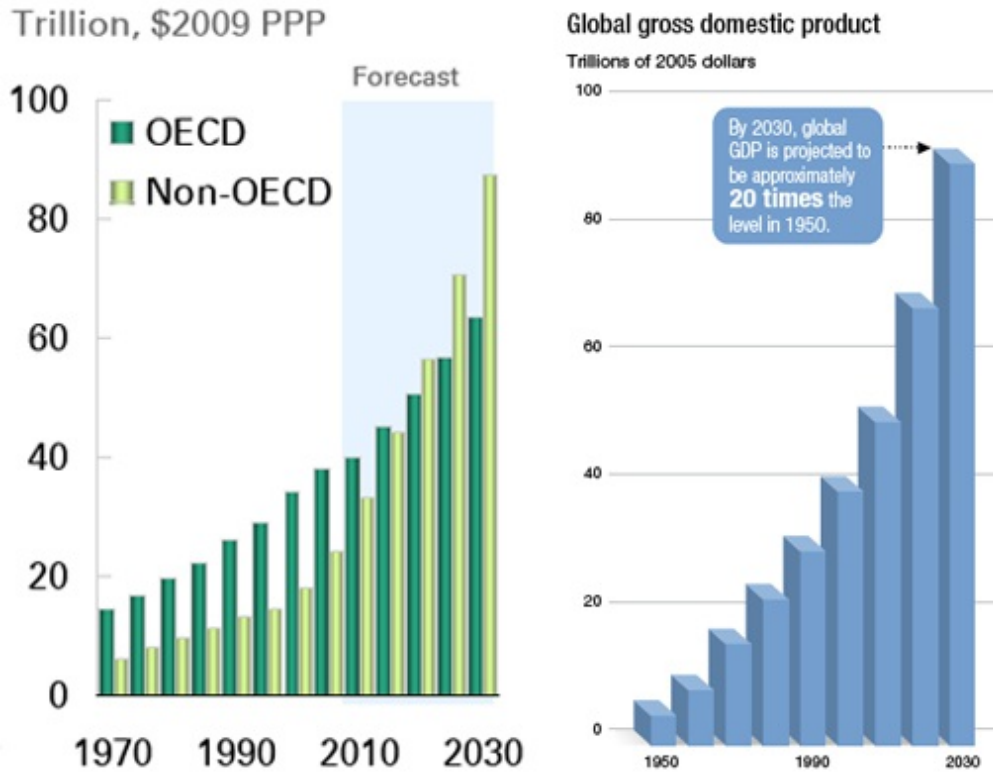


Figure 1. Projections of growth from BP and EM in 2011, looking to 2030.

If one now looks at the shape (the units differ) of the new EM curve, there is a dramatic emphasis on a continued improvement in energy efficiency particularly as we get further into the out years. (Note the remaining illustrations all come from the EM document “The Outlook for Energy: A View to 2040”).

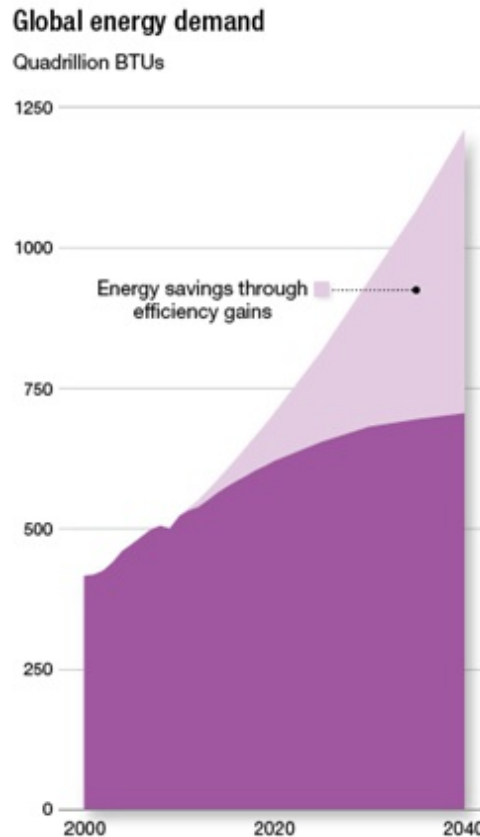


Figure 2. Current EM projections for global energy demand in the years to 2040.

