

# Oil Use Must Drop To Meet Climate Goals

## An Analysis of the IEA World Energy Outlook 2010

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**ABSTRACT:** The 2010 World Energy Outlook, published on November 9, shows that in order to meet climate goals global oil demand must peak by 2018. This goal will not be easy to achieve but may still be within reach. The IEA's forecasts for oil demand have consistently declined for several years and demand growth appears to be slowing without a concerted effort from most countries. The implication for expensive, high risk and high carbon fuels such as Canadian tar sands is that over the long haul, in a world that is responding to climate change, neither price nor demand will support the rapid growth that is currently planned for by industry and the Canadian government.

### Introduction

Each year, the International Energy Agency (IEA) publishes its World Energy Outlook (WEO), several hundred pages of analysis of one of the world's largest industrial sectors. The organizing structure of the WEO is the presentation of scenarios that detail the supply and demand of energy for the next 25 years under various policy regimes. Here we examine what the WEO says about oil demand under different scenarios and what it means for tar sands producers.

### Divergent scenarios

Until this year there were two scenarios presented in the WEO. The Reference Scenario, which refers to what happens if energy policies stay unchanged over the forecast period and the 450 Scenario (known as the Alternative Scenario prior to 2008), which refers to energy patterns in a world that endeavors to prevent the worst impacts of climate change. This year the Reference Scenario is renamed the Current Policies Scenario, the 450

Scenario remains and a third in-between scenario, called the New Policies Scenario, is added to describe what might happen if policies already agreed to but not yet implemented govern the future.

### When is a forecast not a forecast?

It is quite common for energy companies as well as analysts and commentators to refer only to the Reference Scenario in discussing the WEO, treating it as a forecast of energy trends. (see appendix)

At times this seems to be a willful misinterpretation as the IEA is quite clear that, "*The Reference Scenario is **most definitely not a forecast** of what will happen but a baseline picture of how global energy markets would evolve if governments make no changes to their existing policies and measures.*" (WEO 2009 p.73, emphasis added).

Yet the temptation to treat the Reference Scenario as a forecast is for some, apparently, irresistible. A good example

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comes from the Canadian Association of Petroleum Producers (CAPP), which presents the following WEO 2009 Reference Scenario figures on its website as justification for the tar sands industry.

*“According to the International Energy Agency, the world consumed 85 million barrels of oil per day in 2008. That number is expected to increase to 105 million barrels per day by 2030; a projected increase of around 24% in just over two decades.”<sup>3</sup>*

While this statement supports the idea that the trajectory of oil demand is relentlessly upward and all resources need to be exploited to meet it, some may be surprised to hear that not only does that depend on which scenario you are discussing but also that the IEA’s oil demand forecasts under all scenarios have steeply declined in the last decade.

### **The danger in the Current Policies (Reference) Scenario**

The IEA is clear about the negative consequences of the Current Policies Scenario. In the 2009 WEO it gave a stark warning about this.

*“The rate of growth of fossil-energy consumption projected in the Reference Scenario takes us inexorably towards a long-term concentration of greenhouse gases in the atmosphere in excess of 1000 ppm CO<sub>2</sub>-eq. The CO<sub>2</sub> concentration implied by the Reference Scenario would result in the global average temperature rising by up to 6°C. This would lead almost certainly to massive climatic change and*

<sup>3</sup> <http://www.capp.ca/energySupply/ourEnergyChallenge/Pages/default.aspx#FQQ8eRWc1xLh>

*irreparable damage to the planet.” (WEO 2009. p.44)*

*“Continuing on today’s energy path, without any change in government policy, would mean rapidly increasing dependence on fossil fuels, with alarming consequences for climate change and energy security.” (Ibid.)*

In other words, the IEA considers the Current Policies Scenario to be disastrous for both the environment and the economy. To treat this scenario as a forecast and base national or business planning upon it is both cynical and irresponsible. It is tantamount to betting that the world will fail to address climate change, while simultaneously increasing the likelihood of that failure.

Although a binding international agreement to limit greenhouse gas (GHG) emissions is proving elusive it remains the stated goal of most governments to prevent global average temperatures rising above 2°C. The IEA’s 450 Scenario is calculated to stand a 50% chance of achieving that. It is therefore the minimum that government and industry should be aiming for. The implications of achieving this are very significant for oil producers because, as we detail below, it would entail a substantial reduction in demand for oil.

### **Divergent energy futures**

So what are the differences between the scenarios? Tables 1 and 2 feature key figures relating to primary energy demand and oil demand in the two most recent WEO reports.

