

# EXXONMOBIL'S OUTLOOK FOR ENERGY FORECAST OR FANTASY?

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ExxonMobil would like us to think of its energy forecasts as an objective view of the world. The company's Outlook for Energy – the latest released today – predicts that oil and gas use will continue growing at least into the middle of this century, with oil providing the largest share of energy supplies in 2040 and clean energy making only a small dent.<sup>1</sup>

**This short briefing shows that in order to reach this conclusion, ExxonMobil has to rely on some very questionable assumptions about the future:**

- It assumes that current growth rates in renewable energy now collapse;
- It assumes that technological developments in electric vehicles stall;
- It assumes that governments take minimal action on climate change not just now but throughout the next two decades; and
- It assumes that climate change will not be limited to 2°C.

The briefing also shows how ExxonMobil got its predictions on renewable energy wrong before, and how it diverges from other forecasters in its view of the energy future.

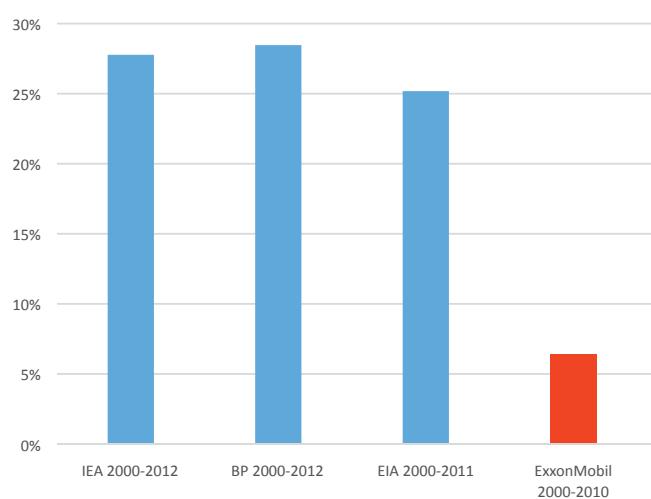
According to Steve Coll's biography of the company, ExxonMobil first published its Outlook for Energy in 2005 as part of a campaign to persuade policymakers in Washington DC – starting with the White House – that continued growth in oil use was inevitable. Research by ExxonMobil's public relations department had identified that one of the best ways to do this was to release its forecast to the public, targeting "informed influentials" including policymakers, thinktanks, financial analysts and economists.<sup>2</sup>

Nonetheless, ExxonMobil portrays the outlook as an objective analysis, "to help promote better understanding of the issues shaping the world's energy future". For policymakers to accept it in this light would be rather like going to a tobacco company for its expert forecast of smoking trends.

Instead, readers should see ExxonMobil's Outlook for what it truly is: a wish list of the company's desired future, dressed up as a portrait of the real world.

# EXXONMOBIL BLIND TO RENEWABLE ENERGY GROWTH

Fig.1: ExxonMobil vs others on recent average annual wind+solar energy growth<sup>3</sup>



- The other major sources of energy statistics all report that the use of wind and solar energy has been growing at rates averaging 25-28% per year. ExxonMobil is alone in reporting much lower growth rates of just 6.5% (fig.1).
- Looking forward, the International Energy Agency and Bloomberg New Energy Finance forecast growth rates for wind and solar of between 10% and 14% over the period 2012-2025. ExxonMobil, on the other hand, projects growth of just 7.4% (fig.2),<sup>4</sup> even as renewable energy becomes cost-competitive with natural gas (fig.3).

Fig.2: ExxonMobil vs IEA and Bloomberg New Energy Finance scenarios: projections of growth rates of wind+solar usage<sup>5</sup>

