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Larger impact than expected, but evidence that measures are working

The whole world is now affected by the Covid-19 virus, with nearly all countries globally implementing quarantine measures or social distancing strategies. Our global traffic data shows that people are largely abiding by these regulations and staying home; road traffic is 45% below normal levels this week compared to 34% below the norm last week.

On the positive side, evidence is streaming in to suggest that quarantine measures are effective against the virus. In countries with measures in place since the beginning of March, such as Italy and Spain, the number of new fatalities per day is flattening out. True new infected cases per day in these countries has likely already fallen by 80% to 90%.

Still, the total number of true infected people globally has grown rapidly and is likely now around 13 million, driven by quicker than expected growth in North America, as well as South America, the Middle East and other European countries. If all quarantine measures are maintained through April, about 25 million people will be infected by 1 May. In a scenario where quarantine measures are loosened, the number of infected people will grow to 65 million.

Our perspective is that all countries will aim to manage the pandemic by throttling between more or less strict social distancing measures. This will last for 12 to 18 months if no medical or technological solution is found. In many countries, especially low income countries, the resulting decrease in economic activity might lead to severe societal or public health related issues. Thus, a balance between virus mitigation and economic activity must be found.

We estimate that road traffic and aviation will be down 50% in April, and the impact on the global oil market will be unprecedented. Demand destruction could amount to over 22 million barrels per day. The world will run out of oil storage and production will need to be shut-in many places. The gas markets will be less severely hit, as associated gas will decline and gas demand is more robust. Demand for oil service will drop below any level seen the last few decades. However, as soon as the coronavirus situation is over, which will likely be sometime in 2021, oil and oil service markets are set to rebound to extreme levels.
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The true number of infected people is likely 13 million (outside of China)

As of 30 March, 13.3 million people outside of China have been infected, according to our model.

Reported cases were 695,000 as of 30 March, a number we estimate is just 5% of true cases. The number of reported cases grew last week by 13% per day, with a doubling time of 5.7 days. Similar figures a week ago were 17% and 4.5 days, indicating that quarantine measures seem to have had an effect as growth in reported cases is slowing.

Registered fatalities outside of China were 33,800 as of 30 March, a number which grew by 14.4% per day over the last week versus the 18.9% growth seen a week ago. Thus, growth in fatalities is also slowing. However, growth is lagging behind true cases by 18 days and therefore we expect growth in fatalities to slow further over the next two weeks. Nevertheless, growth in fatalities was higher than expected last week, resulting in an upward revision of our historical estimates for true cases.

For the next month, we are presenting two scenarios; In the Effective Prevention scenario we assume that strict quarantine measures are maintained throughout April, keeping the Contact Rate (CR) at 2 interactions per person per day. In this scenario there will be 25 million infected people by end of April.

In the Soft Mitigation scenario, we assume a trigger point wherein 0.5% of true cases* exceeds 50% of the country’s ICU capacity. If less than 50% of ICU capacity is utilized, quarantine measures within this scenario will be loosened, resulting in a CR of 6. In this scenario, true cases will again rise and there will be 66 million true cases of infection by the end of April.

* Reason for 0.5% given in the methodology chapter “Calibrating ICU bed capacity”
Source: Rystad Energy Covid-19 research and analysis
Outbreak status and outlook: Global overview

Europe still has the most active cases, but revisions to North America show huge growth

Number of cases by region
Cases (log scale); assumes Effective Prevention Scenario

As of 30 March, an estimated 8.9 million people were infected in Europe.

North America has seen the largest revision since last week, up from 600,000 to 2 million estimated true infected cases as of 30 March.

Forecasted figures have been adjusted significantly down for Asia and Russia, as countries (India, Russia, others) have announced strict quarantine measures.

Australia and Africa have been adjusted upwards due to the observed increase in fatalities and reported cases.

<table>
<thead>
<tr>
<th>Continent</th>
<th>True cases 30 March</th>
<th>Reported cases 30 March</th>
<th>Share reported</th>
</tr>
</thead>
<tbody>
<tr>
<td>Europe</td>
<td>8,907,010</td>
<td>410,139</td>
<td>4.60%</td>
</tr>
<tr>
<td>North America</td>
<td>2,013,816</td>
<td>167,989</td>
<td>8.30%</td>
</tr>
<tr>
<td>Middle East</td>
<td>1,419,758</td>
<td>62,078</td>
<td>4.40%</td>
</tr>
<tr>
<td>China</td>
<td>498,048</td>
<td>81,470</td>
<td>16.40%</td>
</tr>
<tr>
<td>South America</td>
<td>472,307</td>
<td>15,323</td>
<td>3.20%</td>
</tr>
<tr>
<td>Asia</td>
<td>319,087</td>
<td>26,497</td>
<td>8.30%</td>
</tr>
<tr>
<td>Africa</td>
<td>118,717</td>
<td>5,283</td>
<td>4.50%</td>
</tr>
<tr>
<td>Australia</td>
<td>22,942</td>
<td>4,889</td>
<td>21.30%</td>
</tr>
<tr>
<td>Russia</td>
<td>10,203</td>
<td>1,836</td>
<td>18.00%</td>
</tr>
</tbody>
</table>

Source: Rystad Energy Covid-19 research and analysis
Outbreak status and outlook: Global overview

North American countries currently see the fastest growth of Covid-19 cases

Number of reported cases
Cases (log scale)

Source: Rystad Energy Covid-19 research and analysis
Outbreak status and outlook: Global overview

Reported cases are only the tip of the iceberg

Reported cases are only a fraction of the number of actual infected people:
• Many infected people are asymptomatic. They are unaware of being infected and are never tested or registered.
• Most sick people stay at home, and given the limited testing capacity in most countries, they are not registered as having been sick.

In populations where large groups have been tested, the following figures have been registered:
• Infection mortality rates (IFR) of 0.3%-1.0%, averaging 0.66%
• IFR appears stable across regions when adjusted for age.
• Thus, IFR is a better indicator of actual infected people, rather than reported cases. However, as the time from onset to fatality is, on average, 18 days, number of fatalities is giving a rather precise figure for «true infected» 18 days earlier.

The number of critical cases could potentially be another indicator of true cases because:
• 0.5% of all cases will need intensive care, according to our analysis as published earlier.
• However, critical case reporting practices vary from country to country, and cannot be trusted in all countries.
• Also, limited ICU capacity could lead to lower figures because people with a real need for ICU beds still do not get it.
• The time from onset to the critical phase is typically 12 days
• Still, the number of critical cases will also be used as an indicator to find the true number of Covid-19 cases.

