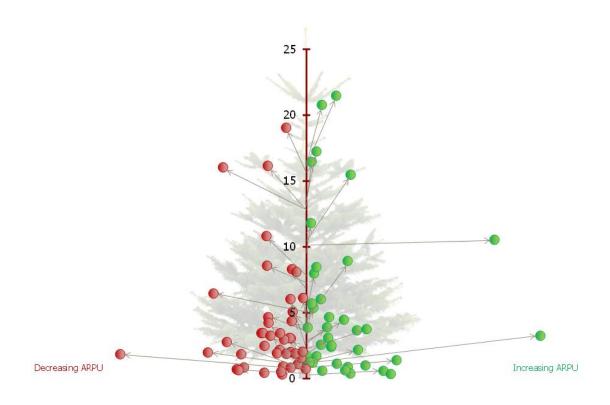**Industry analysis #1 2019**

Mobile data – full year 2018

All operators climbed the tree – 46% turned usage growth into ARPU growth

This is tefficient's 22nd public analysis on the development and drivers of mobile data. We have ranked 90 reporting or reported operators based on average data usage per SIM, total data traffic and revenue per gigabyte in 2018.

The data usage per SIM grew for all operators; everybody climbed the Christmas tree. 46% of operators could turn that data usage growth into ARPU growth – 54% could not. Read our analysis to see who delivered on "more for more" and who floated with the "more for less" stream.

Average consumption per SIM per month: Eleven operators now above 10 GB

Figure 1 shows the average mobile data usage for 90 reporting or reported[1] mobile operators globally with values both for the full year of 2018 and for the full year of 2017.

*) Calculated as country total minus all other (reporting) operators
**) Data traffic not reported, but calculated based on reported usage
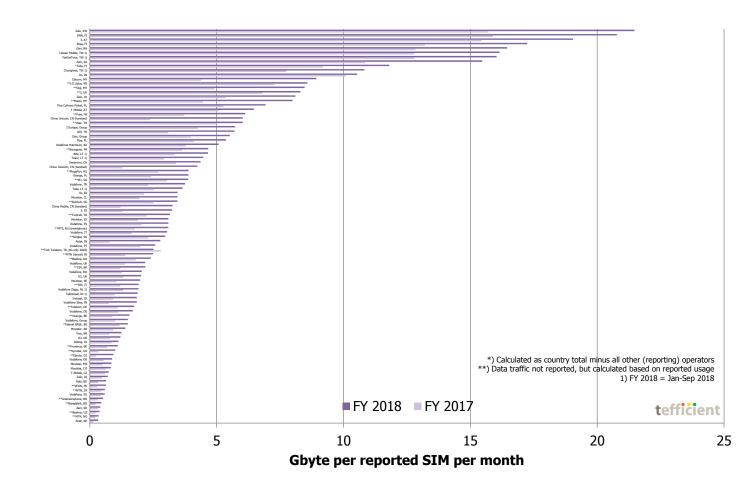1) FY 2018 = Jan-Sep 2018

Figure 1. Average data usage per reported SIM per month – all operators

As it's nearly impossible to read Figure 1 we will break it down into three regions of the world, but let's first identify the **global data usage leaders** – see Figure 2.

There is a change in the global top: **Zain Kuwait** has overtaken DNA Finland as the operator with the highest mobile data consumption per SIM. With **21.5 GB** of data per SIM per month, Zain Kuwait becomes the one to catch for operators who – like Zain Kuwait – knows how to turn usage growth into revenue growth. Zain offers **unlimited** (under fair usage policy) data-only plans for 46 EUR – alongside smartphone plans with buckets up to **1 TB** (with a hefty price of 116 EUR). There are cheaper options too – but still with very large data buckets.

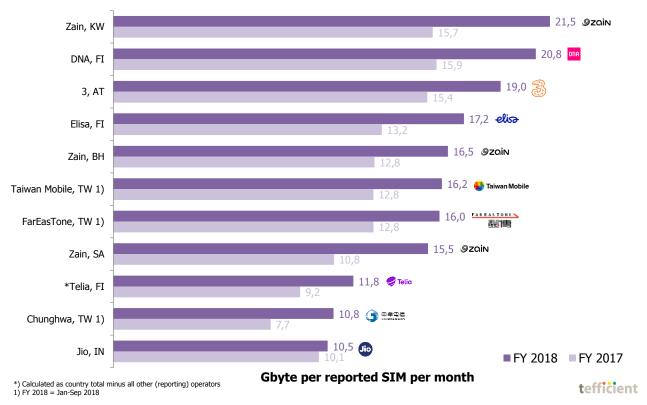[1] By regulators – if reported latest 28 March 2019

Figure 2. Average data usage per reported SIM per month – top 11 operators

DNA, winner of many of our previous reports, had a growth in the average usage per SIM per month from 15.9 GB in 2017 to **20.8 GB** in 2018 – but that wasn't enough to keep Zain Kuwait behind. **Unlimited, speed-tiered, plans** – both for data-only and smartphones – form a key component of the Finnish market logic. DNA doesn't report how large share of its base that has unlimited plans, but for Finland as a whole, that share was **67%** of non-M2M SIMs in December 2018.

Drei (3) Austria defends its number three position from our previous report. The company carried **43%** of Austria's total mobile data traffic in Q3 2018. That share actually used to be even higher, but that is more a reflection of that Drei's competitors A1 and T-Mobile eventually embraced the data-only home segment that previously pretty much was defined and owned by Drei. The Austrian home internet plans come with **unlimited, speed-tiered, data**. Hybrid routers are now offered by A1 and T-Mobile to speed up the slow fixed internet that is characteristic for Austria. Unlike Finland, smartphone plans aren't unlimited in Austria.