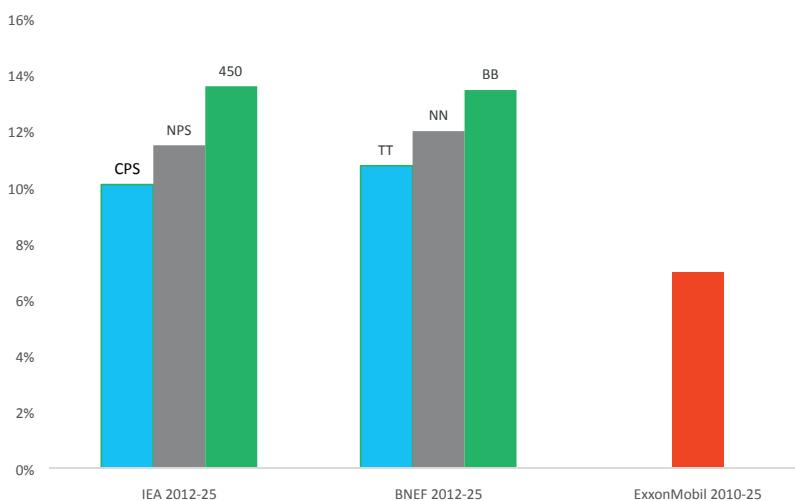
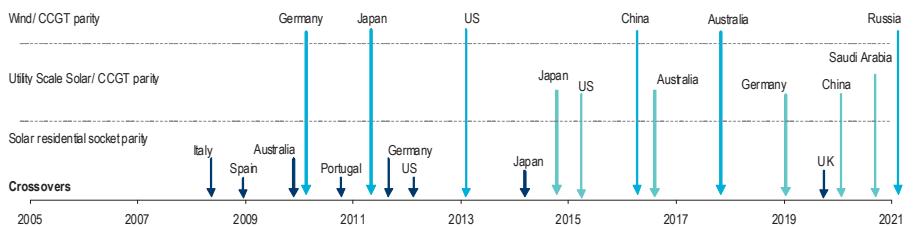
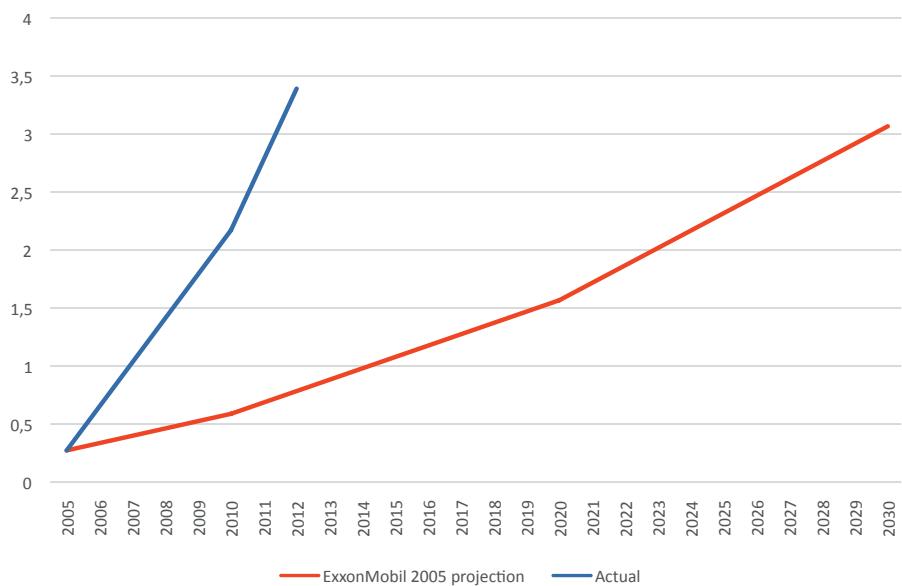


Fig.3: Cost competitiveness of wind and solar in various countries<sup>6</sup>



- This would not be the first time ExxonMobil has under-forecast the growth rate of renewables. ExxonMobil's first published Outlook in 2005 projected that wind and solar would account for 1% of total world energy production by 2030. Wind and solar achieved this share in 2012, after 7 years rather than 25 (fig.4).

Fig.4: Wind and solar usage: ExxonMobil's 2005 under-projection<sup>7</sup> (million barrels of oil equivalent per day)



# EXXONMOBIL NOT PLUGGED INTO DEVELOPMENTS IN ELECTRIC VEHICLE TECHNOLOGY

Wind and solar power are primarily used in electricity generation, and therefore compete more directly with coal, gas and nuclear. But for transportation, the technological contest is between oil and electric vehicles (EVs).<sup>8</sup> It is harder to forecast future growth of EVs, given their earlier stage of development compared to renewable energy.

However, again we see ExxonMobil projecting lower growth rates than other analysts, based on an assumption of a stalling of technological developments:

- The Electric Vehicle Initiative – which comprises 15 member governments from the countries with largest vehicle markets – has targets of EVs comprising 2% of cars on the road and 4% of sales by 2020,<sup>9</sup> with annual growth rates of 80% per year during that period (2012 growth, the first year after full commercialization, was 100%). Investment bank UBS projects EVs to account for 10% of European vehicle sales by 2025.<sup>10</sup> In contrast, ExxonMobil's Outlook for Energy forecasts that EVs will account for only about 5% of the global car fleet by 2040.
- Until its previous edition of the outlook, in December 2013, ExxonMobil's based its pessimism on assuming that high battery costs – the biggest determinant of EV competitiveness – will hold back the growth of EVs.<sup>11</sup> Battery costs are in fact falling fast, and are generally expected to fall by 50% by 2020 (fig.5). As a result, UBS forecasts electric vehicles could be cost-competitive with oil-fueled vehicles by 2020, even without subsidies (fig.6).<sup>12</sup>