Thus in our report, reported fatalities and critical cases are used to estimate the actual number of infected cases 12 to 18 days ago. Then we study observed quarantine measures and traffic patterns in order to produce a best possible estimate of the current true number of Covid-19 cases.
Outbreak status and outlook: Global overview

Most key countries have curbed the virus spread, but the US and Canada are still growing

**Estimated total true cases, key relevant countries**
Number of cases*; assumes *Effective Prevention Scenario*

<table>
<thead>
<tr>
<th>Country</th>
<th>Estimate</th>
<th>Forecast</th>
</tr>
</thead>
<tbody>
<tr>
<td>Canada</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>China</td>
<td>1,000,000</td>
<td></td>
</tr>
<tr>
<td>France</td>
<td>2,000,000</td>
<td></td>
</tr>
<tr>
<td>Spain</td>
<td>3,000,000</td>
<td></td>
</tr>
<tr>
<td>UK</td>
<td>4,000,000</td>
<td></td>
</tr>
<tr>
<td>Italy</td>
<td>5,000,000</td>
<td></td>
</tr>
<tr>
<td>USA</td>
<td>6,000,000</td>
<td></td>
</tr>
</tbody>
</table>

Source: Rystad Energy research and analyses; Worldometer; *Assumes current measures in place during forecasting interval
Outbreak status and outlook: Global overview

**True new cases have peaked in Europe, while US and Canada will see growth**

According to our data, *true new cases per day* peaked in France and Spain 18 days ago, and in Italy 26 days ago. At peak about 100,000 new people were infected every day in each of these three countries. Strict quarantine measures were then introduced. These measures have worked well, and true number of new infected people has declined significantly. In France and Spain the model indicates that true new cases each day are now at about 11,000, and about 5,000 in Italy.

In the US, about 100,000 new people are now infected every day, while in Canada about 5,000 are infected, and in the UK about 20,000 are infected each day.

Here we show the likely development going forward in two scenarios: The solid lines shows the *Effective Prevention Scenario*, wherein countries maintain current quarantines and social distance regimes. The dotted line shows a *Soft Mitigation Scenario*, wherein social distancing measures are loosened prematurely or see weak compliance.

Within the *Soft Mitigation Scenario*, France, Spain and Italy will as described loosen quarantines in 5 to 18 days. The US, Canada and the UK will loosen quarantines immediately as Intensive Care Unit (ICU) capacity is still only 50% utilized. These countries will then all see increases in the number of new infected cases each day. In the US, new cases per day will grow to 1.8 million per day in 21 days, when stricter quarantines will again be implemented.
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Three possible outcomes for the virus in a nation

Scenarios for managing the outbreak

Do nothing (or acting too late): Critical cases far exceed ICU bed capacity. Economic activity in the start is not affected, but the late onset of initiatives or the collapse of the health sector could have a devastating effect.

Effective prevention scenario: Strict and effective social distancing measures are implemented, suppressing the outbreak at an early stage. (However, there is a risk of resurgence if isolation is broken and new cases appear)

Mitigation scenario: Looser social distancing measures are implemented. This is still enough to slow down the infection and keep critical cases within the limits of the country’s ICU capacity. Herd immunity is built up, avoiding the risk of resurgence.

Source: Rystad Energy research and analyses
Outbreak status and outlook: Concepts and measures

Countries that start too late could struggle to get off “the red route”

Scenarios for managing the outbreak

Week 10 (March 2-8)

Week 14 (March 30-April 5)

Source: Rystad Energy research and analyses
### Outbreak status and outlook: Concepts and measures

**Global quarantine measures, spectrum of severity**

<table>
<thead>
<tr>
<th>Decrease in personal freedom</th>
<th>Social distancing</th>
<th>Light lockdown</th>
<th>Full lockdown</th>
<th>Curfew</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Social gatherings</strong></td>
<td>Limited e.g. to 50 people</td>
<td>Banned (but 5 could be accepted)</td>
<td>Banned</td>
<td>Banned</td>
</tr>
<tr>
<td><strong>Educational establishments</strong></td>
<td>Most schools shut</td>
<td>Shut</td>
<td>Shut</td>
<td>Shut</td>
</tr>
<tr>
<td><strong>Non-essential businesses</strong></td>
<td>Open</td>
<td>Work from home</td>
<td>Work from home</td>
<td>Closed</td>
</tr>
<tr>
<td><strong>Essential businesses</strong></td>
<td>Open</td>
<td>Open</td>
<td>Open, but documentation required</td>
<td></td>
</tr>
<tr>
<td><strong>Shopping</strong></td>
<td>Allowed, with reduced social interaction</td>
<td>Allowed, with reduced social interaction</td>
<td>Allowed, but many shops closed</td>
<td>Not allowed, except from planned/permitted hours</td>
</tr>
<tr>
<td><strong>Leaving the house to walk and exercise</strong></td>
<td>Allowed, with reduced social interaction</td>
<td>Allowed, with reduced social interaction</td>
<td>Not allowed, except maybe 1 hour or less</td>
<td>Not allowed</td>
</tr>
</tbody>
</table>

When no measures are enacted, we assume each person has contact with 10 other people daily.

When social gatherings are prohibited and schools are closed, contact levels decrease to 4.

The closure of non-essential businesses decreases contact further to 2.

A full lockdown brings the contact rate down to 1.

A “lockdown” refers to emergency protocol that preventing individuals from leaving an area and moving freely. During the Covid-19 pandemic, this indicates a mass quarantine. People are required to stay home and are allowed to go out for essential needs.

Lockdowns can be implemented at varying levels of severity. In Italy, people are required to bring a form of self-declaration when leaving their homes, while in the UK people are allowed to exercise outside without any formal notice.

In the US, more than two thirds of states have imposed a “shelter-in-place” order, which is similar to a lockdown.

Sources: Rystad Energy research and analysis
To date, 50 counties are in full lockdown in addition to almost two thirds of US states. This means that all non-essential business is closed, remote working is enforced, and only essential transportation is allowed. We expect such lockdowns to have a significant impact on oil demand, especially on road fuels, as people do not commute to work, or use cars or public transport on weekends.

In the US, major metropolitan areas instituted lockdowns first, and we are now seeing sweeping state-mandated shelter-in-place orders. Nearly half of US states have now adopted strict measures.

