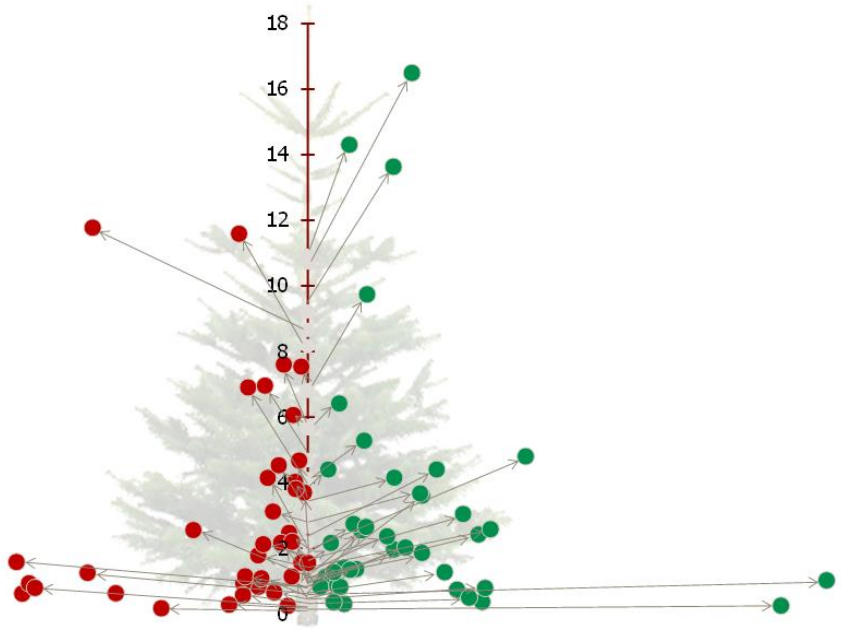
tefficient

Industry analysis #4 2017

Mobile data – Q3 2017

Spotting the operators capable of monetising the data usage growth



This is tefficient's 18th public analysis on the development and drivers of mobile data. It follows on our just-published analysis "More for less" tips the balance that compares 35 countries.

We have ranked 124 operators based on average data usage per SIM, total data traffic and revenue per gigabyte.

The data usage per SIM grew for all operators. And it grows quickly. But what happens to ARPU? Have operators been able to monetise usage growth following the "more for more" mantra?

In an upfront way, our new Christmas tree graph visualises the operators that are delivering on "more for more" – and those that are just following the "more for less" stream.

The data usage in the world spans from 0.1 to 16.5 GB per SIM per month

Figure 1 shows the average mobile data usage for a large number of reporting or reported[1] mobile operators globally. Both the usage for the first half year of 2017 and – if available – the usage for the third quarter of 2017 are displayed.

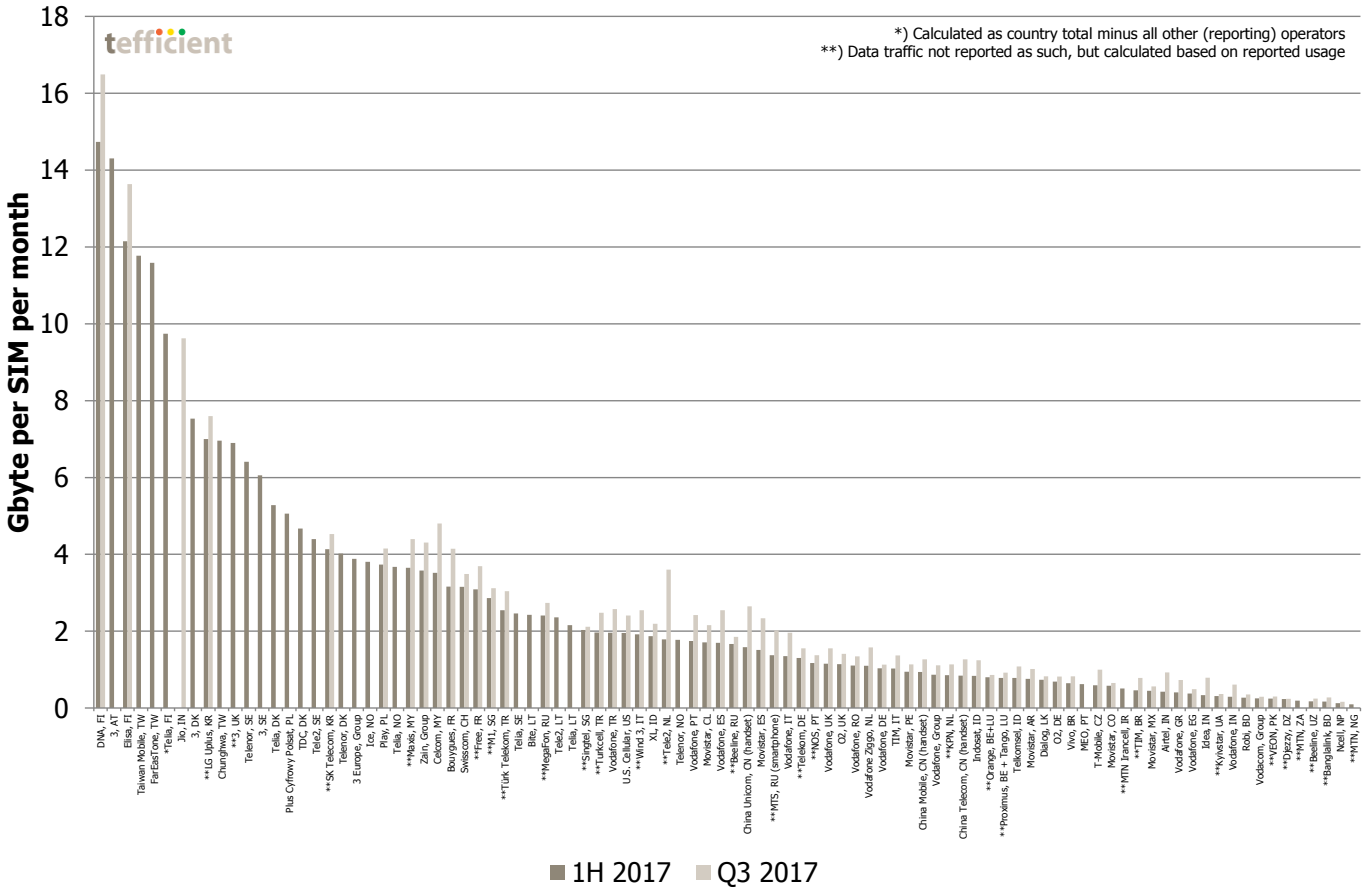


Figure 1. Average data usage per reported SIM per month – all operators

It's of course near to impossible to read Figure 1 and we will therefore break it down into three regions, but let's first use Figure 1 to identify the **global data usage leaders**.

[1] By regulators

Gold DNA Finland with 14.7 GB per SIM and month in 1H 2017 and 16.5 GB in Q3 2017

DNA is back as the usage leader of the world. Most of DNA's subscriptions – regular ones as well as data-only subscriptions – have **unlimited data** volume where the price depends on the chosen speed tier. **52%** of DNA's subscribers had in September chosen speeds that require 4G: Up to 50, 100 or 300 Mbit/s. DNA isn't reporting how many subscriptions that had unlimited data volume, but the June figure for Finland as a whole was **53%** of non-M2M SIMs.

Silver 3 Austria with 14.3 GB per SIM and month in 1H 2017

Three (or Drei) Austria was the gold medallist in our last (FY 2016) analysis, but was overtaken by DNA in the first half of 2017. The usage is still very high, but 3's competitors T-Mobile and A1 have in 2017 aggressively targeted a segment that previously was more or less owned by 3: **Data-only**. In Austria these subscriptions are used to substitute (slow) fixed broadband. They come with unlimited data volume but are charged based on speed tiers. In 2016, 3 carried 64% of the Austrian mobile data traffic, but in 1H 2017, that share had declined to 'just' **52%**. It suggests that competition has had some success in this segment in 2017. In our country analysis, we show just how important data-only is for the overall data usage of a country – and how uniquely positioned Austria is.