The report breaks down the growth in demand into several sectors. And this, at first, is a little irritating. The reason is that in describing, for example, the growth in residential/commercial energy demand, the track-back on the power sources stops at the point where electric current comes out of the wall. Given that it is the growth in electricity consumption, projected to grow overall by 85%, that is the greatest contributor over the period this is a little disingenuous. Now it is true that there is a whole section devoted to electricity generation, but the lack of the source fuel portrays a little bit of sleight of hand.

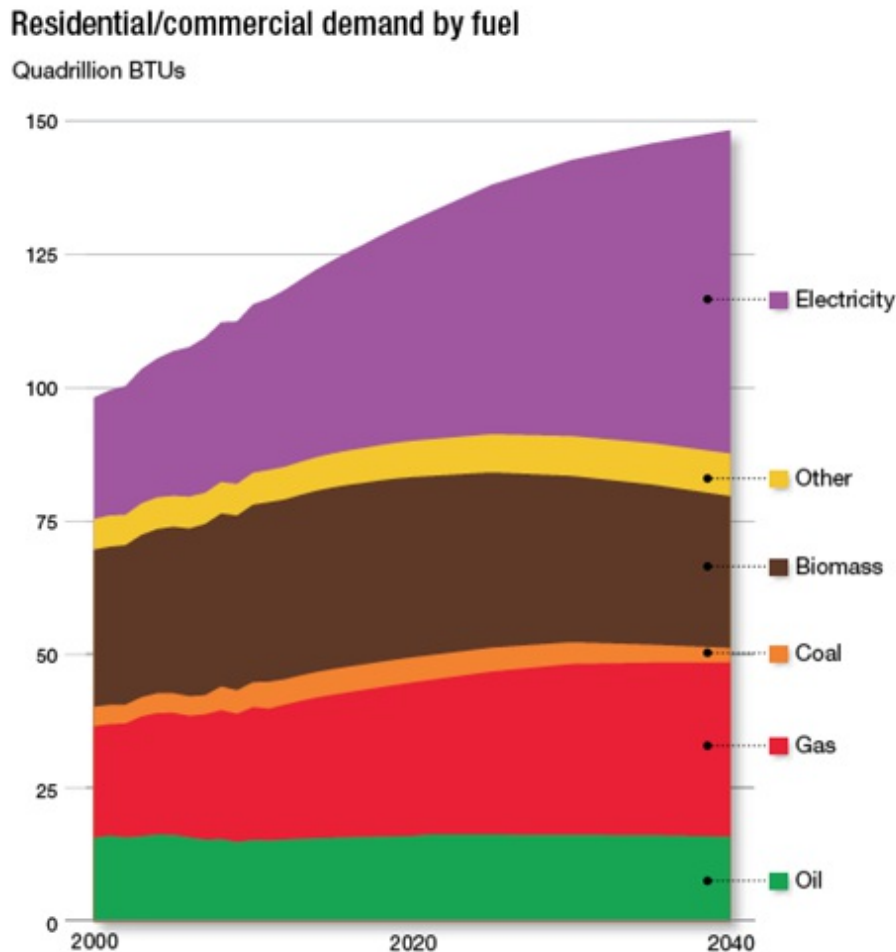


Figure 3. Projected residential/commercial energy growth through 2040, by power source.

There is a similar restriction in source categories for the suppliers of industrial power:

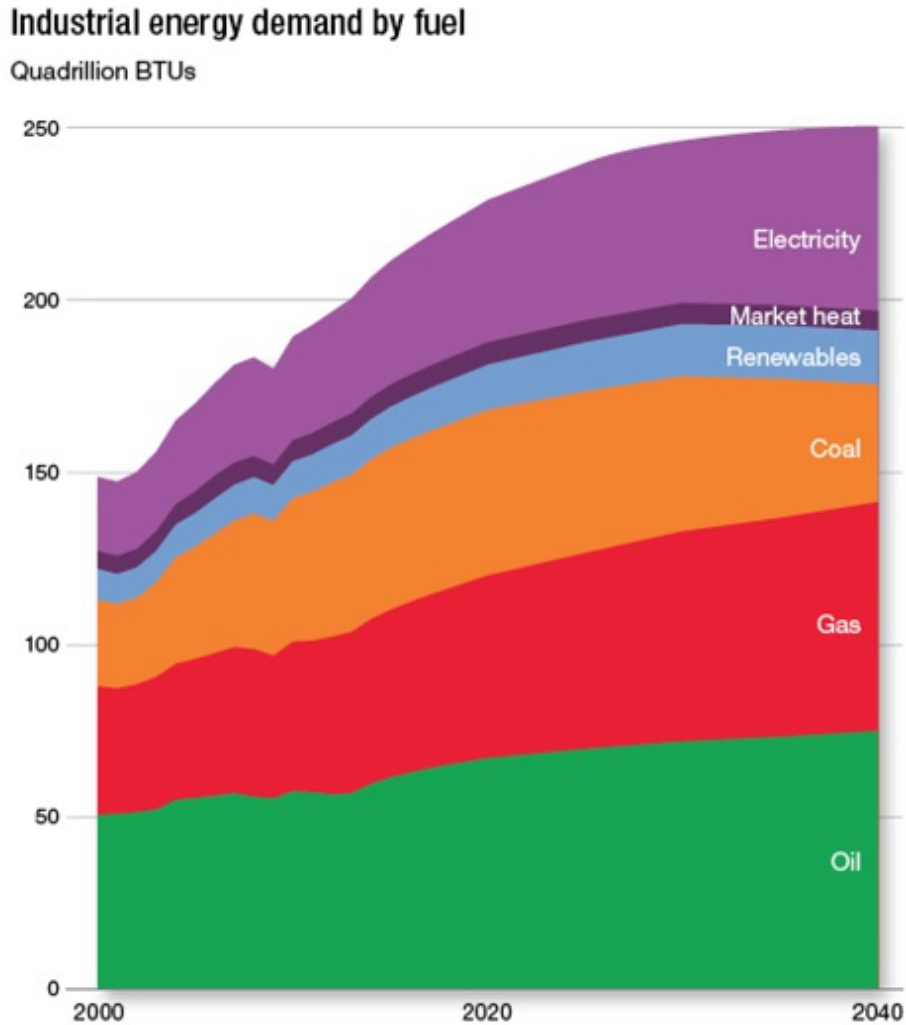


Figure 4. Projected residential/commercial energy growth through 2040, by power source.

However, as recognized, the document does have a chapter that deals with the generation of electrical power. EM anticipate that coal will continue to gain market until 2025, but from that point forward its share will decline as the main competitors, renewables, nuclear and natural gas take an increasing part of the supply.

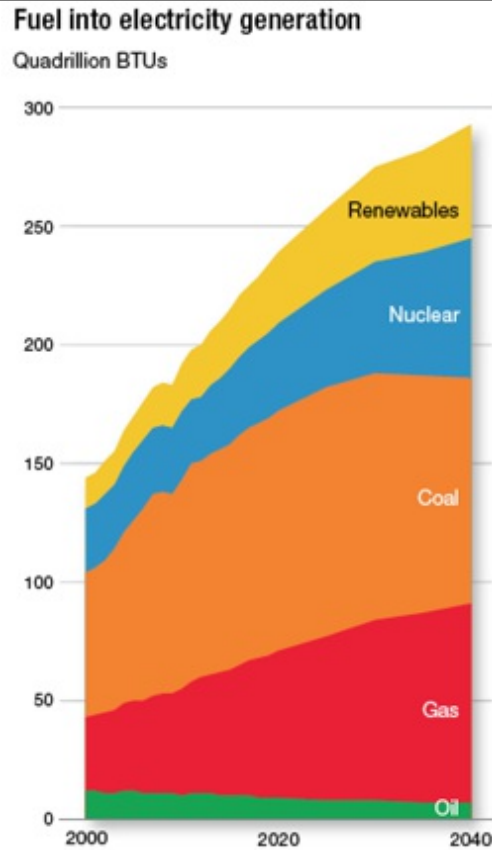


Figure 5. Change in the source of electrical power and its growth.