On 24 March, India went into a three-week lockdown and a curfew regime was imposed, essentially prohibiting 1.3 billion people from venturing out of their homes. The government has indicated that these measures will last until mid-April, but extensions will almost certainly occur. Italy, the European epicenter, is still miles away from having the pandemic under control despite being the first European country to enact similarly strict nationwide lockdowns.
Global quarantine measures visible in traffic data

Traffic data from 20 March to 30 March, by continent
Observed traffic versus normal traffic levels

<table>
<thead>
<tr>
<th>Date</th>
<th>Africa</th>
<th>America N</th>
<th>America S</th>
<th>Asia</th>
<th>Australia</th>
<th>Europe</th>
<th>Middle East</th>
<th>Russia</th>
<th>Grand Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>20.mar.20</td>
<td>-27%</td>
<td>-34%</td>
<td>-37%</td>
<td>-19%</td>
<td>-16%</td>
<td>-28%</td>
<td>-31%</td>
<td>-10%</td>
<td>-25%</td>
</tr>
<tr>
<td>21.mar.20</td>
<td>-28%</td>
<td>-25%</td>
<td>-42%</td>
<td>-20%</td>
<td>-13%</td>
<td>-23%</td>
<td>-35%</td>
<td>-11%</td>
<td>-25%</td>
</tr>
<tr>
<td>22.mar.20</td>
<td>-35%</td>
<td>-16%</td>
<td>-47%</td>
<td>-40%</td>
<td>-11%</td>
<td>-26%</td>
<td>-41%</td>
<td>-4%</td>
<td>-27%</td>
</tr>
<tr>
<td>23.mar.20</td>
<td>-36%</td>
<td>-35%</td>
<td>-48%</td>
<td>-33%</td>
<td>-16%</td>
<td>-29%</td>
<td>-45%</td>
<td>-10%</td>
<td>-31%</td>
</tr>
<tr>
<td>24.mar.20</td>
<td>-36%</td>
<td>-38%</td>
<td>-48%</td>
<td>-37%</td>
<td>-25%</td>
<td>-32%</td>
<td>-44%</td>
<td>-12%</td>
<td>-34%</td>
</tr>
<tr>
<td>25.mar.20</td>
<td>-35%</td>
<td>-38%</td>
<td>-46%</td>
<td>-43%</td>
<td>-27%</td>
<td>-33%</td>
<td>-43%</td>
<td>-13%</td>
<td>-35%</td>
</tr>
<tr>
<td>30.mar.20</td>
<td>-50%</td>
<td>-34%</td>
<td>-45%</td>
<td>-48%</td>
<td>-33%</td>
<td>-32%</td>
<td>-42%</td>
<td>-44%</td>
<td>-41%</td>
</tr>
<tr>
<td>Grand Total</td>
<td>-35%</td>
<td>-32%</td>
<td>-45%</td>
<td>-34%</td>
<td>-20%</td>
<td>-29%</td>
<td>-40%</td>
<td>-15%</td>
<td>-31%</td>
</tr>
</tbody>
</table>

As seen here, global traffic fell from 25% below the normal level at the end of week 12, to 35% in week 13 and 41% in week 14. Russia, Africa and Australia have recently seen the most significantly reduced traffic.
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Growth of new cases slowing in New York state, MA and FL saw faster growth last week

Within US, Covid-19 cases have so far grown the fastest in New York state, with 50% growth per day until a week ago. Last week, this growth slowed to a 16% increase in new cases per day. Currently reported cases are now around 75,000.

Neighboring state New Jersey has seen 28% growth per day over the last 7 days, with 21,000 reported cases.

Five states follow, each with about 7,500 reported infected cases. Reported cases in Massachusetts grew the fastest last week (28% per day), followed by Florida (24%), Michigan (23%), California (16%) and Washington (13%).

Other states have around 55,000 reported cases combined, bringing the US total of reported cases to around 187,000 in total.

This number pales in comparison to our estimates. According to our model, estimated true infected cases are likely around 2 million, meaning that approximately 9% of infected people are actually reported as infected.
Outbreak status and outlook: Americas and Europe

New cases peaked in most US states, but could take off again if quarantines are loosened

Number of new cases, reported and estimated
Cases (log scale)

Most US states introduced social distancing measures around two weeks ago, including the closure of schools and universities, and the banning of larger gatherings. The result of this is visible in our model for new true infected cases, which peaked for New York 15 March at 55,000 new infected people in one day. Around 30,000 new people are still infected every day in the state according to our model, but this will decline going forward due to the current partial curfew.

Here we show the likely development of the virus spread in two scenarios. The fixed lines illustrate the Effective Prevention Scenario, where current quarantine and social distancing measures are kept for the whole of April.

The dotted line shows a Soft Mitigation scenario, as previously described. According to the trigger points previously outlined (ICU bed capacity at more than 50% utilization), only New York is likely to maintain current measures for another three weeks. All other states will likely loosen quarantines, which our simulation shows will result in the steady growth of cases for about three weeks. All states will then reach a similar number of new people being infected per day, around 40,000-80,000 people per day (depending on the state’s population). At this point in time, these states will see ICU bed need exceed 50% of current capacity. ICU bed need will continue to climb for another 12 days despite the second implementation of new strict quarantine rules due to the 12 day lag from onset, to ICU need.

Source: Rystad Energy Covid-19 research and analysis
Are quarantine measures working in the US? Yes, overall traffic is down 34%.

This overview shows the reduction in traffic in major US cities over the last 10 days. Overall traffic is down 34% on average. The largest reduction (a result of the strictest quarantine measures) can be seen in New York, New Jersey, Washington DC, Washington state, Illinois and California. The least traffic reduction is observed in mid continent states like Oklahoma, Kansas, Iowa and Nebraska. State figures are weighted by population in each city.

Source: Rystad Energy global city traffic database
Outbreak status and outlook: Americas and Europe

South American countries have, so far, seen less reported cases

Number of reported cases
Cases (log scale)

In South America, 15,500 people are reported infected, of which the seven largest nations are shown here to the left. This number has grown from 6,000 only a week ago, or a 14% increase per day.

The number of fatalities has been 381, growing by 23% per day over the last week. 42% of these were in Brazil.

According to our simulations, there are currently around 500,000 infected people in South America, of which only 5% are reported as infected.

Still, South American countries are learning from other countries and have swiftly implemented strict quarantine measures.