Bronze Elisa Finland with 12.2 GB per SIM and month in 1H 2017 and 13.6 GB in Q3 2017

Elisa is synonymous with **unlimited data** and never stops reminding Finns about it in its marketing – even though DNA too has had it for a long time and Telia today offers it at lower price points than Elisa. Like with DNA, Elisa's price depends on the chosen speed tier. **62%** of Elisa's voice-also subscriptions had unlimited data volume in September 2017.

The two Taiwanese operators **Taiwan Mobile** and **FarEasTone** are close to the podium with 11.8 GB and 11.6 GB per month in 1H 2017.

The remaining Finnish operator, **Telia**, follows, but we have a newcomer in the seventh position: **Jio**. The Indian challenger that only launched in the second half of 2016 became world famous for its free 4G-only proposition. All of its 139 million subscribers are now charged for data, but they are still using very much: The average consumption per SIM in the third quarter of 2017 (Jio's first reported quarter) was a whopping **9.6 GB** per month – a level that no other maturing market operator is close to.

An operator that possibly could challenge the world top is **Zain**. For 2016, it reported an "average daily data volume". We have asked Zain's investor relations team about the definition, but not received a reply. If it should be understood as a true 365 day average, two of Zain's affiliates – Kuwait and Bahrain – should be in the absolute top with 11.8 GB and 10.0 GB respectively. These numbers are for the full year of 2016, but Zain does not report them for affiliates (only for the group as a whole) during a calendar year.

Europe: Data usage spans from 0.4 to 16.5 GB per SIM per month

Now to the first of three breakdowns: Europe. The top three operators are the same as in the global comparison: 3 Austria, DNA Finland and Elisa Finland.

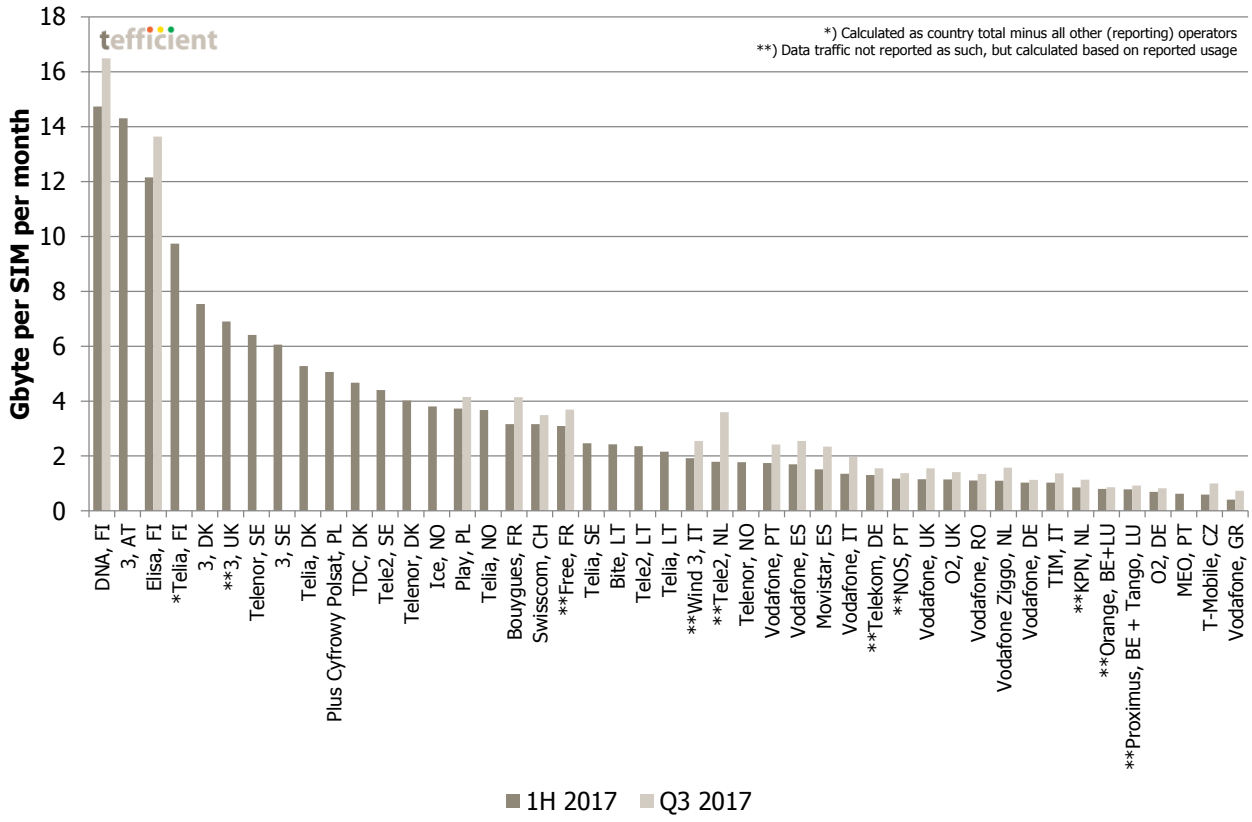


Figure 2. Average data usage per reported SIM per month – European operators

The remaining European operators have customers with significantly lower usage than the top three, but there are a number of operators that had an average usage above 4 GB per month in the first half of 2017. These operators are from Finland, Denmark, Sweden, the UK and Poland.

But Europe has a long tail: Operators from five countries – **Greece**, **Czechia**, **Portugal**, **Germany**, **Belgium**, the **Netherlands** and **Italy** – hold the ten lowest usage positions.

If comparing the 1H 2017 to the Q3 2017 usage bars, we can see that the usage is growing everywhere (where reported). Mid-ranked **Tele2** Netherlands[2] – that introduced an unlimited plan for 25 EUR per month in May 2017 – has had the fastest usage growth in Q3 2017.

[2] 15 December, Deutsche Telekom and Tele2 announced that they will seek regulatory approval for a merger between T-Mobile and Tele2 in the Netherlands. Deutsche Telekom will hold 75% of the merged entity and Tele2 25%.

Asia and China: Data usage spans from 0.1 to 11.8 GB per SIM per month

Apart from **Jio**'s entry, Taiwanese and Korean operators lead the Asia/China ranking, see Figure 3. We already touched on Taiwan Mobile and FarEasTone in the global comparison. Their incumbent competitor, **Chunghwa**, ranks as number five with 7.0 GB, just beaten for fourth place by the Korea's **LG Uplus**.