Fig.5: EV battery cost projections (McKinsey)<sup>13</sup>

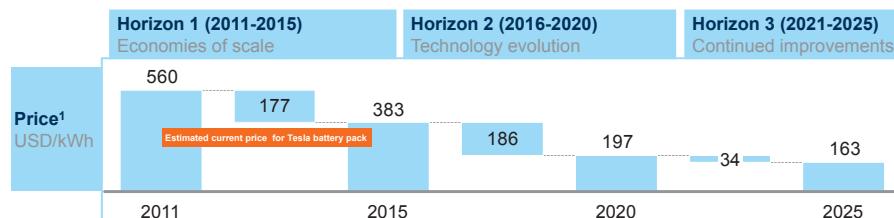
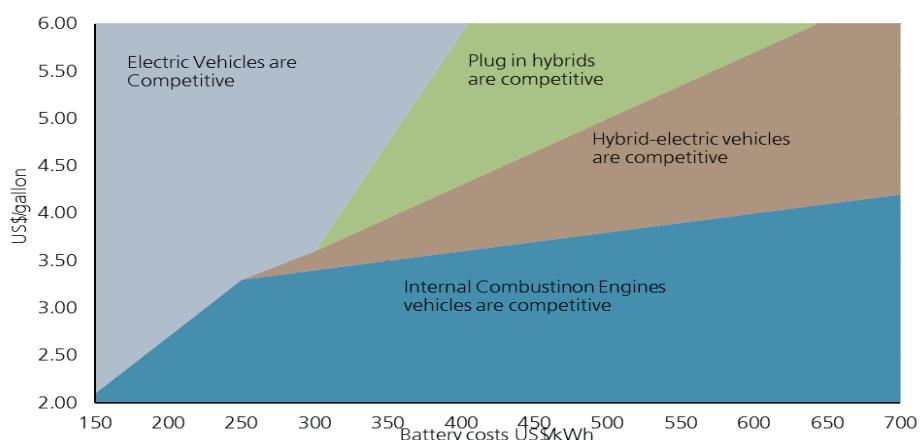


Fig.6: EV competitiveness vs oil-fueled vehicles (UBS)<sup>14</sup>



- This year, ExxonMobil has accepted that battery costs are falling, but doesn't change its forecast for EVs, claiming other, unspecified barriers. "Even though battery costs are likely to fall in coming decades, electric vehicles will continue to face significant challenges as other alternatives also improve".<sup>15</sup>

## EXXONMOBIL BETS ON DANGEROUS LEVELS OF CLIMATE CHANGE

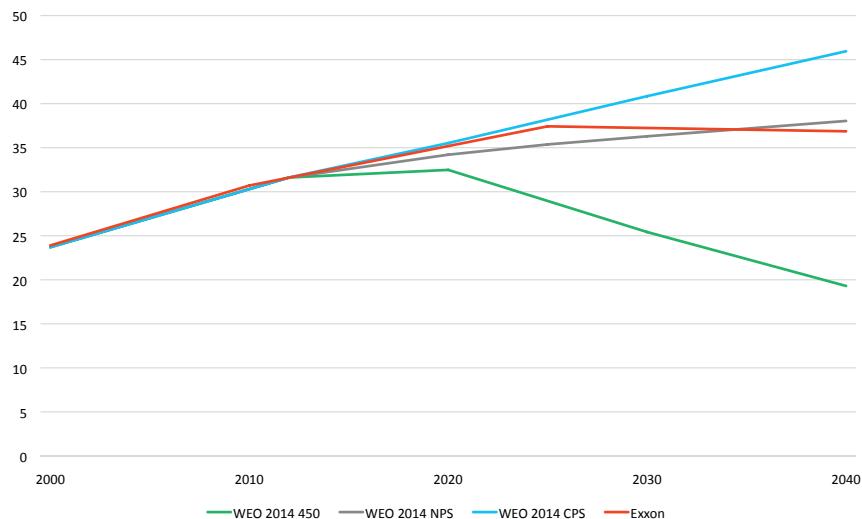
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ExxonMobil publishes its outlook four days before the end of the COP 20 climate summit in Lima, Peru. This is the last summit before a 2015 deadline to agree a deal in Paris on all countries cutting their post-2020 emissions. In predicting continued expansion of greenhouse gas pollution at this moment, the company sets itself against the prevailing efforts and intentions of most governments.