Source: Rystad Energy Covid-19 research and analysis
Are quarantine measures working in the Americas? Yes, overall traffic is 38% down

Reduced traffic in American cities, summarized by country
Share reduction versus regular traffic

<table>
<thead>
<tr>
<th>Continent</th>
<th>Country</th>
<th>Monday</th>
<th>Tuesday</th>
<th>Wednesday</th>
<th>Thursday</th>
</tr>
</thead>
<tbody>
<tr>
<td>America N</td>
<td>United States</td>
<td>18%</td>
<td>39%</td>
<td>43%</td>
<td>44%</td>
</tr>
<tr>
<td></td>
<td>Mexico</td>
<td>20%</td>
<td>39%</td>
<td>43%</td>
<td>44%</td>
</tr>
<tr>
<td></td>
<td>Canada</td>
<td>39%</td>
<td>39%</td>
<td>43%</td>
<td>43%</td>
</tr>
<tr>
<td>America S</td>
<td>Brazil</td>
<td>29%</td>
<td>33%</td>
<td>39%</td>
<td>43%</td>
</tr>
<tr>
<td></td>
<td>Argentina</td>
<td>32%</td>
<td>32%</td>
<td>31%</td>
<td>37%</td>
</tr>
<tr>
<td></td>
<td>Colombia</td>
<td>76%</td>
<td>73%</td>
<td>55%</td>
<td>55%</td>
</tr>
<tr>
<td></td>
<td>Venezuela</td>
<td>59%</td>
<td>52%</td>
<td>34%</td>
<td>31%</td>
</tr>
<tr>
<td></td>
<td>Chile</td>
<td>90%</td>
<td>84%</td>
<td>32%</td>
<td>31%</td>
</tr>
<tr>
<td></td>
<td>Peru</td>
<td>54%</td>
<td>53%</td>
<td>54%</td>
<td>51%</td>
</tr>
<tr>
<td></td>
<td>Dominican Republic</td>
<td>68%</td>
<td>52%</td>
<td>63%</td>
<td>51%</td>
</tr>
<tr>
<td></td>
<td>Ecuador</td>
<td>87%</td>
<td>64%</td>
<td>32%</td>
<td>31%</td>
</tr>
<tr>
<td></td>
<td>Bolivia</td>
<td>80%</td>
<td>82%</td>
<td>71%</td>
<td>71%</td>
</tr>
<tr>
<td></td>
<td>Honduras</td>
<td>41%</td>
<td>43%</td>
<td>25%</td>
<td>20%</td>
</tr>
<tr>
<td></td>
<td>Guatemala</td>
<td>71%</td>
<td>55%</td>
<td>39%</td>
<td>45%</td>
</tr>
<tr>
<td></td>
<td>Puerto Rico</td>
<td>37%</td>
<td>52%</td>
<td>35%</td>
<td>56%</td>
</tr>
<tr>
<td></td>
<td>Haiti</td>
<td>88%</td>
<td>49%</td>
<td>56%</td>
<td>57%</td>
</tr>
<tr>
<td></td>
<td>Paraguay</td>
<td>61%</td>
<td>53%</td>
<td>34%</td>
<td>52%</td>
</tr>
<tr>
<td></td>
<td>Guinea</td>
<td>82%</td>
<td>68%</td>
<td>45%</td>
<td>43%</td>
</tr>
<tr>
<td></td>
<td>Uruguay</td>
<td>68%</td>
<td>45%</td>
<td>16%</td>
<td>12%</td>
</tr>
<tr>
<td></td>
<td>Panama</td>
<td>37%</td>
<td>38%</td>
<td>45%</td>
<td>49%</td>
</tr>
<tr>
<td></td>
<td>Costa Rica</td>
<td>36%</td>
<td>34%</td>
<td>46%</td>
<td>46%</td>
</tr>
<tr>
<td></td>
<td>El Salvador</td>
<td>52%</td>
<td>51%</td>
<td>43%</td>
<td>61%</td>
</tr>
<tr>
<td></td>
<td>Nicaragua</td>
<td>20%</td>
<td>21%</td>
<td>24%</td>
<td>29%</td>
</tr>
<tr>
<td></td>
<td>Jamaica</td>
<td>14%</td>
<td>13%</td>
<td>28%</td>
<td>28%</td>
</tr>
<tr>
<td></td>
<td>Bahamas</td>
<td>38%</td>
<td>38%</td>
<td>56%</td>
<td>51%</td>
</tr>
</tbody>
</table>

- This overview shows the reduction in traffic in major cities in the Americas over the last 10 days.
- Overall traffic is down 38% on average.
- The largest reduction (a result of the strictest quarantine measures) can be seen in South America, in particular in Colombia, Peru, Dominican Republic, Ecuador and Bolivia with around a 70% decrease in traffic.
- The least traffic reduction is observed in Mexico, Chile and Uruguay.
- Country figures are weighted by population in each city.

Source: Rystad Energy global city traffic database
Outbreak status and outlook: Americas and Europe

Number of cases in Canada expected to grow as measures are not yet strict enough

Canada, estimated total and active true cases
Number of cases*; Effective Prevention Scenario

Canada has yet to enforce very strict quarantine measures, however all schools closed nationwide on 17 March.

We estimate the current true number of total cases is likely around 100,000, more than fourteen times the 7,000 reported cases. In our Effective Prevention Scenario we expect the total true number of cases will grow to 200,000 by the end of April. We expect this number will continue to grow as measures continue to be insufficient to stop the spread.

The lower chart shows the daily number of new cases. We note that the number of reported new cases is still on an upwards trend.

For further details please see our Covid-19 dashboard at rystadenergy.com.

Source: Rystad Energy research and analyses; Worldometer; *Assumes current measures in place during forecasting interval
The UK may have passed peak active cases after a very strict lockdown was implemented

UK, estimated total and active true cases
Number of cases*; Effective Prevention Scenario

<table>
<thead>
<tr>
<th>Number of cases*</th>
<th>Reported cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>22,141</td>
<td>0</td>
</tr>
<tr>
<td>100,000</td>
<td></td>
</tr>
<tr>
<td>200,000</td>
<td></td>
</tr>
<tr>
<td>300,000</td>
<td></td>
</tr>
<tr>
<td>400,000</td>
<td></td>
</tr>
<tr>
<td>500,000</td>
<td></td>
</tr>
<tr>
<td>600,000</td>
<td></td>
</tr>
<tr>
<td>700,000</td>
<td></td>
</tr>
<tr>
<td>800,000</td>
<td></td>
</tr>
</tbody>
</table>

The UK implemented a very strict nationwide lockdown on 20 March – a complete turnaround from the former strategy of only slowing the spread and protecting people in risk groups.

We estimate the current true number of total cases 600,000 which is almost thirty times the 22,000 of reported cases. However, we estimate about 400,000 are currently affected, which we expect is the peak.

The lower chart shows the daily reported new cases and deaths. We note that the number of new cases and deaths is still climbing. This is as expected, as the reported numbers have a delay compared to the true numbers. (For example, reported cases keep climbing as more and more people feel symptoms.) We expect to see the number of new cases begin to decline in early April – around two weeks after the very strict lockdown was implemented.

For further details please see our Covid-19 dashboard at rystadenergy.com.

Source: Rystad Energy research and analyses; Worldometer; *Assumes current measures in place during forecasting interval
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Appendix
We now see global oil demand in 2020 contracting by 6.4% from 2019.