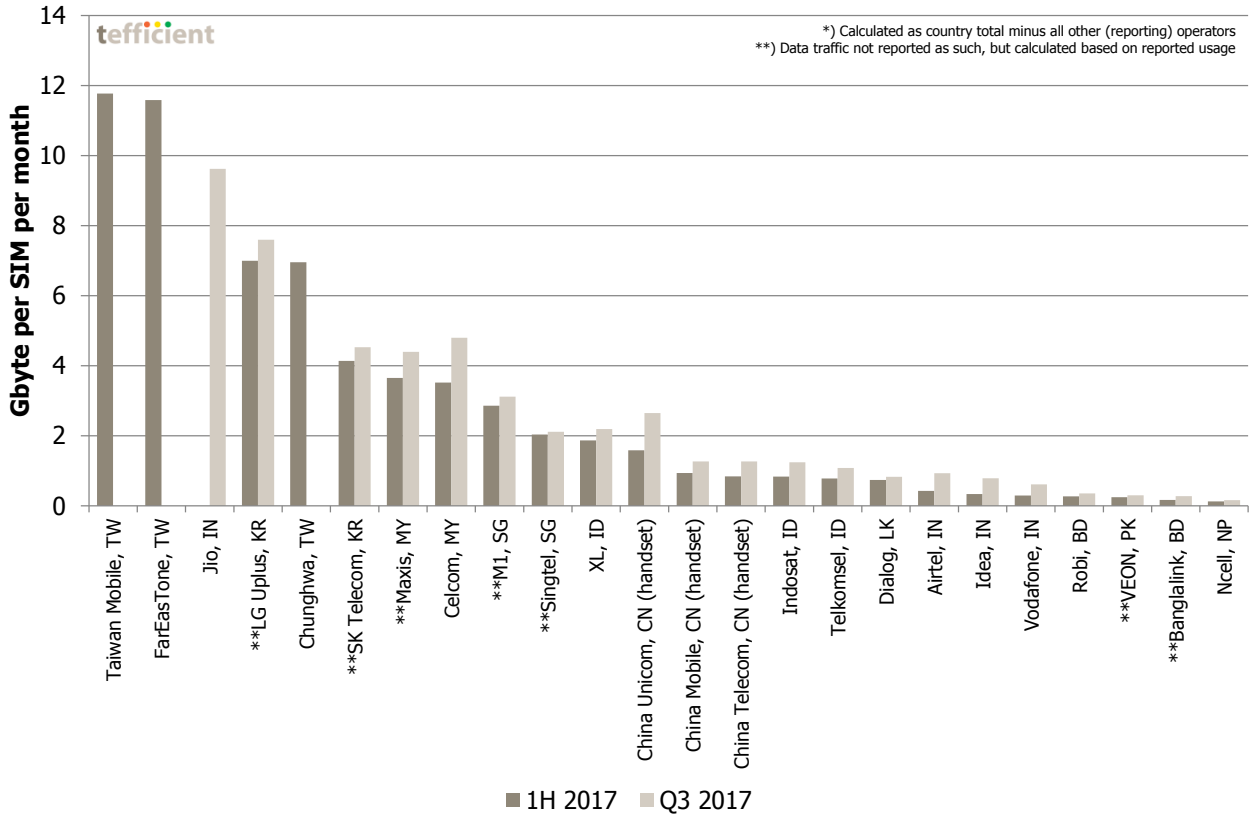


Figure 3. Average data usage per reported SIM per month – Asian and Chinese operators

SK Telecom is sixth with 4.1 GB in 1H 2017, but if you look at the Q3 2017 figures you see that Malaysia's **Celcom** has passed SK Telecom. Celcom's competitor **Maxis** is very close to SK Telecom, but still behind.

The three Chinese operators **China Unicom**, **China Mobile** and **China Telecom** are mid-ranked but the data usage growth is fast – especially for Unicom that is now much ahead of the two others. All three exclude data-only from their reported data traffic.

Another country with fast data usage growth is **Indonesia**. Axiata's **XL** is having twice the usage (2.2 GB per month in Q3) of the larger competitors **Indosat** and **Telkomsel** but the latter two are speeding up.

The remaining reporting Indian operators – **Airtel**, **Idea** and **Vodafone** – are experiencing dramatic growth in the data usage. Their Q3 2017 usage levels (0.9 GB, 0.8 GB, 0.6 GB per month respectively) are though far from that of Jio (9.6 GB).

RoW: Data usage spans from 0.1 to 4.3 GB per SIM per month

The rest of world ranking combines North American, Latin American and Russian operators with operators from Middle East, Africa and reporting international groups, see Figure 4.

It is a pity that none of the major US or Canadian operators report their data traffic or usage. The only sample in Figure 4 is **U.S. Cellular**. It's likely that four larger US carriers Verizon, AT&T, T-Mobile and Sprint would have higher data usage – but it is not reported.

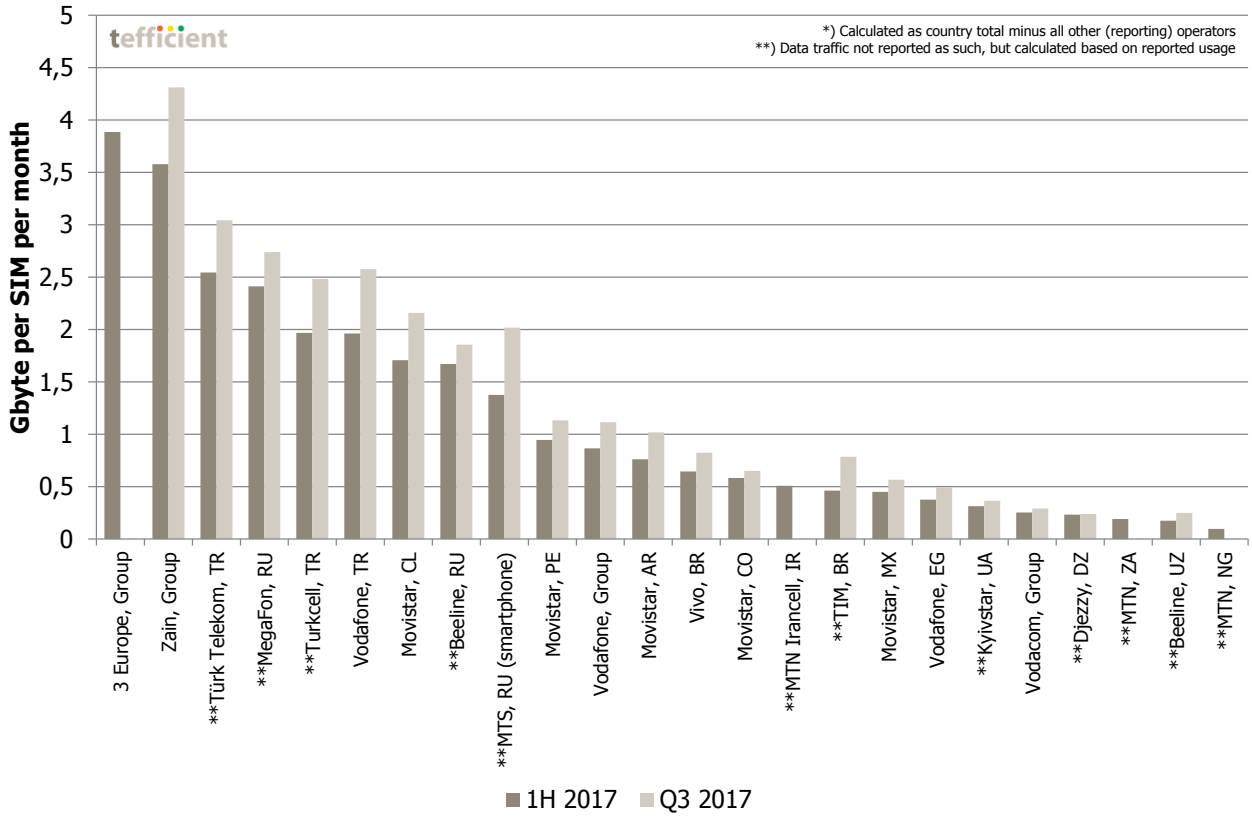


Figure 4. Average data usage per reported SIM per month – RoW operators

If we disregard 3 Europe group whose affiliates are represented in the European comparison (Figure 2), it's interesting to see how high the average usage of **Zain** Group is. If looking at Zain's reported 2016 figures, the average is lifted by Kuwait, Bahrain and Saudi Arabia whereas markets like Iraq and Sudan lower it.

Russian and Turkish operators have high average usage. If we look at the Q3 2017 figures, we can also see that it is growing fast. The Latin American operators have – with the exception of Chile – fairly low average usage. TIM Brazil has had good growth in Q3 2017.

African operators are – together with operators from Uzbekistan and Ukraine – having the lowest monthly data usage per SIM in our sample.

Jio emerges as the largest operator in the world – traffic-wise

We have seen that the data usage varies much between customers of different operators in different countries. If we instead compare total data traffic, the spread will be even wider, see Figure 5.