Below the podium we find **Elisa** from Finland (17.2 GB per SIM per month in 2018), **Zain** from Bahrain (16.5 GB), **Taiwan Mobile** (16.2 GB[2]), **FarEasTone** Taiwan (16.0 GB[2]) and **Zain** Saudi Arabia (15.5 GB). **Telia** Finland is the likely number 9 but since Telia doesn't report its mobile data traffic we have calculated it as the Finland total minus the sum of DNA and Elisa. This means that Telia's actual usage might be somewhat different[3]. **Chunghwa** from Taiwan is number 10 with 10.8 GB[2] while our only maturing market

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[2] Based on Jan-Sep 2018 data
[3] We recommend all operators to report their total mobile data traffic

operator on this top-eleven list is **Jio** from India. Unlike the other operators in the top, Jio's average usage didn't grow much in 2018. When analysing this, one has to consider that for most of 2017, most of Jio's users didn't actually pay anything to use the service. As the data consumption now is monetised, it's an achievement of Jio to defend and even grow that usage. Jio continues to have significantly higher usage than the other Indian operators.

Europe: Finnish operators and '3' dominate the top

Now to the first of three breakdowns: Europe. The number 2 and 3 of the world, **DNA** Finland and **Drei** (3) Austria, top this chart.

Operator	Gbyte per reported SIM per month
DNA, FI	20,8
3, AT	19,0
Elisa, FI	17,2
*Telia, FI	11,8
**3, UK	8,3
Plus Cyfrowy Polsat, PL	6,9
T-Mobile, AT	6,5
**Free, FR	6,1
Play, PL	5,4
**Bouygues, FR	4,7
Bite, LT 1)	4,7
Tele2, LT 1)	4,5
Swisscom, CH	4,4
Orange, PL	3,9
Telia, LT 1)	3,7
Movistar, ES	3,1
Vodafone, ES	3,1
Vodafone, IT	3,0
Vodafone, PT	2,6
Vodafone, UK	2,2
Vodafone, RO	2,0
O2, UK	2,0
**TIM, IT	1,9
Vodafone Ziggo, NL 1)	1,9
**Telekom, DE	1,7
Vodafone, DE	1,7
**Orange, BE	1,6
*Telenet BASE, BE	1,5
O2, DE	1,2
**Proximus, BE	1,1
Vodafone, GR	0,9
T-Mobile, CZ	0,7

*) Calculated as country total minus all other (reporting) operators
**) Data traffic not reported, but calculated based on reported usage
1) FY 2018 = Jan-Sep 2018
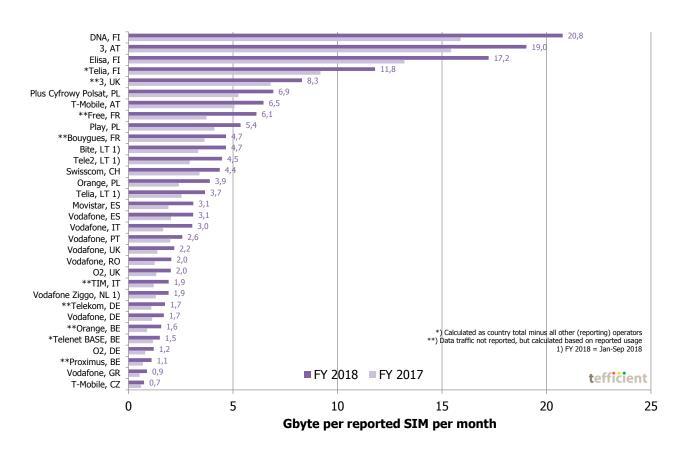
■ FY 2018 ■ FY 2017

Figure 3. Average data usage per reported SIM per month – European operators

The top ten operators are either Finnish (**DNA**, **Elisa**, **Telia**), affiliates of '**3**' (Austria, UK), **Polish** (Plus Cyfrowy Polsat, Play), **Austrian** (3, T-Mobile) or **French** (Free, Bouygues)[4].

The bottom eight operators are from the low usage markets[5] of **Czechia** (T-Mobile[6]), **Greece** (Vodafone), **Belgium** (Proximus, Telenet BASE, Orange) and **Germany** (O2, Vodafone, Telekom).

Who is then having the fastest usage growth in Europe? It's **Vodafone Italy** with **84%** – from 1.7 to 3.0 GB. Also TIM has a fast usage growth, 60%. What happened in Italy in 2018? The new

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[4] We know from previous reports what we should expect to find certain Danish and Swedish operators among these as well, but as these operators do not report their data traffic; it's instead reported by the regulators, there's a delay in those stats

[5] See our latest country data usage report https://tefficient.com/china-and-india-shift-to-4th-gear-leave-many-mature-markets-in-the-dust/

[6] T-Mobile's mobile data traffic over fixed LTE could be excluded; in its Q4 release, T-Mobile reported a 'converged' traffic volume which partly could be carried by the mobile network – but unclear to what extent (clarification asked for)

fourth operator, **Iliad**, launched 29 May. With dirt cheap (6-8 EUR) plans and large data buckets (30-50 GB), Iliad could go from zero to 2.8 million subscriptions in just seven months. The incumbent operators TIM, Vodafone and Wind 3 were quick to churn out similar offers – which clearly fuelled the mobile data consumption in Italy[7].

Another operator that experienced fast usage growth in 2018 is **Orange Belgium**; **77%**. Orange (alongside the whole of Belgium) is still playing is the lowest end of the European scale when it comes to usage, but Orange led the change into plans **marketed as unlimited**. The company launched a plan for 40 EUR which allows unlimited data volume – but it's throttled to 512 kbit/s after 20 GB per month. Orange has nevertheless been rewarded with the fastest usage growth in Belgium. The local competitors Proximus and Telenet BASE copied Orange's 'unlimited' plan setup late 2018/early 2019.