Global oil demand impact analysis Covid-19 – Effective Prevention Scenario

We now estimate 2.5 billion barrels lower oil demand in 2020 due to the virus outbreak, with average daily demand of 93.5 million bpd for the year, i.e. a 6.4% contraction vs the 2019 level of 100 million bpd.

In the alternative "Manage the Virus" scenario we see a more prolonged impact through the year with average demand of only 91.4 million bpd.

A large part of the global population is currently working from home, drastically reducing fuel demand for road transport. Jet fuel use is also dropping sharply as 80% of international long-haul flights are cancelled.

Source: Rystad Energy Research and Analysis
The negative impact on oil demand could amount to as much as 20 million bpd over the next two months.

The impact in East Asia is now estimated to have been a drop of 6.3 million bpd in February. In the rest of the world, we now expect the impact to be three times as high and over a longer period.

Some 2.2 billion barrels, or 7.3% of global oil demand, is poised to be removed from the supply/demand balances. Our estimate before the virus outbreak was that global oil demand in 2020 would grow 1% year-on-year. Now we see global oil demand contracting by 6.4% in 2020 year-on-year.

In the "Manage the Virus" scenario, more people will have to be quarantined over a longer period, thus causing an even more dramatic impact on oil demand throughout the year.

Source: Rystad Energy research and analysis
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Impact on oil demand: Americas and Europe – North America

We see a drop of 5-6 million bpd in April and a drop of 600 million barrels before September

North American oil demand in the Effective Prevention Scenario, impact vs pre-virus estimates
Thousand bpd

We see state-level and city-level quarantine measures being implemented across the US, although still no federal quarantine measures have been taken.

Existing and future quarantine measures and travel restrictions in the northern states and Canada are likely to peak in April 2020.

We expect future travel restrictions and quarantine measures to peak in the southern states in May 2020.

As a result, we expect North American oil demand to hit bottom at 17 million bpd in April and 19 million bpd in May 2020, compared to our pre-virus estimate of close to 23 million bpd.

As more cities and states introduce quarantine measures, we expect a more significant road fuel impact than in our previous report last week.

We now forecast road fuel demand to be reduced by 3.7 million bpd in April and 1.9 million bpd in May 2020.

Overall, oil demand will be cut by almost 6 million bpd in April and about 4.3 million bpd in the second quarter of 2020 on average.

In the alternative “Manage the Virus” scenario, we see restrictions lasting longer and affecting demand in the fourth quarter of 2020 as well.

Source: Rystad Energy research and analysis
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Impact on oil demand: Aviation

Dramatic impact on jet fuel: -4 million bpd in May; down 750 million barrels or 28% in 2020

Global jet fuel consumption growth year-on-year

The bottom for jet fuel will be seen in late April or early May, as the entire world fights against further spread of the virus.

Above and beyond the restrictions being imposed, travelers themselves are voluntarily suspending journeys.

We expect fewer cancellations in June as flights come back gradually ahead of the summer.

The summer peak will be lower than usual due to fewer long-haul flights, as many travelers are likely to prefer domestic vacations.

Source: Rystad Energy research and analysis
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Impact on oil demand: Ground transportation

Global traffic down 36% as movement restrictions sweep India and Southeast Asia

Reduction in traffic* versus normal levels
Percent difference year-on-year, three-day moving average

<table>
<thead>
<tr>
<th>Country</th>
<th>Traffic Reduction</th>
</tr>
</thead>
<tbody>
<tr>
<td>United States</td>
<td>-47%</td>
</tr>
<tr>
<td>France</td>
<td>-53%</td>
</tr>
<tr>
<td>Iran</td>
<td>-54%</td>
</tr>
<tr>
<td>India</td>
<td>-61%</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>-43%</td>
</tr>
<tr>
<td>Brazil</td>
<td>-42%</td>
</tr>
<tr>
<td>United States</td>
<td>-47%</td>
</tr>
<tr>
<td>France</td>
<td>-53%</td>
</tr>
<tr>
<td>Iran</td>
<td>-54%</td>
</tr>
<tr>
<td>India</td>
<td>-61%</td>
</tr>
</tbody>
</table>

*Traffic refers to light-duty vehicle traffic.

Source: TomTom Traffic Index; Google Maps; Rystad Energy research and analysis
Impact on oil demand: Ground transportation

Road traffic in New York down 56% with traffic nationally likely to follow suit

Average state-by-state reduction in traffic versus last year
Percent difference year-on-year, three-day moving average

- Last week we presented historical declines in US road traffic.
- As the situation in many states has become more severe, we have seen further decreases in road traffic this week in all states in our dataset.
- An exception was Minnesota, which stayed flat at last week’s levels.
- Among the three most populous states, California and Texas both experienced 50% traffic reductions, while Florida was down 39% from average 2019 levels.
- Unsurprisingly, New York experiences the most severe drawdown at 56%, a level we currently only see in five other countries.

Source: TomTom Traffic Index; Rystad Energy research and analysis
Impact on oil demand: Ground transportation

Road traffic in India down 60% as the country prepares for a month in lockdown

Average state-by-state reduction for traffic in India versus normal levels
Percent difference, year-on-year

- Real-time traffic data started showing declines for traffic in Indian cities around mid-March, indicating that some companies already had enforced a work-from-home policy among employees.
- Traffic dropped significantly in the days following Prime Minister Narendra Modi’s speech on 19 March urging everyone to stay at home in a Janata Curfew.
- After enforcing a 21-day national lockdown on 24 March, traffic levels in India have declined by around 60% from normal levels. India is the world’s third-largest consumer of road fuel, and the demand effect from this is therefore expected to be huge.

Source: TomTom Traffic Index; Google Maps; Rystad Energy research and analysis
Impact on oil demand: Ground transportation

Road traffic in most major global hubs is down over 30% from normal levels

Traffic levels for last 20 working days compared to average 2019 levels
Percent difference, year-on-year

Asia

Europe & Middle East

Americas

Source: TomTom Traffic Index; Google Maps; Rystad Energy research and analysis
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Impact on oil demand: Road fuel

Road fuel consumption will fall from 48 million to 35 million bpd in April, down 6.6% for 2020

Global gasoline and road diesel consumption

Thousand bpd

A large part of the global population – from East Asia to Europe and North America – is currently working from home.

Over the last week, these restrictions have extended to Africa and Latin America.

France now observes a full curfew in large cities. Such war-like restrictions have over the last week also been introduced in Germany, Spain and the rest of Europe, even in the UK.

TomTom data indicates that commuting rush-hour traffic dropped from more than 50% congestion levels to less than 10% across Europe last week.

The following weeks will see very little commuting traffic in the largest cities in almost all parts of the world.