**Table 1: Energy demand figures in the WEO Current Policies/Reference Scenario**

Growth in Primary Energy Demand 2007-2030 WEO 2009	Percentage of Primary Energy provided by Fossil Fuels in 2030 WEO 2009	Oil Demand million barrels per day	
		2030 WEO 2009	2035 WEO 2010
40%	80%	105	107

**Table 2: Energy demand figures in the WEO 450 Scenario**

Growth in Primary Energy Demand 2007-2030 WEO 2009	Percentage of Primary Energy provided by Fossil Fuels in 2030 WEO 2009	Oil Demand million barrels per day		
		2030 WEO 2009	2030 WEO 2010	2035 WEO 2010
20%	68%	89	84	81

Growth in primary energy demand to 2030 is 20% less in the 450 Scenario than in the Current Policies Scenario, while the role of fossil fuels in the energy mix is 12% less. For oil demand the difference is substantial, with 2035 oil demand in the 450 Scenario 26 million barrels a day (Mbpd) less than the baseline case, a decrease of 25%. The WEO 2010 states that in the 450 Scenario oil demand should peak at around 88 Mbpd in 2018 and thereafter decline steadily falling to 81 Mbpd by 2035.(Pp.443-444) In comparison, oil demand in 2010 is expected to average around 87 Mbpd. In other words, to prevent runaway climate

change, there is little room for further oil demand growth.

**Declining oil demand forecasts**

The decline in oil demand forecasts for the 2030s is not confined to the difference between the two scenarios. Since 2004, the IEA's figures for both scenarios have dropped dramatically representing a disappearance of up to 37 Mbpd of forecast oil consumption in 2030 between the scenarios over the period. This reflects the IEA's evolving assessment of the impact of higher oil prices, the recent recession and the growing confidence in efficiency technologies.

**Table 3: Declining IEA Oil Demand Forecasts for 2030**

Year	2004	2005	2006	2007	2008	2009	2010	2010 New
Current/Ref. Scen.	121	115	116	116	106	105	102.5	96.4
450/Alt. Scen.	108.2	103.5	102.7	102	90	89	84	

As Table 3 shows, in 2004 the IEA was forecasting that oil demand in 2030 could reach 121 Mbpd while an alternative scenario would see a reduction to 108.2. In this year's report we see those figures dramatically reduced. The Current Policies Scenario now sees oil demand reach 102.5 Mbpd in 2030 while the New Policies Scenario, which is an IEA estimate of the affect of implementing polices committed to at the December 2009 Copenhagen climate summit, brings the figure down further to 96.4 Mbpd. That is a reduction of nearly 25 Mbpd in the forecast of oil demand in 2030 over the last 7 reports. It is a huge revision of the need for oil in the coming two decades. Further, the actual level of demand that we should be aiming for in order to have a 50% chance of stabilizing the climate is actually a further 12 Mbpd less.

The trend is particularly interesting because not only have we already achieved a significant decrease in this expected oil demand without trying very hard but we have also come to realize that in order to have a chance of stabilizing the climate, we need to decrease our dependence on oil a lot further. In fact, as time goes on it appears that the amount of oil we can consume while maintaining a healthy climate is shrinking. There is also no reason to believe that the downward revision to these forecasts has ended in 2010. On the contrary, the longer we fail to sufficiently reign in our oil consumption the more drastically we will have to cut it further down the road. In stark contrast to the impression of relentless demand growth portrayed by most industry advocates, the reality is that the amount of oil we should realistically expect to

consume over the coming decades is shrinking fast.

### **Climate change is not the only reason to take action**

The IEA is also very clear that a reduction in oil demand is crucial not only for addressing climate change but also to enhance energy security and protect the economies of oil importing countries. In a section on the prospects of a global peak in oil production, the WEO 2010 say this:

*If governments act vigorously now to encourage more efficient use of oil and the development of alternatives, then demand for oil might begin to ease quite soon and we might see a fairly early peak in oil production. That peak would not be caused by any resource constraint. But if governments do nothing or little more than at present, **then demand will continue to increase, the economic burden of oil use will grow, vulnerability to supply disruptions will increase and the global environment will suffer serious damage. The peak in oil production will come then not as an invited guest, but as the spectre at the feast.*** (P.126 emphasis added)

In the highlights to the Oil Market Outlook section of the report, it is further stated that, *(t)he weaker the response to the climate challenge, the greater the risk of oil scarcity and the higher the economic cost for consuming countries.* (P.101)

It is clear therefore that a move towards the IEA's 450 Scenario is significantly in the public interest. But is it in the interests of the international oil industry?