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[7] Iliad isn't reporting its mobile data traffic (yet?) and Wind 3 has regretfully stopped reporting it after VEON sold its share of the JV to CK Hutchison. In 2017, Wind 3 had the highest data usage in Italy.

Asia and China: Taiwan fills the podium – but watch out for China

The three Taiwanese operators **Taiwan Mobile**, **FarEasTone** and **Chunghwa**[8] hold the top three usage positions in Asia and China. Chunghwa passed **Jio** – now fourth-ranked – during 2018. The ambition previously expressed by the Taiwanese operators – to gradually 'rationalise' the market by getting out of too cheap unlimited plans – seems not to be respected as the usage growth has been quick.

Another country with fast usage growth is **Malaysia**. **Celcom** is number 7, **Digi** number 9 and **Maxis** number 10 on our Asia/China top list.

Figure 4. Average data usage per reported SIM per month – Asian and Chinese operators

If you thought some of the European usage growth rates were quick, let's look at the Asian/Chinese top list:

- Airtel India   +258%
- China Telecom   +229%
- China Mobile   +170%
- China Unicom   +155%

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[8] The operators aren't reporting their mobile data traffic themselves; it is being reported by the regulator. There are two other Taiwanese operators, T-Star and Gt, but they are just reported together as 'other'. Their usage is in between Taiwan Mobile/FarEasTone and Chunghwa.

- 3 Indonesia   +152%
- Vodafone Idea India +148%
- VEON Pakistan   +121%
- Ncell Nepal   +119%
- Celcom Malaysia   +104%
- Indosat Indonesia   +101%

Ten operators **more than doubled** its mobile data usage in 2018 compared to 2017. Indian and Chinese operators dominate. The usage per SIM in Indonesia is affected by a mandatory registration of SIM cards, having made millions of SIM cards disappear from the market, lifting usage per SIM.

The fastest usage growth is found in India and China

RoW: Zain dominates the top

The rest of world ranking combines Latin American and Russian/CIS operators with operators from Middle East, Africa and reporting international groups, see Figure 5.

Figure 5. Average data usage per reported SIM per month – RoW operators

If we disregard **3 Europe** group whose affiliates are represented in the European comparison (Figure 3), it's interesting to see how high the average usage of **Zain** Group is. The average is lifted by Kuwait, Bahrain, Saudi Arabia and Jordan whereas Iraq and Sudan lower it.

Russian and Turkish operators have high average usage. The Latin American operators have – with the exception of Chile – fairly low average usage.

It is a pity that none of the US or Canadian operators report their data traffic or usage. Even U.S. Cellular stopped. It could suggest that it's a sensitive issue for the North American operators; our country analysis[9] shows that mobile customers in Canada and USA pay much for the data they consume.

None of the North American operators report traffic or usage

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[9] Latest version: https://tefficient.com/china-and-india-shift-to-4th-gear-leave-many-mature-markets-in-the-dust/

African operators are – together with an operator from Uzbekistan – having the lowest monthly data usage per SIM in our sample. Two operators had three figure growth rates in 2018: Algeria's **Djezzy** (+283%) and Ukraine's **Kyivstar** (+200%).

China Mobile carried 35000 PB in 2018 − 182% more than in 2017

We have seen that the data usage varies much between customers of different operators in different countries. If we instead compare the total data traffic, the large population differences between the countries make the spread even wider, see Figure 6.

Figure 6. Total data traffic – all operators

As it's impossible to read Figure 6 we will in a bit break it down into the three regions of the world, but let's first identify the **global data traffic leaders** – see Figure 7.

Figure 7. Total data traffic – top 11 operators

China Mobile has 925 million mobile subscribers but only became the largest operator in the world in mobile data traffic during 2018. Its total handset traffic grew **182%** in 2018.

The Indian challenger **Jio** grew its subscription base very quickly in 2018 (at the expense of competition) but even though that leads to a y-o-y traffic growth of **98%**, it's nothing compared to the growth rates in China and among Jio's competitors **Airtel** (+270%) and **Vodafone Idea** (+223%). As shown in the usage section, Jio's usage *per subscription* hasn't grown much in 2018.

China Unicom is the Chinese operator with the highest average usage per subscription. Relative to China Mobile, Unicom's subscription base is small, though: Just 315 million. The total handset data traffic of Unicom grew **179%** in 2018.

Fourth-ranked **China Telecom** had a handset traffic growth rate of **291%**.

Note that Vodafone Group (excluding India) only comes in as number 7 even though it consists of about 20 countries. It says something about the size of the Chinese and Indian operations.

Europe: The largest operators are not the operators with the biggest base

First to the European breakdown. Since the highest ranked European operator is just number 30 in our global rank, we could generally conclude that the European countries are less populated than the global leaders – but also that growth is significantly faster outside of Europe. And it's not the operators that you necessarily would suspect (with the largest SIM base) that are in the top of Figure 8.
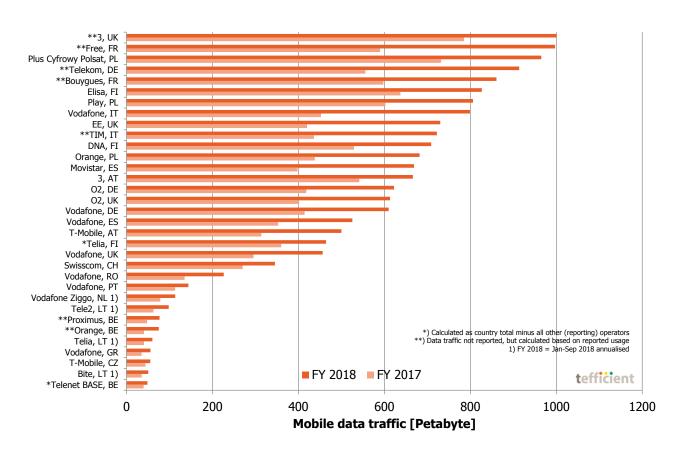

Figure 8. Total data traffic – European operators

In the absence of a reported traffic figure for Wind 3 for 2018[10], **Three** (3) UK becomes Europe's largest operator in total data traffic. The traffic of **Free** from France grew a lot in 2018 (+69%) and the difference between Three and Free is really small. Both operators provide **unlimited** mobile data plans – in Free's case only in combination with a triple-play Freebox.