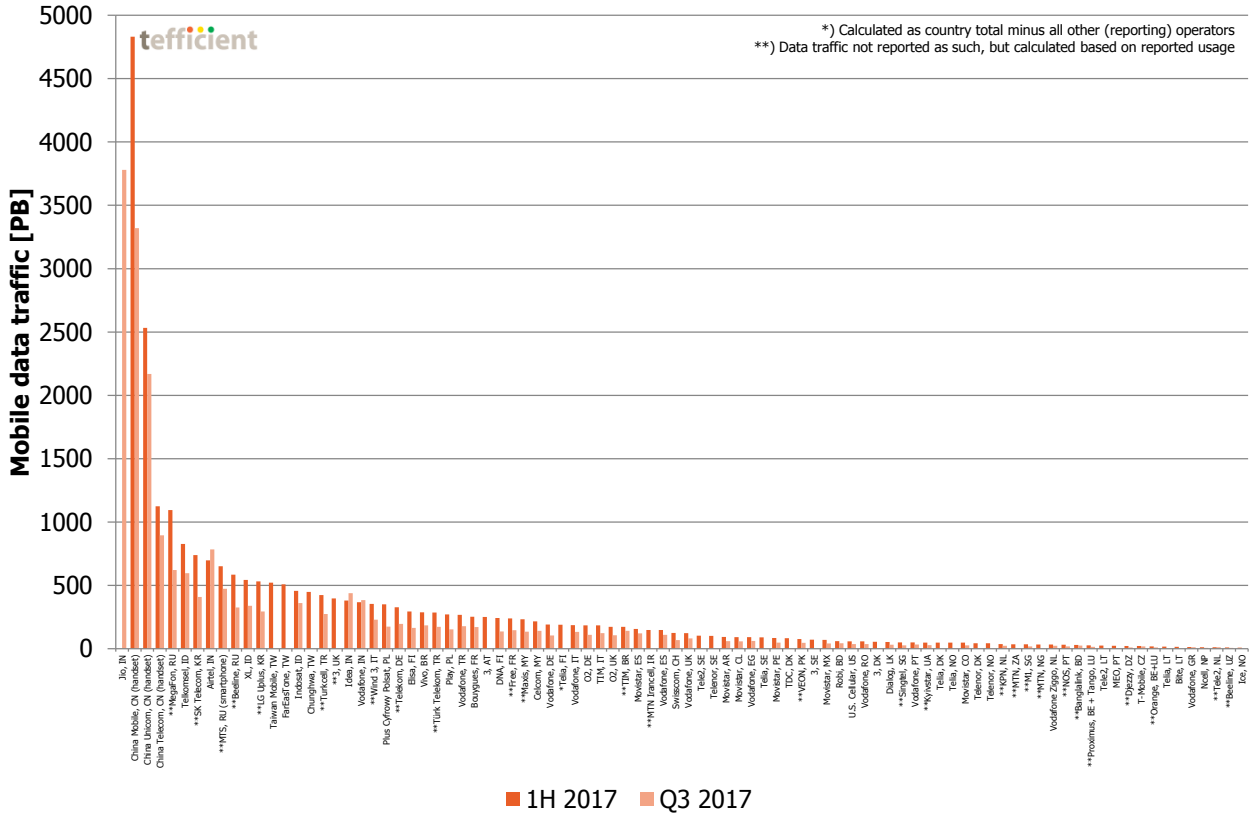


Figure 5. Total data traffic – all operators

Gold Jio with 3780 PB in Q3 2017

Since Jio reported for the first time in Q3 2017, there is a bit of uncertainty surrounding this gold medal – but the Indian challenger carried more mobile data traffic in Q3 than China Mobile carried mobile data *handset* traffic. How the comparison would have looked in 1H 2017, we don't know. With 'only' 139 million subscriptions but – as shown in the previous section – very high usage, the 4G-only operator Jio emerges as the new world leader in total mobile data traffic.

Silver China Mobile with 4831 PB in 1H 2017 and 3320 PB in Q3 2017

With 878 million mobile subscriptions, China Mobile remains the operator with the largest customer base in the world. But Jio overtook it as the biggest carrier of mobile data traffic sometime in 2017. China Mobile is however just including

handset data in its reported mobile data traffic but it's unclear if it would make a difference. Noticeably, China Mobile uses the home-grown Chinese TD-LTE standard for 4G.

Bronze China Unicom with 2533 PB in 1H 2017 and 2169 PB in Q3 2017

Like its larger competitor China Mobile, China Unicom is also just reporting handset data. When it comes to 4G, China Unicom (as well as fourth-ranked China Telecom) uses the 'regular' FDD-LTE standard.

Other operators that are highly ranked are **MegaFon** from Russia, **Telkomsel** from Indonesia, **SK Telecom** from Korea and **Airtel** from India. Airtel's traffic in Q3 was larger than for the first half year of 2017 and it's thus likely that Airtel will have passed MegaFon, Telekomsel and SK Telecom next time we update this analysis. If the merger between Vodafone India and Idea is approved, the combined company will become even larger.

Europe: Europe's largest operators are not the usual suspects

First to the European breakdown. Since the highest ranked European operator is just number 18 in our global rank, we could conclude that the European countries are less populated than the global leaders. But it's not the operators that you would suspect (with the largest SIM base) that are in the top of Figure 6.

Based on a reported usage with an unspecified definition[3], the largest European carrier of mobile data is **3 UK**. Three is known for its high data usage, having offered **all-you-can-eat** plans for long, but for an operator that just holds 12% of the UK subscriptions, it's quite an achievement. The newly formed **Wind 3** in Italy is just behind. The third largest operator in Europe is Poland's **Plus/Cyfrowy Polsat**[4]. It uses data-only as fixed-line substitution – but is now rumoured to be interested in Netia, a fixed operator. Sixth-ranked **Play** is also Polish and has a similar approach as Plus/Cyfrowy Polsat.

