

## Methodology

### Digital Fuel Monitor 10<sup>th</sup> release 2H2018

Digital Fuel Monitor tracks 4G internet access prices and data caps in EU and OECD countries.

Digital Fuel Monitor tracks two types of 4G LTE plans: 4G LTE smartphone plans with at least 1,000 national minutes and 4G LTE mobile broadband or wireless home broadband (data-only) plans.

The Digital Fuel Monitor 10<sup>th</sup> release 2H2018 tracked 1,637 4G LTE tariff plans offered by 141 operators and 43 major MVNOs in EU28 & OECD. During October 2018 4G LTE smartphone tariff plans with at least 1,000 or unlimited minutes were offered by all EU28 and OECD operators. In all EU28 & OECD markets smartphone plans with at least 1,000 minutes were the de facto monthly rolling plans offered by operators. Digital Fuel Monitor 10<sup>th</sup> release includes 957 smartphone tariff plans and 680 mobile broadband or wireless home broadband tariff plans. The 141 operators present in the 41 countries are part of 72 operator groups. Digital Fuel Monitor tracked tariff plans from the main brands of all 137 operators and as well from 55 sub-brands that are owned by operators and 43 independently owned Mobile Virtual Network Operators (MVNOs). Joint ventures between mobile network operators and third parties e.g. Tesco Mobile UK is presumed not to be independent and therefore are designated as sub-brands. Operators that have not yet launched 4G LTE with their own frequencies (e.g. LuxemburgOnline in Luxemburg) and operators that did not offer smartphone plans inclusive of 1,000 minutes allowance but only had per minute available charges (Max Telecom in Bulgaria) were excluded.

### Data collection methodology

All underlying data tariff plans were collected from public sources. Smartphone and mobile broadband tariff plan details were collected online from the operator websites during October 2018 (from the 1<sup>st</sup> of October till the 21<sup>th</sup> of October). Our data collection team could read and understand English, Finnish, Swedish, French, Greek and Hungarian. For the remaining operator web sites which were not available in any of these six languages the team used the automatic translation function of Google. The data collection team has taken and archived screen shots from every single operator tariff that was used in the comparative analysis and as well downloaded and archived the tariff terms and condition wherever readily available.

Digital Fuel Monitor 10<sup>th</sup> release 2H2018 includes 957 consumer monthly rolling 4G LTE smartphone tariff plans having a minimum of 1,000 national minutes and 680 mobile broadband or wireless home broadband tariff plans intended for fixed-to-mobile home broadband substitution that had a minimum 4G speed of 3 Mbps for supporting HD video streaming at all times. We logged all the SIM-only tariffs and in rare occasions tariffs with handset subsidies that have higher gigabyte volume allowance than the maximum possible that consumers could obtain with SIM-only tariffs. The following parameters have been collected for each tariff: the date and time of collection, the country, the operator name, the brand name of the operator, the brand type (operator main or sub-brand or MVNO), the price in local currency, the included data allowance, the included minute & SMS allowances, the maximum download speed of data if applicable, mobility restrictions if applicable (e.g. wireless home broadband plans intended for home usage only) handset subsidies if applicable, tariff name and any applicable options and finally the URL of the operator.

All commercial promotions available at the time of collection were considered (e.g. 2 months free if purchased online or 10% off if purchased before the 10<sup>th</sup> of October 2018). Bundle offers such as fixed broadband plans combined together with smartphone or mobile broadband plans or offers for special customer groups such as second family line for 25% off, youth offers, senior offers, etc. were excluded. If a tariff plan was cheaper with longer contract duration we logged in the database the lowest available price (e.g. 10% off for 24 month contract). If an operator did not offer SIM-only tariff plans (very rare) we logged the operator's cheapest available plans with handset subsidy that fulfilled all other conditions.

The database includes off-the-shelf tariff plans (e.g. RED S 10 GB, RED M 30 GB, RED L 50 GB) and as well added additional data or options that increase the total monthly data allowance wherever applicable. We only considered eligible monthly rolling data add-ons. One time use add-ons that expired in the end of the billing cycle were excluded. Promotions that temporarily increased the volume allowance or maximum speed were considered only if they were applicable for the entire duration of the tariff contract or in case of monthly rolling contracts for minimum 12 months.

No Purchase Power Parity (PPP) operation has been performed on the raw tariff plan prices. Prices in EUR are the retail VAT included prices found on the operator web sites. Prices in other national currencies have been converted to EUR by simply using the exchange rate displayed by Google on the day of collection.

The tariff monthly fee does not include one-off fees (activation porting, service etc). Such fees, with few exceptions, do not significantly increase the monthly tariff fee for the duration of the contract or when they applied for a 12 month period in monthly rolling tariffs.

## Plans with unlimited data volume

Any plan, in Digital Fuel Monitor 10<sup>th</sup> 2H2018 marketed as unlimited where the operator has named a finite volume and reserved the right to throttle the speed below 3 Mbps has been designated as a finite volume plan with a volume equal to the named de-prioritization/throttling volume (e.g. 22, 23, 50 or 75 GB for US operator unlimited plans). Unlimited plans in Digital Fuel Monitor 10<sup>th</sup> 2H2018 release are plans without a named finite volume and a speed of at least 3 Mbps at all times. TDC, Telia and Hutchison in Denmark sold plans with unlimited volume and a fair usage limit of 1,000 gigabytes (one thousand). These three plans were considered unlimited plans in our methodology due to their extremely high (practically unlimited for normal use) fair usage limit.

## Methodology for price metrics and charts

In the Digital Fuel Monitor 10<sup>th</sup> release 2H2018 we used two price metrics to analyse the tariff data. We used the maximum gigabytes that a certain amount of EUR (i.e. gigabytes for €5, €10, €15, €20, €25, €30, €40, €50, €60, €70 and €80) buys in a country and the fully allocated country median price per gigabyte. The maximum gigabytes that a certain amount of EUR buys in a country is the tariff plan among all the eligible tariffs we logged in our database that includes the most gigabytes for the given EUR basket while the fully allocated country median price per gigabyte is the median price of all the eligible tariffs we logged in our database for that country. The fully allocated price is calculated as the tariff monthly fee in EUR (that includes VAT) divided by the included gigabyte allowance.

Charts presenting these two metrics include all eligible tariffs from the operator main brand, their sub-brands or any MVNO that uses the operator network. All tariffs are included in the comparison irrespective if they restrict or not tethering (smartphone plans) or if they are intended for stationary home broadband use only (mobile broadband plans). Unlimited smartphone plans were assigned a finite volume of 250 GB while unlimited mobile broadband plans were assigned a finite volume of 1,000 GB (one thousand). 250 GB and 1,000 GB were the highest finite volume allowance that consumers could

buy by spending €80 per month (i.e. the highest EUR basket we analysed herein) in smartphone and mobile broadband plans respectively during October 2018 in at least one EU28 & OECD markets.

Please do let us know if you notice any broken links, incorrect links, tariff errors, other errors, any tariffs that met the criteria at the time of data collection which we missed, any MVNOs that we might missed and offer competitive data caps and prices or if you would like to make suggestions for improvements by emailing us at [research@rewheel.fi](mailto:research@rewheel.fi)