On all continents, leisure activities have come to a halt as most people now prefer isolation, even during the weekends.

The impact on heavy-duty transport, which represents 22% of total road fuel demand, will be much less pronounced.

Source: Rystad Energy research and analysis
Impact on oil demand: Road fuel

Global road fuel consumption drops 13.4 million bpd in April, down 1.2 billion barrels in 2020

Global gasoline and road diesel consumption growth year-on-year

Source: Rystad Energy research and analysis
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Impact on oil demand: Global market outlook – Service prices

Expect service prices down 8% in 2020 – drilling contractors hit the hardest

**Service price index from 2014 to 2020**
Normalized to 2014=100 for each segment

- During the previous downturn, service prices fell by about 20% on average from 2014 to 2017.
- This time we expect service prices to come down by about 8% on average, although the impact is likely to be more severe for drilling contractors, given that the market experienced a substantial increase in service prices last year.

Source: Rystad Energy Cost Analytics
With the new oil price outlook, upstream free cash flow (FCF) for E&P companies is poised for a significant fall in 2020. Assuming an average Brent oil price of $30 per barrel this year, the sector’s FCF is expected to drop to about $59 billion. But if the average Brent oil price ends up at $20 per bbl in 2020, FCF will plummet to nearly zero.

The $30 per bbl scenario, while representing a huge drop in FCF versus 2018 and 2019, would in fact be considerably better than the cash flow generated by the industry as recently as 2015 and 2016.

This shows that the E&P companies are in a much better position now than they were during the previous oil price collapse.

Impact on oil demand: Global market outlook – Cash Flow Situation

With oil at $30, FCF from public E&Ps will drop 70% YOY – better be prepared this time

* Excludes China Source: Rystad Energy UCube March 2020
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With billions in debt payments approaching, shale E&P companies are likely to put the brakes on activity much faster than what was seen during the previous downturn five years ago.

The chart shows the amount of maturing debt and interest expenses scheduled for the top 29 US light tight oil public producers, which collectively accounted for about half of last year’s US light tight oil production. During the next seven years, these operators are expected to spend about $133 billion on debt instalments and interest unless further debt refinancing is applied. Interest payments for the group vary between $5 billion and $8 billion annually, while the maturities and interest schedule totals roughly $27.2 billion for the remainder of 2020 and 2021. In 2019 the same peer group generated $51.1 billion in cash flow from operations (CFO) while spending $45.9 billion in capex.

Although operators made a concerted effort in 2019 to balance spending and to deleverage, the prevailing low commodity prices and continuous equity investor pressure point towards a persistent lack of financing to deal with the obligations burden as fewer companies will be able to break even. The benchmark is also highly impacted by Occidental Petroleum’s debt burden after its acquisition of Anadarko. Other companies that have more than $0.5 billion in scheduled debt payments in 2020-2021 include EOG, Noble Energy, Pioneer Natural Resources, Whiting Petroleum and WPX Energy.

*Peer group of 29 operators: APA, CPE, CHK, XEC, CXO, COP, CLR, DVN, FANG, ESTE, EOG, HES, HPR, LPI, MRO, MTDR, MUR, NBL, OAS, OVV, OXY, PE, PDCE, PXD, QEP, ROSE, SM, WLL, WPX

Source: Company reporting, Rystad Energy research and analysis
As the number of Covid-19 cases in the US continues to grow exponentially (now totalling more than 185,000), a lot of uncertainty remains on how the country will react to stop the pandemic. So far 18 states have announced a full lockdown and 12 only a partial one. But the duration of the quarantine still remains to be seen and it is still uncertain if other states will also be forcing people to stay at home.

We have defined five scenarios to try to estimate the potential impact of a lockdown, where in Scenario 1 only the states that have announced a lockdown continue with reduced activities for one month. In the most extreme case (Scenario 5) all states apply a full lockdown for a period of two months. We also apply reduced demand ratios to the various sectors based on the effect we have seen in other countries so far. The commercial sector is the one most affected, with a drop of around 31% as a result of a full lockdown, while power demand has dropped between 7% and 19% in various countries. Given that around 37% of total gas demand in the US is from the power sector, this is where a major drop in demand could be expected. Finally we assume a drop of 2% in total demand as a result of slower economic growth during the rest of the year.

Based on the different scenarios, demand could drop between 5% and 14% during 2Q 2020, which would represent a major blow for gas producers that are already struggling in the low price environment. In yearly terms, demand could drop between 2.7% and 4.4% from our original 2020 forecast, depending on the final measures taken. The drop in demand could be less accentuated if more coal-to-gas switching takes place within the power sector. So far coal prices have not dropped to the same extent, incentivising more gas power generation.

Source: Rystad Energy research and analysis, GasMarketCube, EIA
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Public health impact

Strict preventative measures reduce the spread of the virus and “flatten the curve” of infection. This implies that the number of people infected at any point in time is reduced, and fewer patients are in need of intensive care.

If the number of people in intensive care is lower than the hospital capacity in a given region, this in turn implies fewer people are at risk of dying.

Economic impact

Strict preventative measures such as school closures, home quarantine and travel bans imply reduced revenues for many companies and massive layoffs.

The economic impact will increase relative to the severity of quarantine measures implemented and the time period the measures are in place. At a certain point, governments will consider easing measures either because they have control of the virus or because the economic impact is too severe.

Source: Rystad Energy research and analyses
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  • Methodolgy behind the models
# Scenarios for the Covid-19 pandemic

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Government policy</th>
<th>Benefits</th>
<th>Issues</th>
<th>Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do nothing (let outbreak occur)</td>
<td>• Do nothing</td>
<td>• Economy as usual</td>
<td>• 90% of intensive care patients get no help</td>
<td>• Limited negative market impact</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Life as usual (if not sick)</td>
<td>• Higher fatality rates</td>
<td>• Negative moral impact – unnecessary loss of loved ones</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• “Finished” in 4 months</td>
<td>• Health sector collapse</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Economy hurt anyway if global recession</td>
<td></td>
</tr>
<tr>
<td>Manage the virus (mitigate or slow outbreak)</td>
<td>• No cultural activity</td>
<td>• Plan for health system capacity to handle intensive care cases (although this has uncertainty)</td>
<td>• Takes a long time – 6 to 22 months</td>
<td>• Severe and long-lasting economic impact</td>
</tr>
<tr>
<td></td>
<td>• Case isolation, home quarantine, social distancing</td>
<td>• Immunity for future similar epidemics</td>
<td>• Hurts economy</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Travel down by ~90%</td>
<td>• Vital functions still working</td>
<td>• Weakest groups in dire straits</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Quarantines challenge free movement, liberal values</td>
<td></td>
</tr>
<tr>
<td>Effective prevention (suppress or stop outbreak)</td>
<td>• As above, plus…</td>
<td>• Mission accomplished in 8 weeks, then back to normal</td>
<td>• Too late to stop the virus many places</td>
<td>• Very sudden market collapse, but for a short period of time</td>
</tr>
<tr>
<td></td>
<td>• Curfew for all non-essential workers and penalties for non compliance</td>
<td>• Complete city/country isolation</td>
<td>• May challenge human rights and liberal values</td>
<td>• Ethically the right decision, but concerns the infection will comeback</td>
</tr>
<tr>
<td></td>
<td>• Complete isolation between regions and countries</td>
<td>• Avoid fatalities - hope vaccination will occur before virus comeback</td>
<td>• When “finished”, we could see virus resurgence</td>
<td></td>
</tr>
</tbody>
</table>