The third largest operator in Europe is Poland's **Plus/Cyfrowy Polsat**. It uses data-only as fixed-line substitution – but has now become a significant shareholder in Netia, a fixed operator which might indicate a change in strategy. Also seven-ranked **Play** is Polish and has a similar approach – using mobile as fixed-line replacement – as Plus/Cyfrowy Polsat.

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[10] Wind 3 led Europe in our 1H 2018 analysis https://tefficient.com/more-data-always-for-more-it-happens/

In position six, we find **Elisa** from Finland. With Finland's 5.5 million inhabitants, it is impressive to find Elisa carrying as much traffic as operators from e.g. Germany, Italy, France and the UK. Elisa's local competitor **DNA** is number 11. In spite of unlimited being attached to two-thirds of all subscriptions, Elisa's traffic just grew 30% in 2018 while DNA's grew 34%.

The European operators with the fastest growth in traffic are **Orange Belgium** (+85%) and **Vodafone Italy** (+77%). We explained why in the previous, usage, section.

The operators with the highest share of unlimited in Europe – Elisa & DNA – had fairly slow traffic growth

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Asia and China: Astounding traffic growth

We find the six global traffic leaders in the top of the Asian/Chinese comparison: **China Mobile**, **Jio**, **China Unicom**, **China Telecom**, **Airtel** and **Vodafone Idea**. As shown in the global section, the growth rates are very high for all these operators (98-291%).
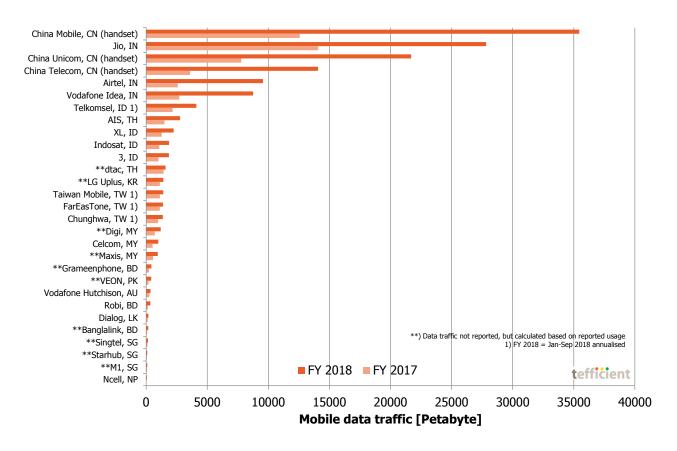

Figure 9. Total data traffic – Asian and Chinese operators

The **Indonesian** operators (Telkomsel, XL, Indosat and '3') and the **Thai** operators (AIS, dtac) follow. Although not matching the traffic growth of the Chinese and Indian operators, these operators have also experienced fast traffic growth – with one exception:

- Telkomsel Indonesia +90%
- AIS Thailand +85%
- XL Indonesia +76%
- Indosat Indonesia +73%
- 3 Indonesia +83%
- dtac Thailand +11%

Traffic growth is fast in Indonesia and Thailand too

One reason to **dtac**'s slow growth is that the company lost 6% of its subscriber base in 2018, but the main reason is that dtac's owner Telenor is reporting a much slower growth in the average usage per active data user compared to AIS. dtac's average data usage per subscrption is still higher, though.

RoW: MegaFon larger than 3 Europe Group and Zain Group

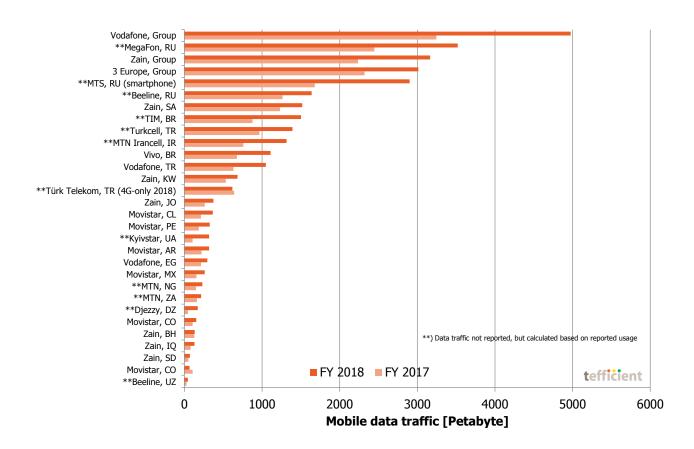Figure 10 collects operators from the rest of the world, but also a few reporting international groups.

Figure 10. Total data traffic – Rest of world operators

The Russian operator **MegaFon** (#2) is an international giant in mobile data, carrying more traffic than the whole of 3 Europe Group or the whole group of Zain. Even though MegaFon's local competitors MTS and Beeline (VEON) are large too, MegaFon is larger. This can be traced back to MegaFon's acquisition of the 4G data-only specialist Yota back in 2013.

Saudi, Turkish and Brazilian operators follow – together with **MTN Irancell**, an operator with 45 million subscribers showing a quickly increasing appetite for mobile data.

Show us the money!