**Declining demand, the Canadian Tar Sands and other marginal oils**

International oil companies (IOCs) face a significant challenge particularly if the world moves towards the 450 Scenario pathway. Declining oil demand would have the affect of stabilizing oil prices rendering more expensive and risky resources such as the Canadian tar sands, the offshore Arctic and ultra-deepwater production less profitable. This is a particular problem for these companies as they face an increasing reliance on these resources as easier to produce oil is now primarily concentrated in OPEC countries that restrict IOC access.

The WEO suggests that under the 450 Scenario unconventional oil such as the Canadian tar sands would see a declining growth rate after 2020.

*“Growth is fastest in the current decade and then tapers off, with declining world oil demand, causing oil prices to level off, which reduces the attractiveness of investing in projects to develop these higher-cost resources.”*

Compared to the Current Policies Scenario the report foresees a 28% decline in tar sands production under the 450 Scenario. While that suggests there is still room for growth in the Canadian tar sands it is worth noting that the industry has proposed projects that would raise production to 7.7 Mbpd, more than double the amount the IEA suggests would be sustainable under its climate saving scenario and also significantly more than the IEA's baseline case. (see Table 4) These figures suggest a stark disparity between industry ambition and realistic and sustainable levels of tar sands production.

**Table 4: Canadian tar sands production under different WEO 2010 scenarios**

Scenario	Current Policies Scenario	New Policies Scenario	450 Scenario	Announced Projects
Million barrels per day	4.6	4.1	3.3	7.7

These WEO figures suggest that the IEA does not foresee the tar sands industry growing to the levels the industry currently expects. Further if climate change goals are to be met, growth will be limited to less than 50% of current announced projects.

The WEO 2010 also suggests that the need for exploration in frontiers such as the Arctic will also be limited.

*...the need for exploration to find and then develop reservoirs that are as yet unknown is only two thirds of that in the New Policies Scenario, a difference of almost 60 billion barrels. This reduction is equivalent to two-thirds of the estimated volume of oil that is thought to remain to be found in the Arctic and is comparable to the total volume of oil discovered during the past five years. As the oil industry typically develops easy-to-find oil first, this reduced need to bring on new*

*capacity allows the industry to dispense with some of the more costly and more environmentally sensitive projects. (P. 451)*

### **Conclusion**

Examining the full range of IEA scenarios provides a welcome contrast to the relentless oil industry mantra that rising oil demand is inevitable. The contrast reveals that oil companies, especially those planning to increase tar sands and other unconventional production, are aligning their business plans with a pathway that ensures catastrophic climate change and energy insecurity.

The IEA does not claim that achieving the 450 Scenario will be easy, particularly as the longer the current impasse in international climate negotiations goes on the more difficult and expensive it will be. Indeed, the missed opportunity at Copenhagen is calculated to require an extra \$1 trillion between 2010 and 2030 in order to achieve the 450 Scenario; the IEA calls this “the cost of Copenhagen”.

But the WEO does indicate how the energy sector must change. In the WEO 2009 it was calculated that around 60% of the necessary emissions cuts derive from efficiency savings, delivered in the case of oil through tightening vehicle efficiency standards and support for electric vehicles and hybrids. The reports also show that developed countries can achieve absolute reductions in oil demand while emerging economies such as China can significantly

constrain their oil consumption growth without sacrificing economic growth and while continuing to increase access to energy. The result however would see much of the world’s most expensive, risky and environmentally destructive oil, including a significant proportion of the Canadian tar sands, left in the ground.

It is further worth noting that, as Table 3 above demonstrates, forecasts for oil demand are on an inexorable downward trajectory. Implementing the necessary climate policies to prevent a rise in average global temperatures above 2°C would further reinforce this trend. Every year that we fail to take sufficient action requires a greater effort in years to come.

Further, these forecasts tend to portray steady and non-disruptive change. While one could argue that the IEA should be more realistic in factoring in potential disruptive events into its forecasts, it is very difficult to model such trends. It is therefore worth noting that the sharpest year-on-year drop in the oil demand forecasts, between the 2007 and 2008 WEO reports, was the result of analyzing the consumer and policy response to the overheated oil market that saw prices spiking to \$147 a barrel in July 2008. It seems optimistic to rule out similar events in the coming decade that might precipitate another significant re-evaluation of the trends.

## Appendix: Examples of misuse of WEO figures

The figures in Table 1 above are worth noting as they regularly appear on the websites and publications of oil companies, oil industry trade associations and in energy industry media as well as in the speeches and presentations of oil executives and government ministers. Rarely if ever, are these figures qualified by statements, like those given by the IEA in the WEO, that clarify the status of the figures as a baseline scenario rather than a forecast. Instead they are often presented precisely in the way the IEA warns against; as a forecast of global energy trends. Here are some examples of these misuses of the WEO.