For ExxonMobil's predictions to be right, it has to assume not only that talks in Lima and Paris will fail to deliver significant results, but that action on climate change will consistently fall short – at all jurisdictional levels – for the next two decades.<sup>16</sup> This in turn requires assuming no significant political impacts due to extreme weather events becoming more frequent and damaging, due to economists warning increasingly of economic damage, or due to military leaders drawing attention to a worsening security landscape due to climate change.

- The latest science indicates that for average global warming not to exceed 2°C, global GHG emissions have to be reduced by up to 70% by 2050 and fall to zero soon thereafter.<sup>17</sup> Yet ExxonMobil sees emissions continuing to grow until 2030 and then remaining roughly level until 2040. (This leveling is because ExxonMobil forecasts a reduction in coal use – conveniently, not anything that would affect its own business in oil and gas, which it sees continuing to grow).
- For the outlook period up to 2040, ExxonMobil's forecast emissions curves exceed those of the International Energy Agency's New Policies Scenario, which the IEA says would extrapolate to warming of 3.6°C by the end of this century. For the earlier part of that period until 2025, ExxonMobil's forecast tracks the IEA's more severe Current Policies Scenario, which the IEA has substantially above the IEA's 450 scenario, designed to give a 50% chance of staying within 2°C (fig.7).
- In a series of scientific studies, the World Bank has found that warming of around 4°C would be "devastating", with the inundation of coastal cities; increased risks for food production and far greater water scarcity. The Bank concluded, "Finding ways to avoid that scenario is vital for the health and welfare of communities around the world... A 4°C world can, and must, be avoided."<sup>18</sup>

Fig.7: Total CO<sub>2</sub> emissions (GT/y) under Exxon and IEA scenarios<sup>18</sup>



- In responding to investor concerns about climate change earlier this year, ExxonMobil used its Outlook to argue:

*"ExxonMobil believes that although there is always the possibility that government action may impact the company, the scenario where governments restrict hydrocarbon production in a way to reduce GHG emissions 80 percent during the Outlook period is highly unlikely. The Outlook demonstrates that the world will require all the carbon-based energy that ExxonMobil plans to produce during the Outlook period."<sup>20</sup>*

## CONCLUSION HOW TO READ EXXONMOBIL'S OUTLOOK

No-one expects to predict the future with a high level of accuracy; the most we can do is to model how things might develop under various assumptions and scenarios, and try to use that analysis to guide our actions. What our calculations show is that ExxonMobil's forecast is based on the unlikely scenario of several assumptions about the future *all* turning out to be correct:

- Renewable energy growth rates plummet
- Electric vehicles do not significantly penetrate, in spite of falling battery costs
- Climate talks in Lima and Paris fail to decide on major emission reductions
- There is no significant action to slow climate change in the next two decades.

No doubt such a future would be good for ExxonMobil's business. It would also be very bad for most human beings. Fortunately, it is not a plausible projection of the future.

Decision-makers would be best advised to treat ExxonMobil's outlook merely as a view of the company's desired outcomes, based on convenient and collectively-unlikely assumptions.

<sup>1</sup> ExxonMobil, *Outlook for Energy 2015*, December 2014, p.67

<sup>2</sup> Steve Coll, *Private Empire – ExxonMobil and American Power*, Penguin, 2012, pp.302-5, 309-10

<sup>3</sup> International Energy Agency, *Energy Statistics Of Non-OECD Countries*, 2014 edition, pp.II.471-473; BP, *Statistical Review of World Energy 2014*, workbook [http://www.bp.com/content/dam/bp/excel/Energy-Economics/statistical-review-2014/BPStatistical\\_Review\\_of\\_world\\_energy\\_2014\\_workbook.xlsx](http://www.bp.com/content/dam/bp/excel/Energy-Economics/statistical-review-2014/BPStatistical_Review_of_world_energy_2014_workbook.xlsx); US Energy Information Administration tables, *Solar Electricity Net Generation and Wind Electricity Net Generation*, <http://www.eia.gov/cfapps/ipdbproject/IEDIndex3.cfm?tid=2&pid=2&aid=12>; ExxonMobil, *Outlook for Energy 2015*, data spreadsheet, [http://cdn.exxonmobil.com/~media/Reports/Outlook%20For%20Energy/2015/2015-EOResults%20Pages\\_Final\\_Values.xlsx](http://cdn.exxonmobil.com/~media/Reports/Outlook%20For%20Energy/2015/2015-EOResults%20Pages_Final_Values.xlsx)