The way we calculate revenue per gigabyte – *total* mobile service revenue per carried gigabyte – will resonate with mature markets where operators generally aren't attempting to monetise voice and SMS based on usage. Instead they have made voice and messaging allowances unlimited and included them in a flat fee.

In *maturing* markets, usage-based monetisation is still used to a higher degree. This is true also for voice and messaging. With our calculation method, one might conclude that the operators ending up with the highest effective revenue per gigabyte would thus be operators from maturing markets. You do find two African operators in the bottom of Figure 11 – but otherwise the operators with the highest revenue per GB are from seven European countries: **Belgium**, **Greece**, **Czechia**[11], **Germany**, the **Netherlands**, the **UK** and **Switzerland**.
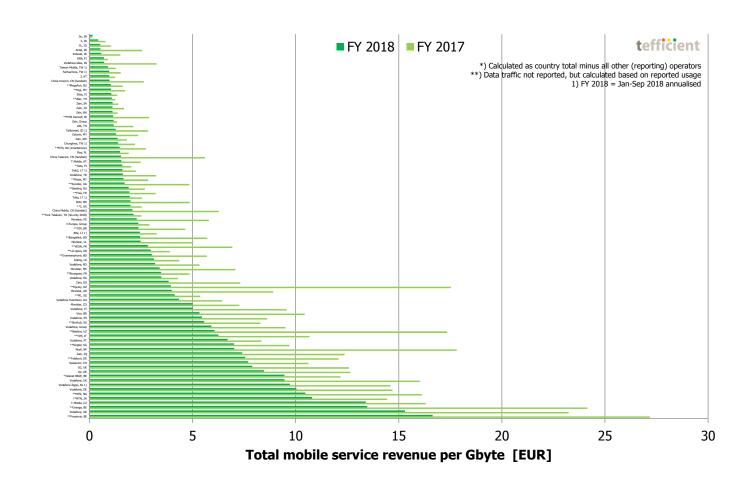

Figure 11. Total mobile service revenue per gigabyte – all operators[12]

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[11] T-Mobile's mobile data traffic over fixed LTE could be excluded; in its Q4 release, T-Mobile reported a 'converged' traffic volume which partly could be carried by the mobile network – but unclear to what extent (clarification asked for)
[12] That also report mobile service revenue

We will – for readability reasons – soon break Figure 11 down into Europe, Asia/China and RoW, but let's first look into a disclaimer with regards to operators marked with * or **.

When reporting mobile data traffic, take inspiration from Vodafone and Telefónica

All graphs in this analysis carry this legend:

*) Data traffic calculated as country total minus all other (reporting) operators
**) Data traffic not reported, but calculated based on reported usage

There are a number of operators globally that, in their regular easy-to-use Excel sheets, report their **total mobile data traffic** quarter by quarter. Of the larger operators groups, **Vodafone** and **Telefónica** are two good examples. We encourage all operators to follow their example.

Some operators are instead reporting – or occasionally indicating – **data usage**. These are the operators marked with **. The problem here is that most operators aren't defining what a user is – sometimes it is all users, sometimes "active data users" (whatever that is), sometimes smartphone users, sometimes branded smartphone users, sometimes postpaid users, sometimes 4G users. Typically these usage numbers are stated to impress, i.e. they are representative only for a smaller, high-usage, segment of the subscriber base. An exception to that operators reporting usage isn't reporting the number of associated users is **VEON** Group that reports the usage per mobile data customer *and* the number of such mobile data customers (a subset of the total customer base). Well done, VEON.

The majority of operators are still not reporting anything, though. Orange Group and Telia Company are examples of it. And, of course, all North American carriers. In some cases, country regulators are helpful in reporting a breakdown per operator. But in most cases, the country regulator is just reporting a total. In such occasions – and if also all other operators report data traffic or at least usage – we have calculated the country residual and assumed that this traffic equals that of the non-reporting operator. These are the operators marked with *.

It's not necessarily so that a regulator and the reporting operators use exactly the same definition when reporting data traffic. Traffic via MVNOs can e.g. disturb the comparability. Where the error risks to be the largest, though, is in countries where the country residual has been assigned to a *-marked operator while, at the same time, one or several of the other operators are **-marked operators, i.e. have not explicitly reported the total data traffic but some type of usage.

So if any operator (*-marked or **-marked) is unhappy with its calculated data traffic, the solution is simple: Start to report your total mobile data traffic.

Having explained this, let's now in Figure 11 identify the ten operators that get the *lowest* total mobile service revenue per gigabyte in the world:

		FY 2017	FY 2018	
1.	**Jio**, India	0.1 EUR	0.2 EUR ⬆	
2.	**3**, Indonesia	0.8 EUR	0.4 EUR ⬇	
3.	**XL**, Indonesia	1.0 EUR	0.5 EUR ⬇	
4.	**Airtel**, India	2.5 EUR	0.5 EUR ⬇	
5.	**Indosat**, Indonesia	1.5 EUR	0.6 EUR ⬇	
6.	**DNA**, Finland	0.9 EUR	0.7 EUR ⬇	
7.	**Vodafone Idea**, India	3.3 EUR	0.7 EUR ⬇	
8.	**Taiwan Mobile**, Taiwan	1.3 EUR	0.9 EUR ⬇ *Jan-Sep 2018 annualised*
9.	**FarEasTone**, Taiwan	1.5 EUR	1.0 EUR ⬇ *Jan-Sep 2018 annualised*
10.	**3**, Austria	1.2 EUR	1.0 EUR ⬇	

All these operators are either active in mature high data usage markets (Finland, Taiwan, Austria) or in highly competitive maturing markets (India, Indonesia). Note that while Airtel and Vodafone Idea have had significant drops in the revenue per GB in 2018, **Jio** actually increased its revenue per GB. The explanation is of course that Jio in 2017 still had many customers on its free introduction offer.