**Appendix: Scenario definitions**

Scenarios for the Covid-19 pandemic
Since the beginning of March, Worldometer has reported serious/critical cases. These figures are taken from national health authorities or public sources.

Can we trust these figures?

Yes and no!

For some countries, figures are flat or 0 for many days, and then suddenly we see a big jump. E.g. for US (reported flat at 64 up to March 21th, then reported at 795), Germany (reported flat at 23 up to March 26th, then reported at 1581) and Iran (reported at 0 until March 26th, and then reported at 2746)

For other countries, figures are almost perfectly correlated between reported actual or active cases, indicating that one of the figures is calculated based on the other (China, Spain, France, ..)

We have checked the correlation between active cases and serious/critical cases with 0,1,2,…9 day delays. We have found that the best correlation was after an average of 5.6 days. Thus, we will use a 6 day delay for countries where data is incomplete.

South Korea, Iceland and Norway have done the most testing. For these countries the number of serious/critical cases is between 0.7% and 3.2% of active reported cases. The Norwegian Institute of Public Health (FHI) expects that 0.25% of those infected will need an ICU bed, while our own calibration concludes that 0.5% infected will require ICU treatment.

### Country Max correlation Date (D) for best correlation Days delay giving highest correlation (x) Reported active cases day D Reported critical cases day D+x Active reported cases per ICU (Day D+x versus D) Share ICU of all active cases N days before