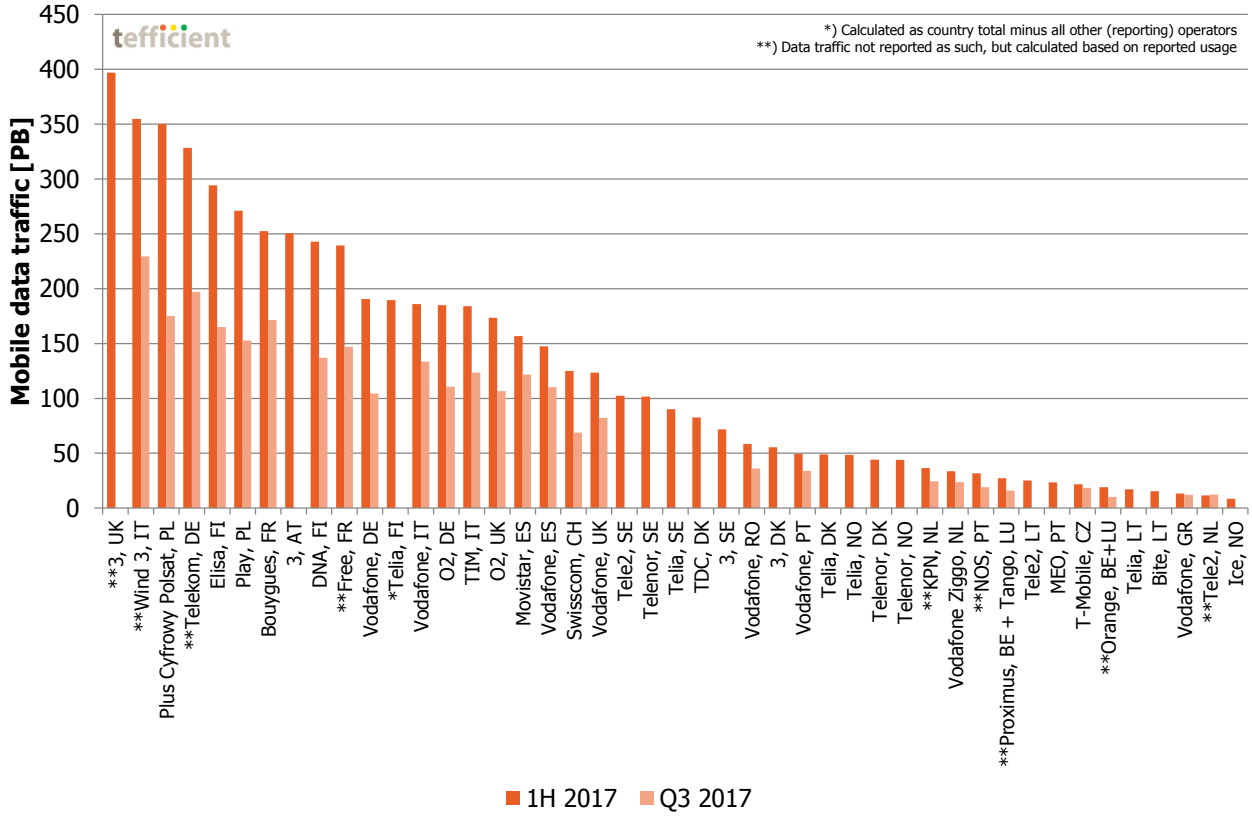


Figure 6. Total data traffic – European operators

Finland has 5.5 million inhabitants, but **Elisa** is still ranked as number 5 in Europe. Elisa's competitors **DNA** and **Telia** are number 9 and 12. They all beat Europe's largest operator in SIMs – **O2 Germany** (#14).

[3] The media team of 3 UK was asked and answered that the definition is not disclosed. We have assumed it is per active subscription.
[4] A bit of reporting uncertainity here as well: The traffic reported for 1H was higher than the traffic reported for the nine months to September. We have prorated the latter figure, thinking that the 1H figure was wrong.

Asia and China: Where the traffic figures get really large

We find the four global traffic leaders in the top of the Asian/Chinese comparison: **Jio**, **China Mobile**, **China Unicom** and **China Telecom**.

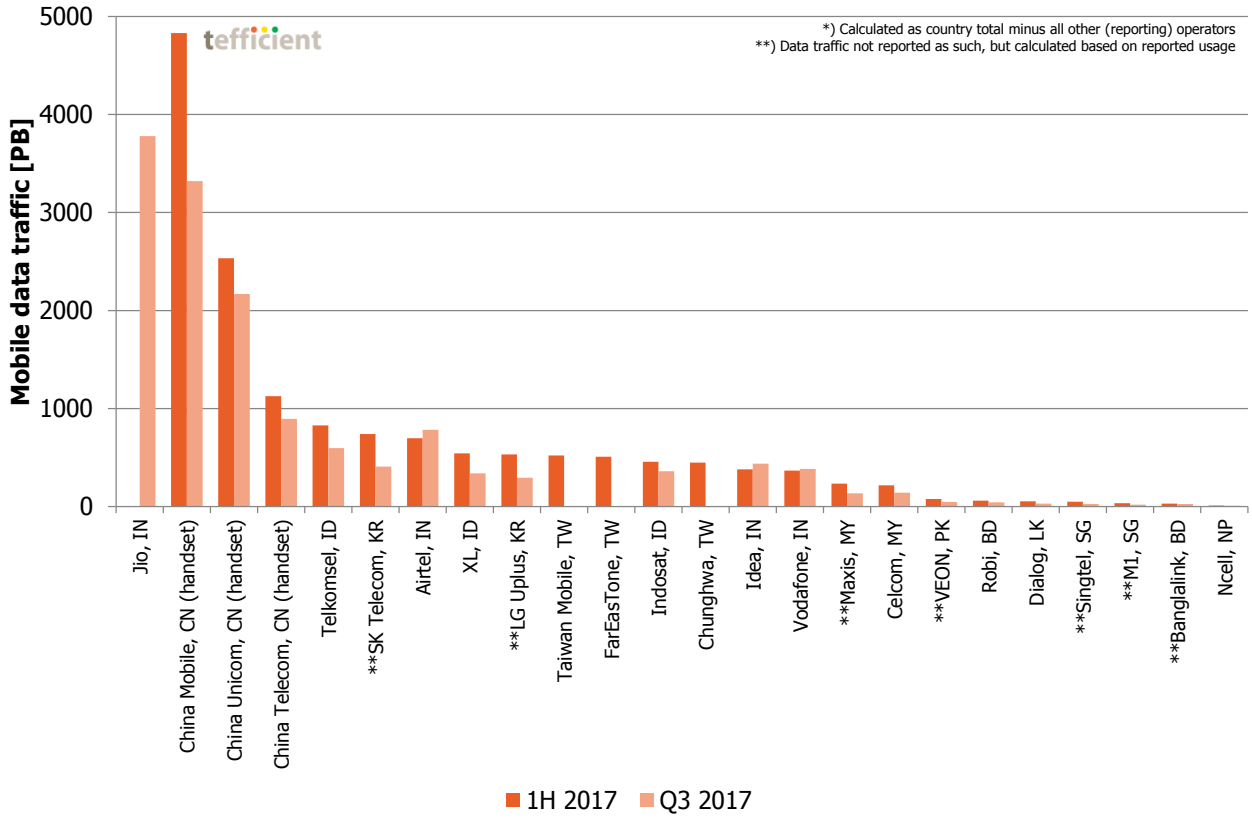


Figure 7. Total data traffic – Asian and Chinese operators

Telkomsel from Indonesia – a quickly growing operator with 190 million subscribers – is number 5 followed by the Korean market leader, **SK Telecom**. Airtel from India is, as pointed out, experiencing fast growth in data traffic and has already passed SK Telecom and Telkomsel in Q3. The other Indian operators in Figure 7, **Idea** and **Vodafone**, have also carried more traffic in Q3 than in the first half of 2017.

RoW: MegaFon larger than 3 Europe Group and Zain Group

Figure 8 collects operators from the rest of the world, but also a few reporting international groups.