The ten operators that get the *highest* total mobile service revenue per gigabyte in the world are:

		FY 2017	FY 2018
1.	**Proximus**, Belgium**	27.2 EUR	16.6 EUR ↓
2.	**Vodafone**, Greece	23.2 EUR	15.3 EUR ↓
3.	**Orange**, Belgium**	24.1 EUR	13.5 EUR ↓
4.	**T-Mobile**, Czechia[11]	16.3 EUR	13.4 EUR ↓
5.	**MTN**, South Africa**	14.4 EUR	10.8 EUR ↓
6.	**MTN**, Nigeria**	16.1 EUR	10.5 EUR ↓
7.	**Vodafone**, Germany	14.7 EUR	10.0 EUR ↓
8.	**Vodafone Ziggo**, Netherlands	14.6 EUR	9.7 EUR ↓
9.	**Vodafone**, UK	16.0 EUR	9.5 EUR ↓
10.	**Telenet BASE**, Belgium*	12.2 EUR	9.5 EUR ↓

In our mature market focused country analysis you can identify Belgium, Germany, Greece, the Netherlands and Czechia[13] as some of the country markets (of the covered) with the highest revenue per gigabyte so this list seems plausible.

We conclude that there in 2018 there was a **107 times difference** between the operator with the highest total service revenue per gigabyte (Proximus Belgium) and the operator with the lowest (Jio India).

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[13] Canada is also a country with high revenue per gigabyte but none of the Candian operators report data traffic and consequently do not appear in this analysis

Europe: Wide spread in the revenue per GB

Figure 12 shows the European breakdown. Since European operators played both in the bottom and in top of the global chart, the spread is almost as large as in the global view. To ease comparability, the scale is kept intact throughout this section.
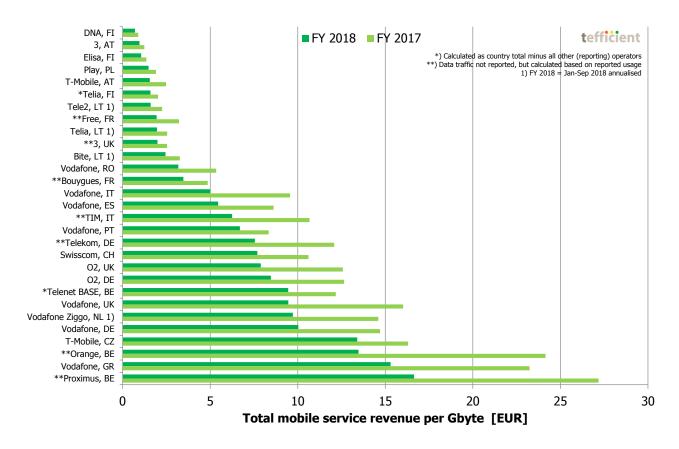

Figure 12. Total mobile service revenue per gigabyte – European operators

As pointed out in the global section, Belgian, Greek, Czech[11], German, Dutch, UK and Swiss operators play in the bottom of the graph – where the total service revenue per consumed gigabyte is high. In the other end of the scale – where the revenue per gigabyte is low – we find operators from **Finland**, **Austria** and **Poland**.

Asia and China: Revenue per GB going down very quickly

Figure 13 shows the Asian and Chinese operators. Indian and Indonesian operators have the lowest revenue per gigabyte whereas no operator (except Nepal's Ncell in 2017) is having very high revenue.
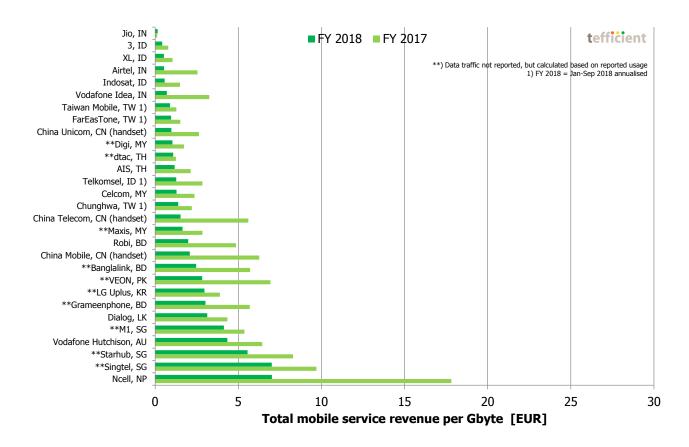

Figure 13. Total mobile service revenue per gigabyte – Asian and Chinese operators

The quickly growing data usage in China and India has moved the Chinese and Indian operators upwards compared to our previous analysis.

RoW: Big drop in revenue per GB in certain maturing markets

Finally Figure 14 which shows the operators in the rest of the world alongside a few groups that separate out mobile service revenue in their reporting.
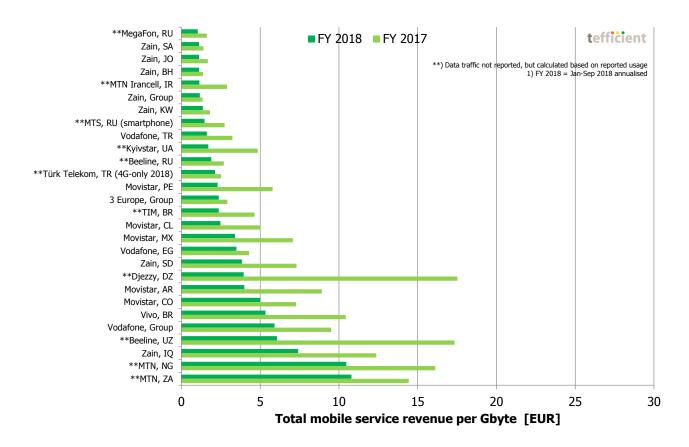

Figure 14. Total mobile service revenue per gigabyte – rest of world operators

Russia's MegaFon, Zain's Middle East operations and MTN Irancell dominate the top end of the chart where revenues are the lowest per gigabyte. Latin American operators clutter the middle of the chart whereas **sub-Saharan operators** populate the bottom of the graph.