<sup>4</sup> ExxonMobil, *Outlook for Energy 2015*, data spreadsheet, [http://cdn.exxonmobil.com/~media/Reports/Outlook%20For%20Energy/2015/2015-EOResults%20Pages\\_Final\\_Values.xlsx](http://cdn.exxonmobil.com/~media/Reports/Outlook%20For%20Energy/2015/2015-EOResults%20Pages_Final_Values.xlsx)

<sup>5</sup> International Energy Agency (Current Policies, New Policies and 450 scenarios), *World Energy Outlook 2014*, pp.608-9; Bloomberg New Energy Finance (Traditional Territory, New Normal and Barrier Busting scenarios), *Global Renewable Energy Market Outlook 2013* Factpack, 22 April 2013, p.9; ExxonMobil, *Outlook for Energy 2015*, data spreadsheet, [http://cdn.exxonmobil.com/~media/Reports/Outlook%20For%20Energy/2015/2015-EOResults%20Pages\\_Final\\_Values.xlsx](http://cdn.exxonmobil.com/~media/Reports/Outlook%20For%20Energy/2015/2015-EOResults%20Pages_Final_Values.xlsx)

<sup>6</sup> Citi, *Battery storage – the next solar boom?*, 30 April 2013, p.5

<sup>7</sup> ExxonMobil *The Outlook for Energy: A View to 2030*, presentation, 12 September 2005, slide 13; actuals extrapolated from *Outlook for Energy 2014*, p. 52

<sup>8</sup> We refer here to plug-in vehicles, both fully electric and plug-in hybrid, not unplugged hybrids.

<sup>9</sup> IEA, *Electric Vehicles Initiative & Clean Energy Ministerial, Global EV Outlook – Understanding the Electric Vehicle Landscape to 2020*, April 2013, pp.6,10; UBS, *Global Utilities, Autos & Chemicals: Will solar, batteries and electric cars reshape the electricity system?*, 20 August 2014

<sup>10</sup> UBS, *Global Utilities, Autos & Chemicals: Will solar, batteries and electric cars re-shape the electricity system?*, 20 August 2014, p.5

<sup>11</sup> ExxonMobil, *Outlook for Energy 2014*, December 2013, p.21

<sup>12</sup> UBS, *Global Utilities, Autos & Chemicals: Will solar, batteries and electric cars re-shape the electricity system?*, 20 August 2014

<sup>13</sup> McKinsey & Company, *Evolution - Electric vehicles in Europe, gearing up for a new phase?*, April 2014, p.25 Large format pack price at 70% depth of discharge

<sup>14</sup> If assuming battery costs are \$200/kWh, EVs will be competitive with oil-fuelled if gasoline prices are above \$2.50/gall. UBS, *Global Utilities, Autos & Chemicals: Will solar, batteries and electric cars re-shape the electricity system?*, 20 August 2014, p.17

<sup>15</sup> ExxonMobil, *Outlook for Energy 2015*, December 2014, p.19

<sup>16</sup> ExxonMobil factors climate policies into its models with a postulated proxy carbon price. What this analysis shows is that ExxonMobil's forecast assumes a price so low that the world will experience very dangerous levels of climate change.

<sup>17</sup> Intergovernmental Panel on Climate Change, *Fifth Assessment Report, Synthesis Report*, November 2014, pp.91-2

<sup>18</sup> IEA, *World Energy Outlook 2014*, pp.608-9; ExxonMobil *Outlook for Energy 2015*, data spreadsheet, [http://cdn.exxonmobil.com/~media/Reports/Outlook%20For%20Energy/2015/2015-EOResults%20Pages\\_Final\\_Values.xlsx](http://cdn.exxonmobil.com/~media/Reports/Outlook%20For%20Energy/2015/2015-EOResults%20Pages_Final_Values.xlsx)

<sup>19</sup> Foreword by World Bank President Jim Yong Kim, in *Turn Down the Heat – Why a 4°C Warmer World Must be Avoided*, November 2012, A Report for the World Bank by the Potsdam Institute for Climate Impact Research and Climate Analytics

<sup>20</sup> ExxonMobil, *Energy and Carbon -- Managing the Risks*, p.12 <http://cdn.exxonmobil.com/~media/Files/Other/2014/Report%20-%20Energy%20and%20Carbon%20-%20Managing%20the%20Risks.pdf>