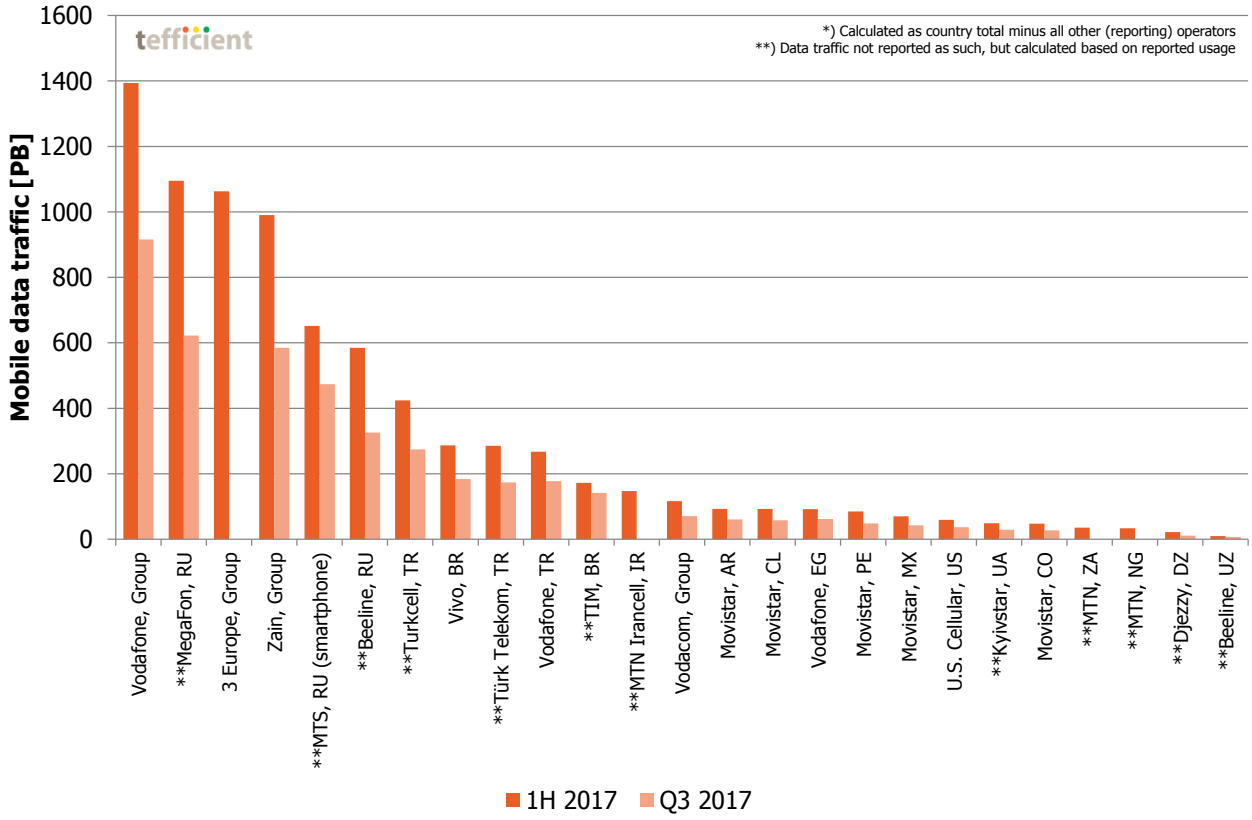


Figure 8. Total data traffic – Rest of world operators

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 attributed to MegaFon's acquisition of the 4G data-only specialist Yota back in 2013.

Turkish and Brazilian operators follow. A newcomer in our analysis is MTN Irancell, an operator carrying more mobile data than the whole of Vodacom group.

World: Total revenue per GB can be anything between 0.3 and 37.4 EUR

In our country analysis, we have focused on mature markets. 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 much 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. Figure 9 is though showing that this is the case only for a few sub-Saharan operators.

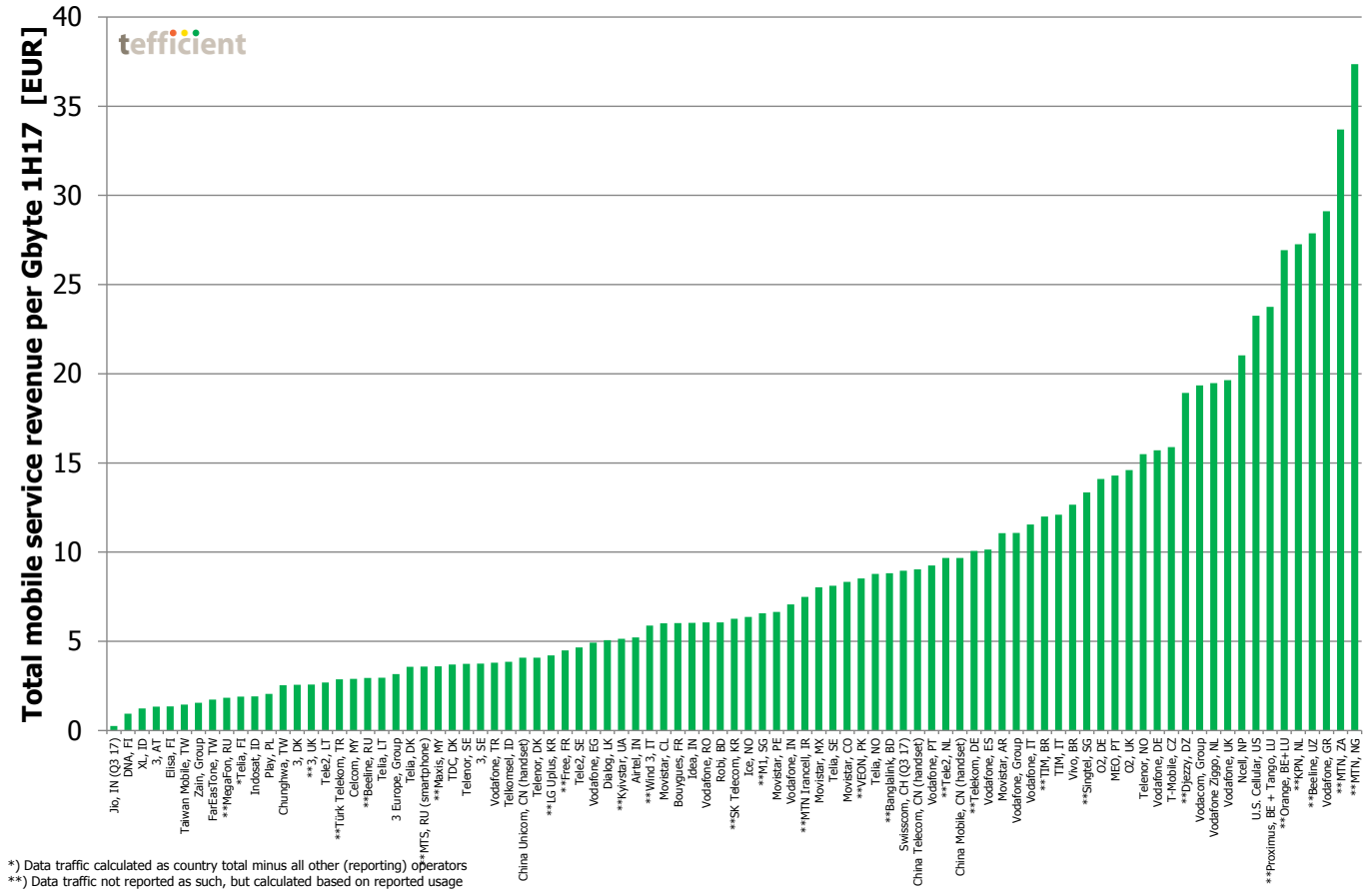


Figure 9. Total mobile service revenue per gigabyte – all operators[5]

[5] That also report mobile service revenue

We will – for readability reasons – soon break down Figure 9 in 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 as such, 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. 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).

The majority of operators are still not reporting anything, though. Orange Group, Telia Company and Telenor Group are examples of it. And, of course, all large 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 9 identify the operators that get the lowest total mobile service revenue per gigabyte in the world in the first half of 2017:

1. **Jio**, India – 0.3 EUR (Q3 2017)
2. **DNA**, Finland – 0.9 EUR
3. **XL**, Indonesia – 1.2 EUR
4. **3**, Austria – 1.3 EUR
5. **Elisa**, Finland – 1.3 EUR
6. **Taiwan Mobile**, Taiwan – 1.4 EUR
7. **Zain**, Group – 1.6 EUR
8. **FarEasTone**, Taiwan – 1.7 EUR
9. **MegaFon**, Russia** – 1.8 EUR
10. **Telia**, Finland* – 1.9 EUR
11. **Indosat**, Indonesia – 1.9 EUR
12. **Play**, Poland** – 2.1 EUR

All these operators are either active in high data usage markets (Finland, Taiwan) or have usage leadership positions. In the mature market focused country analysis you can identify Finland, Taiwan, Austria and Poland as some of the country markets (of the covered) with the highest revenue per gigabyte so this list seems plausible.

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

1. **MTN**, Nigeria** – 37.4 EUR
2. **MTN**, South Africa** - 33.7 EUR
3. **Vodafone**, Greece – 29.1 EUR
4. **Beeline**, Uzbekistan** – 27.9 EUR
5. **KPN**, Netherlands** – 27.3 EUR
6. **Orange**, Belgium & Luxembourg** – 26.9 EUR
7. **Proximus**, Belgium & **Tango**, Luxembourg** – 23.7 EUR
8. **U.S. Cellular**, US – 23.3 EUR
9. **Ncell**, Nepal – 21.0 EUR
10. **Vodafone**, UK – 19.6 EUR
11. **Vodafone Ziggo**, the Netherlands – 19.5 EUR
12. **Vodacom**, Group – 19.3 EUR

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

We conclude that there is a **150-fold difference** between the operator with the highest total service revenue per gigabyte (MTN Nigeria) and the operator with the lowest (Jio India).

Europe: Greece, the Netherlands and Belgium have the highest revenue per GB

Figure 10 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.