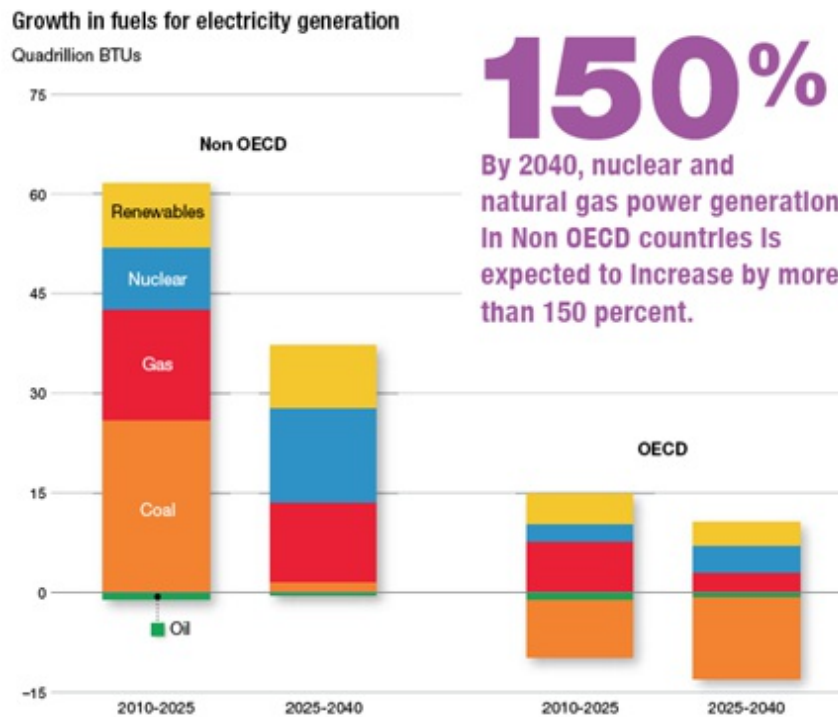


Figure 6. The breakdown of electric power fuel sources between OECD and non-OECD countries

One of the reasons for the change, particularly the change to natural gas from coal, comes with the increasing burden of carbon costs, as EM projects.

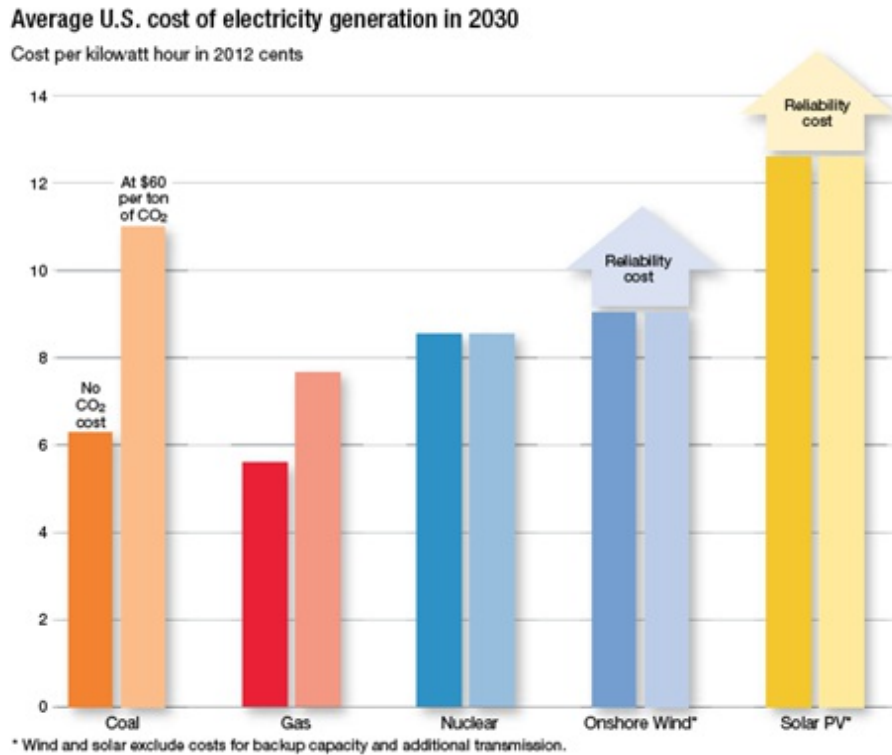


Figure 7. Anticipated fuel source costs for electricity in 2030.