Beeline Uzbekistan and Djezzy from Algeria have had very significant drops in the revenue per gigabyte in 2018.

The revenue per GB vs. usage chart

Let us now combine the revenue per gigabyte with the usage. Those of you that have read our data usage and revenue analyses before are familiar with the **revenue per GB vs. usage** chart. But where it is normally populated with countries, it is here populated with operators, see Figure 15.
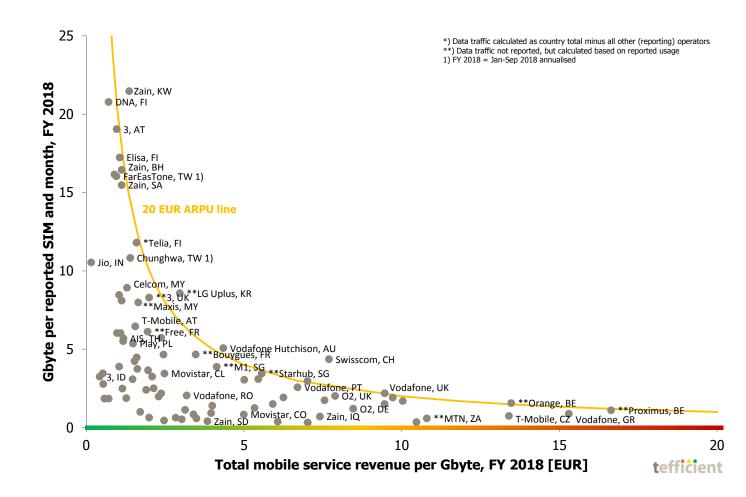

Figure 15. Mobile data usage vs. total mobile service revenue per Gbyte

With all those markers, we have only been able to highlight the operators that have more extreme positions. The amber line is not a regression line, but illustrates where 20 EUR of ARPU is earned. Operators above the line earn more – and operators below the line less than 20 EUR.

Most mature markets operators operate with an APRU of around 20 EUR. Many operators in maturing markets clutter in the southwest or south parts of the chart.

The ARPU vs. usage chart

One could criticise the previous chart for comparing the number of gigabytes with something that relates to it – the revenue per gigabyte. Our next chart, Figure 16, is therefore comparing the number of gigabytes with the revenue per subscription, i.e. the ARPU. And that is perhaps even more interesting.
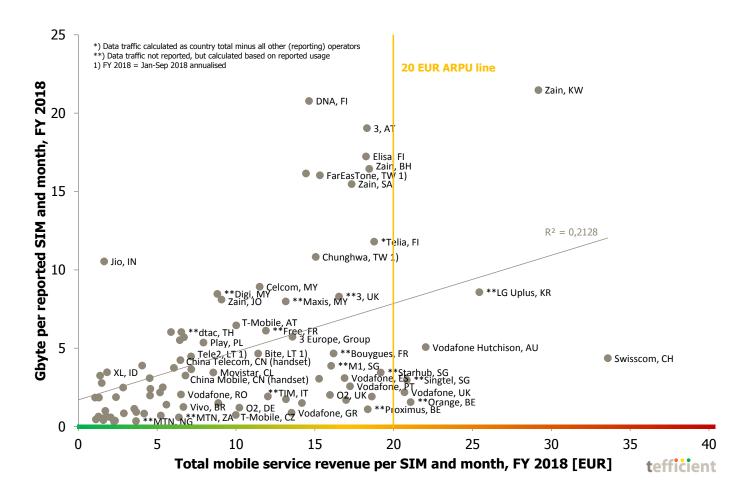

Figure 16. Mobile data usage vs. total mobile service revenue per SIM

Of all the operators there are three – **Swisscom**, **Zain** Kuwait and **LG Uplus** – that enjoy much higher total mobile service revenue per SIM than all other operators. In Zain's and, to some extent, LG Uplus' case the data consumption is also high. Swisscom's subscribers – although many being on speed-tiered unlimited plans – are not using particularly much data, but the ARPU is unparalleled in our sample of operators (where both data traffic/usage and mobile service revenue are reported).

In the middle top of the graph there is a cluster of operators with very high average data usage but moderate ARPU of about 15-20 EUR. Here we find the Finnish and the Taiwanese operators together with Zain Bahrain and Zain Saudi Arabia.

And then there's **Jio**. Its ARPU isn't the lowest, but considering an average data usage above 10 GB per month, Jio is the clear affordability leader of the world.

The grey regression line suggests that **operators with higher data usage have higher ARPU**.

To moderate this, one has to realise that the adherence to this line (shown by a R^2 value below 1) isn't perfect. And we should also remember that the line visualises an international – not a national – trend: It is quite difficult to find national examples showing that operators with higher data usage enjoy higher ARPU. If anything, it's rather the opposite. It's typically the challenger operator that has the customers with the highest data usage and challenger operators tend to have lower ARPU than incumbents.

Operators with higher data usage tend to have higher ARPU

Dressing the Christmas tree

Absolute ARPU aside, how many of the operators have been able to deliver on "**more for more**" i.e. been able to increase ARPU while increasing data usage? And how many are just following the "more for less" stream, giving users more data but not being able to charge anything more?

This might be the ugliest Christmas tree you've seen, but it is at least reasonably well balanced this time: When data usage increased[14], **46% of operators could grow ARPU** (with branches growing to the right) – 54% could not.