<table>
<thead>
<tr>
<th>Country</th>
<th>Max correlation</th>
<th>Date (D) for best correlation</th>
<th>Days delay giving highest correlation (x)</th>
<th>Reported active cases day D</th>
<th>Reported critical cases day D+x</th>
<th>Active reported cases per ICU (Day D+x versus D)</th>
<th>Share ICU of all active cases N days before</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spain</td>
<td>0.9951</td>
<td>23.mar.20</td>
<td>6.0</td>
<td>29 470</td>
<td>4 165</td>
<td>7</td>
<td>14.1%</td>
</tr>
<tr>
<td>France</td>
<td>0.9968</td>
<td>24.mar.20</td>
<td>3.0</td>
<td>17 923</td>
<td>3 787</td>
<td>5</td>
<td>21.1%</td>
</tr>
<tr>
<td>China</td>
<td>0.9958</td>
<td>11.mar.20</td>
<td>6.0</td>
<td>16 051</td>
<td>3 226</td>
<td>5</td>
<td>20.1%</td>
</tr>
<tr>
<td>Iran</td>
<td>0.7726</td>
<td>23.mar.20</td>
<td>6.0</td>
<td>12 861</td>
<td>3 206</td>
<td>4</td>
<td>24.9%</td>
</tr>
<tr>
<td>USA</td>
<td>0.9887</td>
<td>23.mar.20</td>
<td>6.0</td>
<td>42 609</td>
<td>2 948</td>
<td>14</td>
<td>6.9%</td>
</tr>
<tr>
<td>Italy</td>
<td>0.9950</td>
<td>19.mar.20</td>
<td>6.0</td>
<td>33 190</td>
<td>2 498</td>
<td>13</td>
<td>7.5%</td>
</tr>
<tr>
<td>Germany</td>
<td>0.9583</td>
<td>23.mar.20</td>
<td>6.0</td>
<td>28 480</td>
<td>1 979</td>
<td>14</td>
<td>6.9%</td>
</tr>
<tr>
<td>Netherlands</td>
<td>0.9894</td>
<td>23.mar.20</td>
<td>5.0</td>
<td>4 534</td>
<td>914</td>
<td>5</td>
<td>20.2%</td>
</tr>
<tr>
<td>Belgium</td>
<td>0.9967</td>
<td>24.mar.20</td>
<td>5.0</td>
<td>3 686</td>
<td>867</td>
<td>4</td>
<td>23.5%</td>
</tr>
<tr>
<td>Turkey</td>
<td>0.9957</td>
<td>23.mar.20</td>
<td>6.0</td>
<td>1 492</td>
<td>568</td>
<td>3</td>
<td>38.1%</td>
</tr>
<tr>
<td>Switzerland</td>
<td>0.9471</td>
<td>22.mar.20</td>
<td>7.0</td>
<td>7 245</td>
<td>301</td>
<td>24</td>
<td>4.2%</td>
</tr>
<tr>
<td>Brazil</td>
<td>0.9720</td>
<td>23.mar.20</td>
<td>6.0</td>
<td>1 888</td>
<td>296</td>
<td>6</td>
<td>15.7%</td>
</tr>
<tr>
<td>Czechia</td>
<td>0.9734</td>
<td>23.mar.20</td>
<td>6.0</td>
<td>1 228</td>
<td>45</td>
<td>27</td>
<td>3.7%</td>
</tr>
<tr>
<td>Sweden</td>
<td>0.9887</td>
<td>23.mar.20</td>
<td>6.0</td>
<td>2 005</td>
<td>255</td>
<td>8</td>
<td>12.7%</td>
</tr>
<tr>
<td>Austria</td>
<td>0.9398</td>
<td>20.mar.20</td>
<td>9.0</td>
<td>2 634</td>
<td>187</td>
<td>14</td>
<td>7.1%</td>
</tr>
<tr>
<td>UK</td>
<td>0.9133</td>
<td>21.mar.20</td>
<td>7.0</td>
<td>4 692</td>
<td>163</td>
<td>29</td>
<td>3.5%</td>
</tr>
<tr>
<td>Canada</td>
<td>0.9114</td>
<td>21.mar.20</td>
<td>8.0</td>
<td>1 295</td>
<td>120</td>
<td>11</td>
<td>9.3%</td>
</tr>
<tr>
<td>Denmark</td>
<td>0.9898</td>
<td>23.mar.20</td>
<td>6.0</td>
<td>1 425</td>
<td>113</td>
<td>13</td>
<td>7.9%</td>
</tr>
<tr>
<td>Portugal</td>
<td>0.9678</td>
<td>24.mar.20</td>
<td>4.0</td>
<td>2 307</td>
<td>89</td>
<td>26</td>
<td>3.9%</td>
</tr>
<tr>
<td>Norway</td>
<td>0.9393</td>
<td>24.mar.20</td>
<td>2.0</td>
<td>2 848</td>
<td>70</td>
<td>41</td>
<td>2.6%</td>
</tr>
<tr>
<td>Greece</td>
<td>0.9894</td>
<td>19.mar.20</td>
<td>9.0</td>
<td>439</td>
<td>66</td>
<td>7</td>
<td>15.0%</td>
</tr>
<tr>
<td>Ireland</td>
<td>0.9807</td>
<td>24.mar.20</td>
<td>4.0</td>
<td>1 317</td>
<td>59</td>
<td>22</td>
<td>4.5%</td>
</tr>
<tr>
<td>Ecuador</td>
<td>0.9481</td>
<td>19.mar.20</td>
<td>8.0</td>
<td>256</td>
<td>58</td>
<td>4</td>
<td>22.7%</td>
</tr>
<tr>
<td>Japan</td>
<td>0.9683</td>
<td>23.mar.20</td>
<td>4.0</td>
<td>851</td>
<td>56</td>
<td>15</td>
<td>6.6%</td>
</tr>
<tr>
<td>S. Korea</td>
<td>0.9347</td>
<td>09.mar.20</td>
<td>2.0</td>
<td>7 259</td>
<td>54</td>
<td>134</td>
<td>0.7%</td>
</tr>
<tr>
<td>Malaysia</td>
<td>0.9858</td>
<td>23.mar.20</td>
<td>6.0</td>
<td>1 345</td>
<td>73</td>
<td>18</td>
<td>5.4%</td>
</tr>
<tr>
<td>Israel</td>
<td>0.9953</td>
<td>22.mar.20</td>
<td>4.0</td>
<td>1 033</td>
<td>46</td>
<td>22</td>
<td>4.5%</td>
</tr>
<tr>
<td>Moldova</td>
<td>1.0000</td>
<td>23.mar.20</td>
<td>6.0</td>
<td>106</td>
<td>33</td>
<td>3</td>
<td>31.1%</td>
</tr>
<tr>
<td>Peru</td>
<td>1.0000</td>
<td>23.mar.20</td>
<td>6.0</td>
<td>389</td>
<td>40</td>
<td>10</td>
<td>10.3%</td>
</tr>
<tr>
<td>Finland</td>
<td>0.9753</td>
<td>20.mar.20</td>
<td>9.0</td>
<td>440</td>
<td>32</td>
<td>14</td>
<td>7.3%</td>
</tr>
<tr>
<td>Serbia</td>
<td>1.0000</td>
<td>23.mar.20</td>
<td>6.0</td>
<td>243</td>
<td>25</td>
<td>10</td>
<td>10.3%</td>
</tr>
<tr>
<td>Australia</td>
<td>0.9602</td>
<td>23.mar.20</td>
<td>5.0</td>
<td>1 762</td>
<td>23</td>
<td>77</td>
<td>1.3%</td>
</tr>
<tr>
<td>Azerbaijan</td>
<td>0.9525</td>
<td>23.mar.20</td>
<td>6.0</td>
<td>61</td>
<td>23</td>
<td>3</td>
<td>37.7%</td>
</tr>
<tr>
<td>Panama</td>
<td>1.0000</td>
<td>23.mar.20</td>
<td>6.0</td>
<td>309</td>
<td>32</td>
<td>10</td>
<td>10.4%</td>
</tr>
<tr>
<td>Singapore</td>
<td>0.9463</td>
<td>22.mar.20</td>
<td>7.0</td>
<td>309</td>
<td>19</td>
<td>16</td>
<td>6.1%</td>
</tr>
<tr>
<td>Iceland</td>
<td>0.9261</td>
<td>24.mar.20</td>
<td>5.0</td>
<td>595</td>
<td>19</td>
<td>31</td>
<td>3.2%</td>
</tr>
<tr>
<td>San Marino</td>
<td>0.9761</td>
<td>23.mar.20</td>
<td>6.0</td>
<td>163</td>
<td>16</td>
<td>10</td>
<td>9.8%</td>
</tr>
<tr>
<td>Diamond Princess</td>
<td>0.9352</td>
<td>21.mar.20</td>
<td>6.0</td>
<td>137</td>
<td>15</td>
<td>9</td>
<td>10.9%</td>
</tr>
<tr>
<td>Romania</td>
<td>0.9939</td>
<td>13.mar.20</td>
<td>8.0</td>
<td>63</td>
<td>14</td>
<td>5</td>
<td>22.2%</td>
</tr>
<tr>
<td>Slovenia</td>
<td>0.9870</td>
<td>22.mar.20</td>
<td>4.0</td>
<td>412</td>
<td>14</td>
<td>29</td>
<td>3.4%</td>
</tr>
<tr>
<td>Croatia</td>
<td>0.9674</td>
<td>22.mar.20</td>
<td>5.0</td>
<td>248</td>
<td>14</td>
<td>18</td>
<td>5.6%</td>
</tr>
<tr>
<td>Thailand</td>
<td>0.9497</td>
<td>19.mar.20</td>
<td>6.0</td>
<td>229</td>
<td>11</td>
<td>21</td>
<td>4.8%</td>
</tr>
<tr>
<td>Pakistan</td>
<td>0.9779</td>
<td>21.mar.20</td>
<td>8.0</td>
<td>629</td>
<td>11</td>
<td>57</td>
<td>1.7%</td>
</tr>
<tr>
<td>Luxembourg</td>
<td>0.9738</td>
<td>13.mar.20</td>
<td>4.0</td>
<td>26</td>
<td>10</td>
<td>3</td>
<td>38.5%</td>
</tr>
</tbody>
</table>

Source: Worldometer; Rystad Energy Covid-19 research team
Global oil demand growth is strongly related to GDP growth. The relationship is given by oil demand intensity, which gradually decreases with improved fuel efficiency and – going forward – electric vehicle market penetration. The correlation is not fully linear due to demand elasticities.

Our research indicates that pre-virus global oil demand in 2020 would be flat if GDP growth was to slow down to 2% (IMF: “global recession”), while oil demand growth would be 1 million bpd if global GDP was to expand by 3%.

However, based on the latest reporting on the spread of Covid-19 and the state of the stock markets, some macro analysts now see global GDP contracting.

Our latest estimate for a global oil demand contraction of 4 million barrels per day is in line with this empiric model of correlation between oil demand and GDP.
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