The low price that is anticipated to continue for natural gas makes it therefore the growth fuel, as Figure 5 suggests. When this is combined with the anticipated changes in liquid fuels for transportation, which will see a 40% growth overall with heavy duty transportation showing the greatest growth, investors in oil and natural gas should be reassured. Cars are expected to achieve an average performance of 47 mpg, which is achieved with the anticipated mix being:

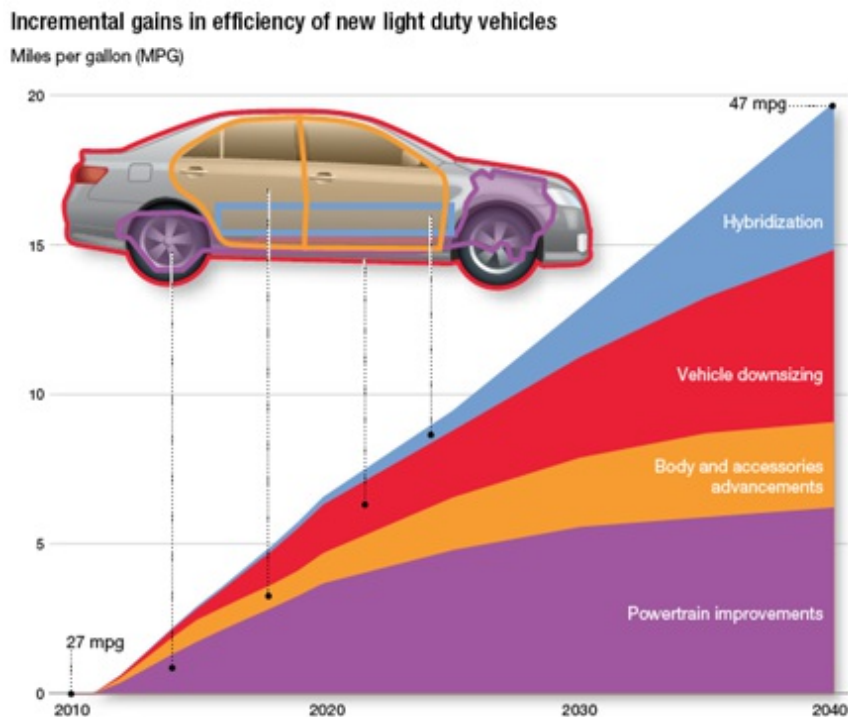


Figure 8. The anticipated growth in automobile performance through the years.

Nevertheless, the increasing growth of personal transportation in the developing countries is expected to continue to increase demand for oil. With the growth in power generation from natural gas, the two combine to paint a glowing picture of the future of the hydrocarbon industry.

EM project that overall the demand for liquid fuels will rise to 113 million barrels of oil equivalent (mboe) per day by 2040, a 30% growth over 2010 with most of the demand remaining with the transportation needs. The company seems comfortable with industry being able to achieve that level of supply, although the mix will change considerably from that which currently prevails.