### Canadian Department of Natural Resources

In a testimony at a recent Federal Standing Committee on Natural Resources in Ottawa, Mark Corey, assistant deputy minister for the Department of Natural Resources, quoted the IEA stating that, "global energy will increase by 1.5 per cent per year until 2030, which would be an overall increase of 40 per cent."<sup>4</sup> He was apparently defending Canada's planned growth in tar sands production. The figures are straight out of the IEA's Current Policies (Reference) Scenario and are quoted as if the IEA intended them as a forecast.

4 Simon Dyer, The Pembina Institute, 25 November, 2010. Oilsands, energy security and climate calamity. <http://www.pembina.org/blog/436>

### Canadian Association of Petroleum Producers (CAPP)

The CAPP website provides another example of WEO abuse in defense of tar sands production. On a page entitled "Our Energy Challenge"<sup>5</sup> the trade association that represents the Canadian tar sands-dominated oil and gas industry, misquotes the WEO on several points.

*"According to the International Energy Agency, the world consumed 85 million barrels of oil per day in 2008. That number is expected to increase to 105 million barrels per day by 2030; a projected increase of around 24% in just over two decades."*

It goes on to say:

*As demand for energy continues to rise, the supply needed to meet that demand will become increasingly difficult and expensive to find and develop.*

*While alternative sources of energy will be important, the International Energy Agency states that fossil fuels will remain our primary source of energy in the future, accounting for 84 per cent of the overall increase in demand between 2005 and 2030.*

All of these figures are from the climatically disastrous Reference Scenario. While the IEA specifically says these figures are not a forecast, CAPP makes no effort to qualify the figures. What makes

5 <http://www.capp.ca/energySupply/ourEnergyChallenge/Pages/default.aspx#FQQ8eRWc1xLh>

CAPP's presentation of these figures particularly egregious is that for the fossil fuel percentage of primary energy growth, CAPP has taken a figure from the WEO 2007 Reference Scenario. So while the IEA has been progressively revising down that figure due to changes in policy and efficiency improvements over the past three years, CAPP has conveniently not noticed. The corresponding figure in the 2009 Reference Scenario is 77%, a reduction of 7% from CAPP's stated figure, while under the 450 Scenario it would be 68%.

### **Suncor**

Suncor is the largest producer of tar sands oil. In a speech given by CEO Rick George to the World Energy Congress in September 2010, Mr George severely misused the WEO. He said,

*"Despite some promising developments in harnessing renewable energy, the most recent World Energy Outlook predicts that, by 2050, hydrocarbons will still represent 75% of primary energy demand."*<sup>6</sup>

This is particularly surprising as nowhere in the WEO are there any predictions for energy demand in 2050.

### **BP**

BP appears to know how to use the WEO but is inconsistent in its application. While its sustainability report correctly quotes the IEA as stating global primary energy growth rates to 2030 of between 20%-

40%<sup>7</sup>, its executives make speeches in which only Reference Scenario figures are used, or in one case, even higher estimates are given.

For example, Ian Conn, BP's Chief Executive of Refining and Marketing, told the World Forum on Enterprise and the Environment in June 2010 that, *"Global primary energy demand is forecast to increase by 40% or more by 2030 compared to 2009."*<sup>8</sup> He incorrectly attributed this to the WEO 2010, which had not been released at the time.

Interestingly, other BP executives claim that BP has its own even higher estimations for this figure. Executive Vice President, Steve Westwell told the World National Oil Companies Congress also in June 2010 that, *"BP's projections show that the world could need as much as 45% more energy in 2030 than today."*<sup>9</sup>

<sup>6</sup> Rick George, World Energy Congress Montreal, Quebec September 14, 2010. <http://www.suncor.com/en/newsroom/2470.aspx?id=3689>

<sup>7</sup> BP Today's Energy Challenge. <http://www.bp.com/sectiongenericarticle.do?categoryId=9032936&contentId=7060393>

<sup>8</sup> Ian Conn, 24 June, 2010. Towards the Energy Future – a pragmatic vision. [http://www.bp.com/liveassets/bp\\_internet/globalbp/STAGING/global\\_assets/downloads/S/Speech\\_Ian\\_Conn\\_world\\_Forum\\_Oxford\\_June\\_2010.pdf](http://www.bp.com/liveassets/bp_internet/globalbp/STAGING/global_assets/downloads/S/Speech_Ian_Conn_world_Forum_Oxford_June_2010.pdf)

<sup>9</sup> Steve Westwell, 22 June, 2010. Key roles and responsibilities of IOCs in an age of uncertainty. <http://www.bp.com/genericarticle.do?categoryId=98&contentId=7063033>