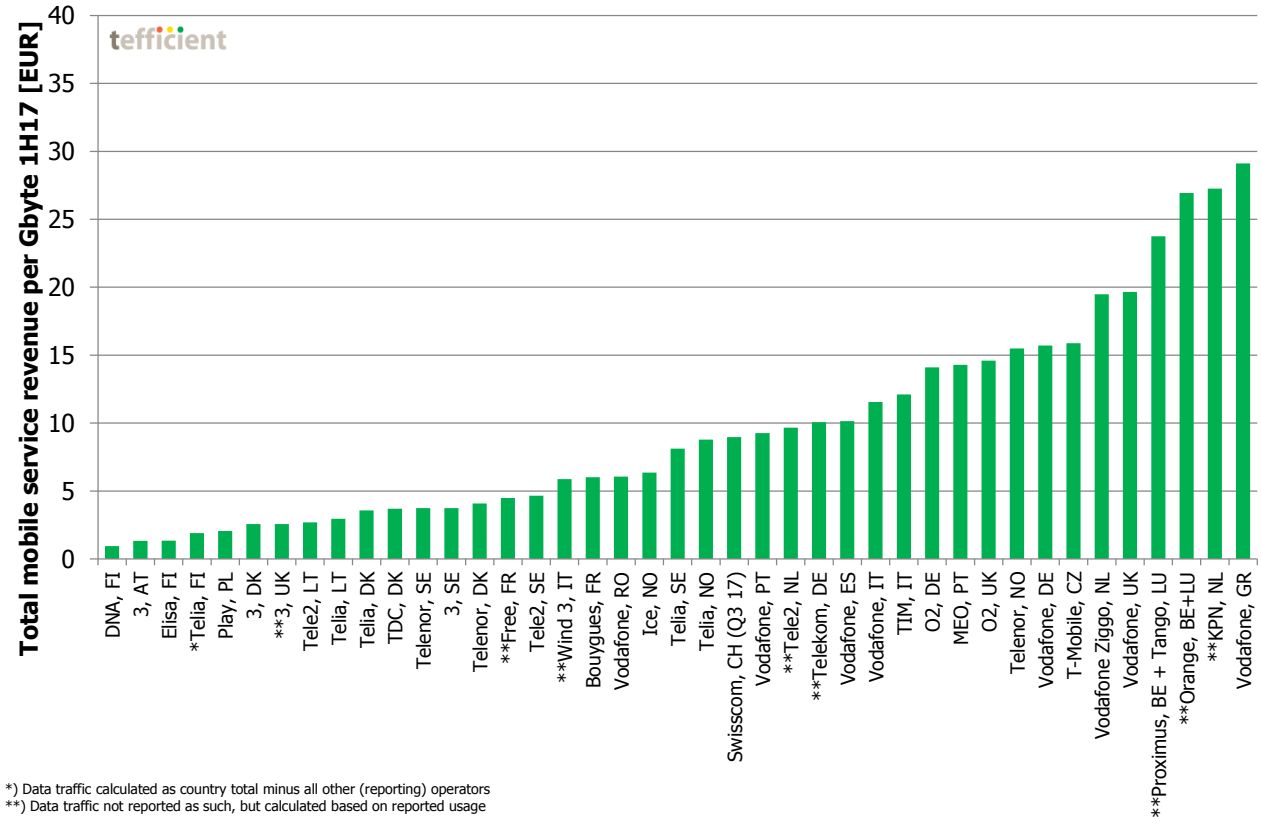


Figure 10. Total mobile service revenue per gigabyte – European operators

The position of **3** is important to point out: In almost each European market where it operates – Austria, Denmark, the UK, the UK and Italy[6] – 3 has revenues per gigabyte which are lower than *all* of its local competition. It just in Sweden that 3 isn't having the lowest revenue, but the difference to Telenor is marginal. It's thus fair to say that 3 has done a lot to improve the competitiveness of many European markets when it comes to mobile data. At the same time, 3 Group has been allowed by the European Commission to consolidate several European markets; Austria, Ireland and Italy have all gone from four to three[7] MNOs based on initiatives taken by 3's owner **CK Hutchison**. The exception is the UK where the European Commission turned down 3's request to merge with O2.

[6] No data exists for 3 Ireland

[7] Italy will come back to four MNOs as a result of the remedies agreed with the EU: Iliad (owner of French operator Free) will use assets sold by 3 and Wind as basis for a new fourth MNO

Asia and China: Revenue per GB coming down fast

Figure 11 shows the Asian and Chinese operators. Jio, Indonesian and Taiwanese operators have the lowest revenue per gigabyte whereas no operator (except Nepal's Ncell) is having very high revenue. The quickly growing data usage in China and India has moved the Chinese and Indian operators to the left compared to our 2016 analysis.

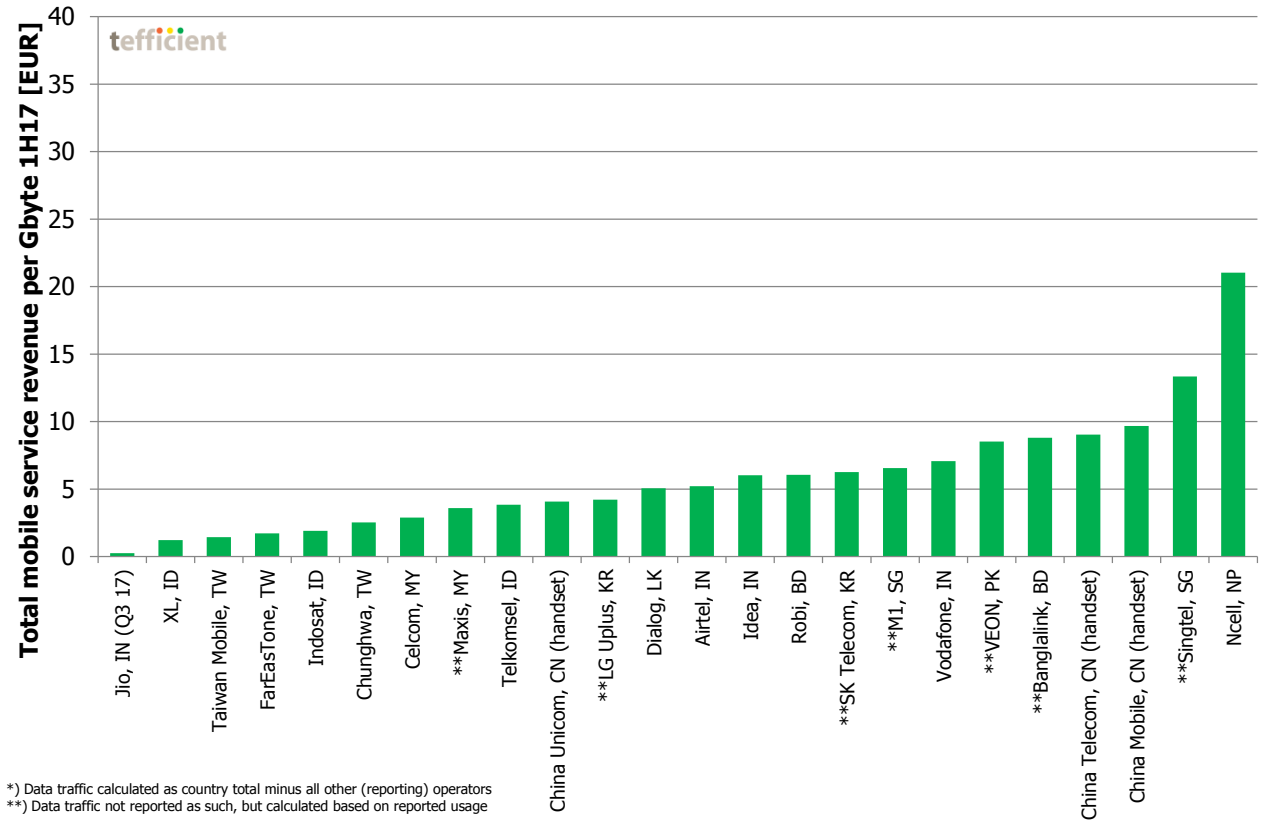


Figure 11. Total mobile service revenue per gigabyte – Asian and Chinese operators

RoW: Revenue per GB spans between 1.6 and 37.4 EUR

Finally Figure 12 which shows the operators in the rest of the world alongside a few groups that separate out mobile service revenue in their reporting.