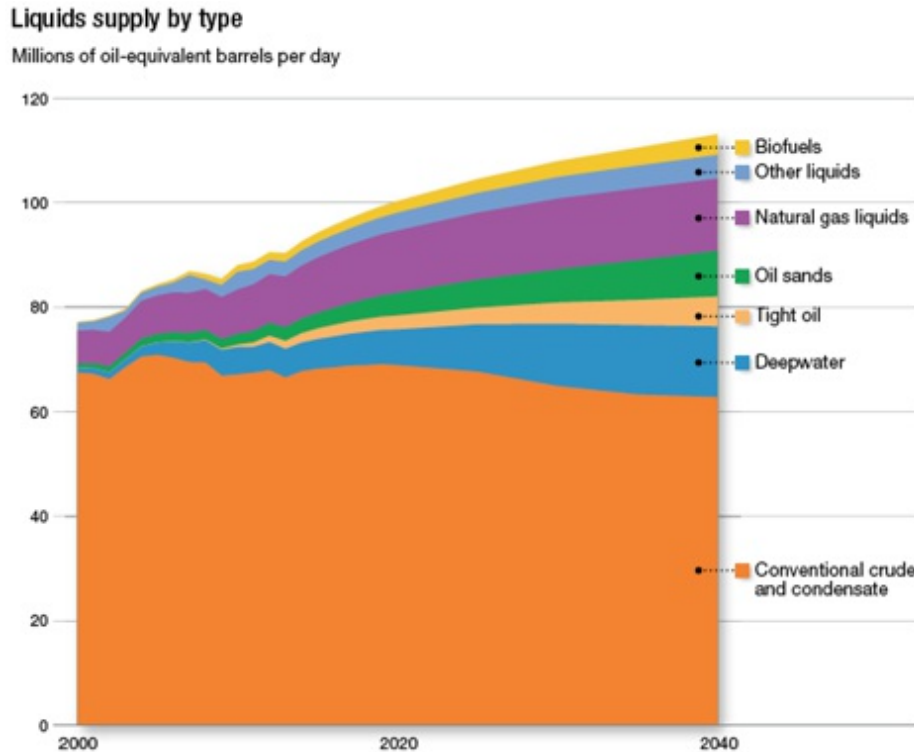


Figure 9. Change in the liquid fuel sources that are anticipated over the coming years.

And it is here, I fear, that the report becomes overly optimistic. By looking at the relative size of the remaining resource, relative to the production achieved to date, EM foresee no problem in providing the supply targets that are shown in the above figure. EM expect that technical innovation will continue to dramatically improve production from the United States and North America in total. Supply growth is anticipated from tight oil in places such as the Bakken, Deepwater from the Gulf and the tar sands. They project that these will combine to lift North American total liquids production by another 40%. When the production from the offshore Brazilian fields and the heavy oil sands of Venezuela are added, then this reinforces the view that they hold of an achievable target.

Major new liquids in North America

Millions of oil-equivalent barrels per day

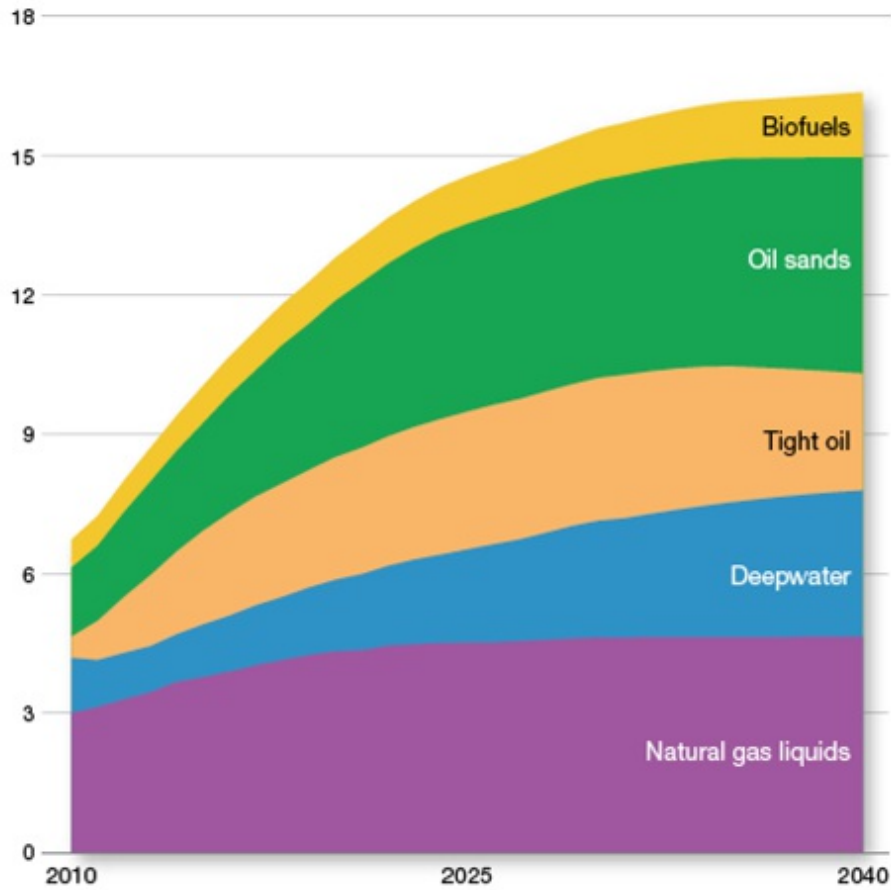


Figure 10. Growth in supply of liquid fuels in North America

Yet it is in the Middle East, a region they hardly discuss, that they see the largest growth.