<div style="background: orange; color: white; text-align: center;">
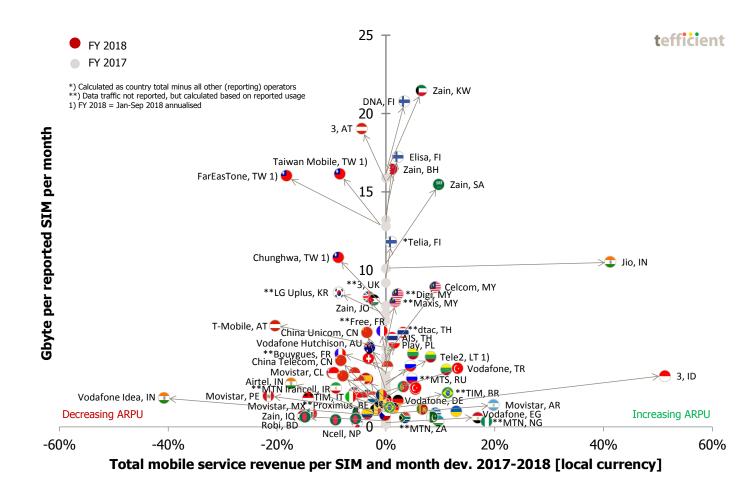Data usage grew for 100% of operators

ARPU grew for 46% of operators
</div>

Figure 17. Mobile data usage development vs. ARPU[15] development – FY 2017 to FY 2018

Let's highlight a few best practices of successful "more for more" operators:

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[14] In some charts, this seems not to be the case for Türk Telekom (TT), but it's due to a change in their reporting – from usage per smartphone in 2017 to usage per 4G sub in 2018. Since the usage for Turkey and competitors grew, this is likely true also for TT.
[15] ARPU is calculated as the reported total mobile service (non-equipment) revenue incl. interconnect & roaming divided with the average number of reported SIMs. It can differ from the definition of operator reported ARPU.

- **Zain** in Kuwait and Saudi Arabia (and to some extent Bahrain) have been able to grow its ARPU following onto significant increase in data usage fuelled by very large buckets and, in some cases, unlimited allowances.
- All three Finnish operators (**DNA**, **Elisa** and **Telia**) have been able to grow ARPU thanks to more and more customers upgrading to faster (and more expensive) speed tiers on their unlimited plans.
- **Jio** in India might seem as a monetisation powerhouse, getting so much more ARPU for just a small increase in data usage. In reality, the APRU in 2017 was kept down much by the free introduction plan. It's interesting to compare Jio's ARPU journey with that of Vodafone Idea - +40% vs. -40%.
- All three Malaysian operators (**Celcom**, **Digi**, **Maxis**) were able to grow ARPU while growing data usage a lot.
- Also all three **Lithuanian** operators (Tele2, Telia, Bite) and the three large **Russian** operators (MTS, MegaFon, Beeline) were able to grow ARPU while growing data usage.
- **3** in Indonesia had a massive ARPU expansion in 2018 but the main reason to it was the mandatory SIM registration in Indonesia which cut off 49% of 3's subscription base. In spite of this, 3 could still grow its revenue which suggests that most of these disconnected non-registered SIMs were not generating much revenue.

54% of the operators are on the branches facing left. They had data usage growth, but still a **decline in ARPU**. There are a few operators standing out quite negatively here:
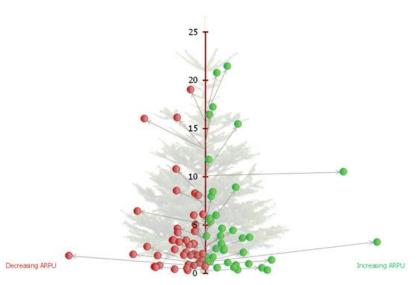
- **Vodafone Idea** has suffered from Jio's disruptive entry in India. Airtel has fared relatively better – but still with an ARPU decrease of 17%.
- The ARPU of **Movistar** in Peru fell a lot in spite of good growth in data usage. The competition in the Peruvian market is currently very aggressive led by the smaller MNOs and by new MVNOs.
- **T-Mobile** seems to have had a very negative ARPU development in Austria – much worse than 3 Austria. This development is partly explained by a quickly growing base of *international* Deutsche Telekom group M2M SIMs being homebased in Austria – but as T-Mobile doesn't separate out M2M in its reporting, we can't know for sure.
- Finally **Taiwan** where the three incumbent mobile operators FarEasTone, Taiwan Mobile and Chunghwa all continued to experience decreasing ARPU in spite of growing data usage. As mentioned previously, the operator attempts to 'rationalise' the market seem to have failed.

Conclusion

In this analysis, we have presented fourteen ranking charts and two correlation plots and we hope these are useful for you in understanding how **mobile data usage**, **traffic** and **service revenues** are developing globally.

But it's the Christmas tree graph that we'd like you to remember. It shows that data usage grows for *all* operators – and that **46%** of these operators have been able to turn that into ARPU growth. They have delivered on a "more for more" promise. They are the operators that have proven their capability to monetise an increasing mobile data usage.

In some cases, this follows on an overall market trend – several operators are sharing the same positive development. Nothing wrong in that.

But it's when *one* operator stands out from the national crowd it is interesting to go deeper and understand what that operator has done to turn customers' data usage growth into ARPU growth. There are **many initiatives** taken to change mobile data monetisation or customer loyalty to the better – unlimited, zero-rating, rollover, speed tiers, video tiers, priority tiers, inclusive content, FMC, 100% app-based services – to name a few. But which of them work?

To understand the underlying drivers is a complex and sometimes market-specific quest beyond the scope of this public analysis. Don't hesitate to ask us.