Liquid supply growth by region, 2010-2040

Millions of oil-equivalent barrels per day

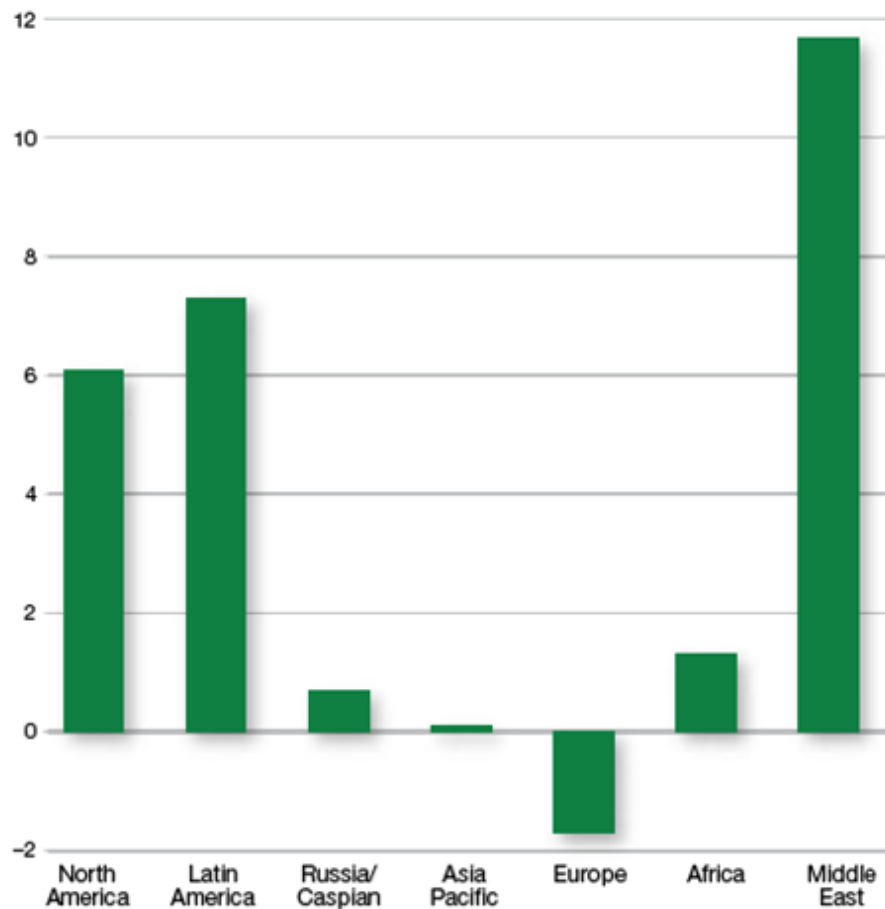


Figure 11. Sources of future growth in liquid fuel supply.

EM don't actually say where that great growth is likely to come from, but it is very likely heavily weighted towards the most optimistic of estimates for the future production of Iraq, with the ongoing turmoil of the "Arab Spring" being totally discounted.

Well, it makes a nice pipe dream, as I'm afraid, as is also their anticipation that industry will be able to produce and distribute the target volumes of natural gas they anticipate will come to save us all from the increasingly higher costs of power. Dare one gently cough and mutter "decline rates"?

If I can put it another way . . . At the beginning of the report, after projecting a reasonable estimate of global growth over the next 25 years, EM put in a very optimistic level of improvement in energy efficiency in order to significantly lower energy demand. Then, to balance supply to that lower level of demand, they seem to have picked the most optimistic of assumptions about potential growths in that supply. I rather suspect that they are seeing the writing on the wall, but obfuscating it with optimism beyond the bounds of realistic expectation.



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