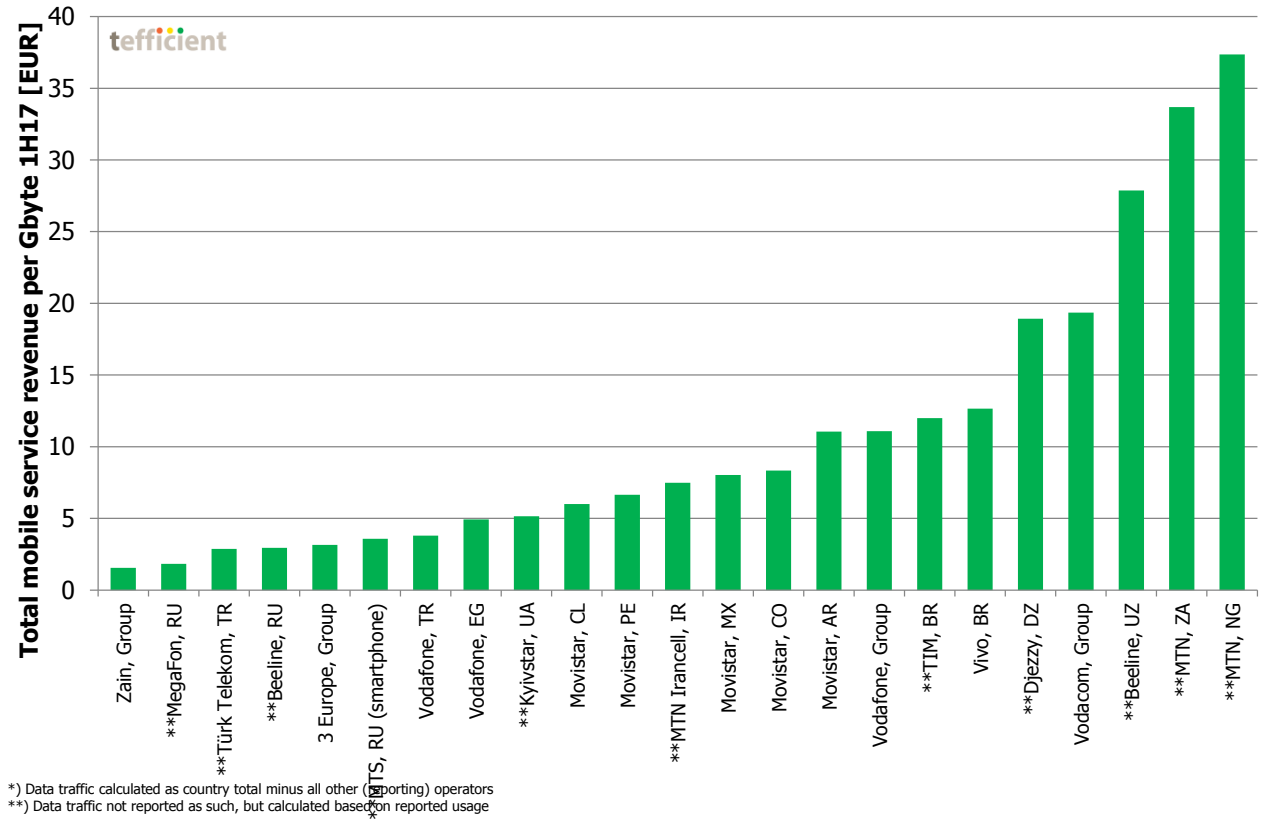


Figure 12. Total mobile service revenue per gigabyte – rest of world operators

Together with Zain Group and 3 Europe Group, operators from Russia and Turkey have the lowest revenue per gigabyte whereas Latin American operators dominate the middle. Sub-Saharan operators including Vodacom Group populate the right hand of the graph.

Let's put it all together

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 vs. usage** chart. But where it is normally populated with countries, it is here populated with operators, see Figure 13.

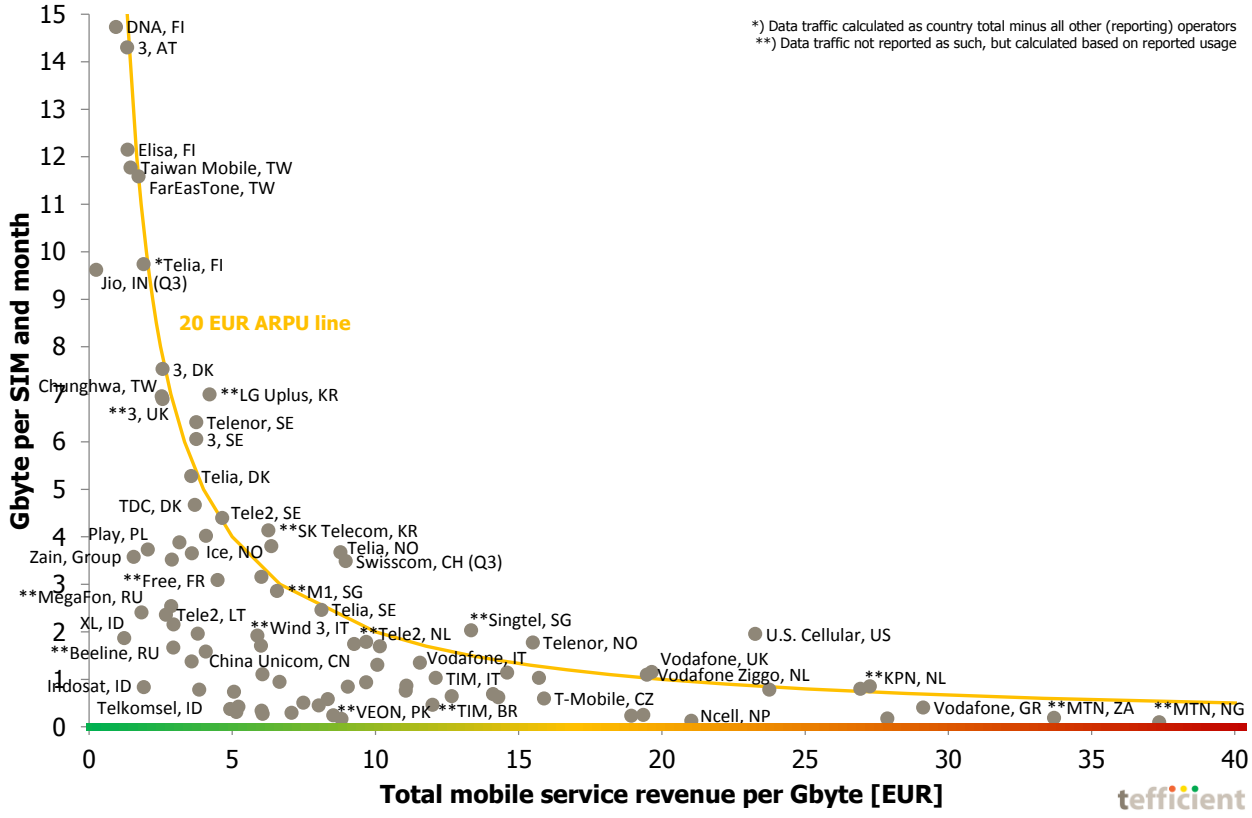


Figure 13. Mobile data usage vs. total mobile service revenue per Gbyte 1H 2017

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.

One could criticise the chart for comparing the number of gigabytes with something that relates to it – the revenue per gigabyte. Our next chart, Figure 14, is therefore comparing the number of gigabytes with the revenue per subscription, i.e. the ARPU. And that is perhaps even more interesting.

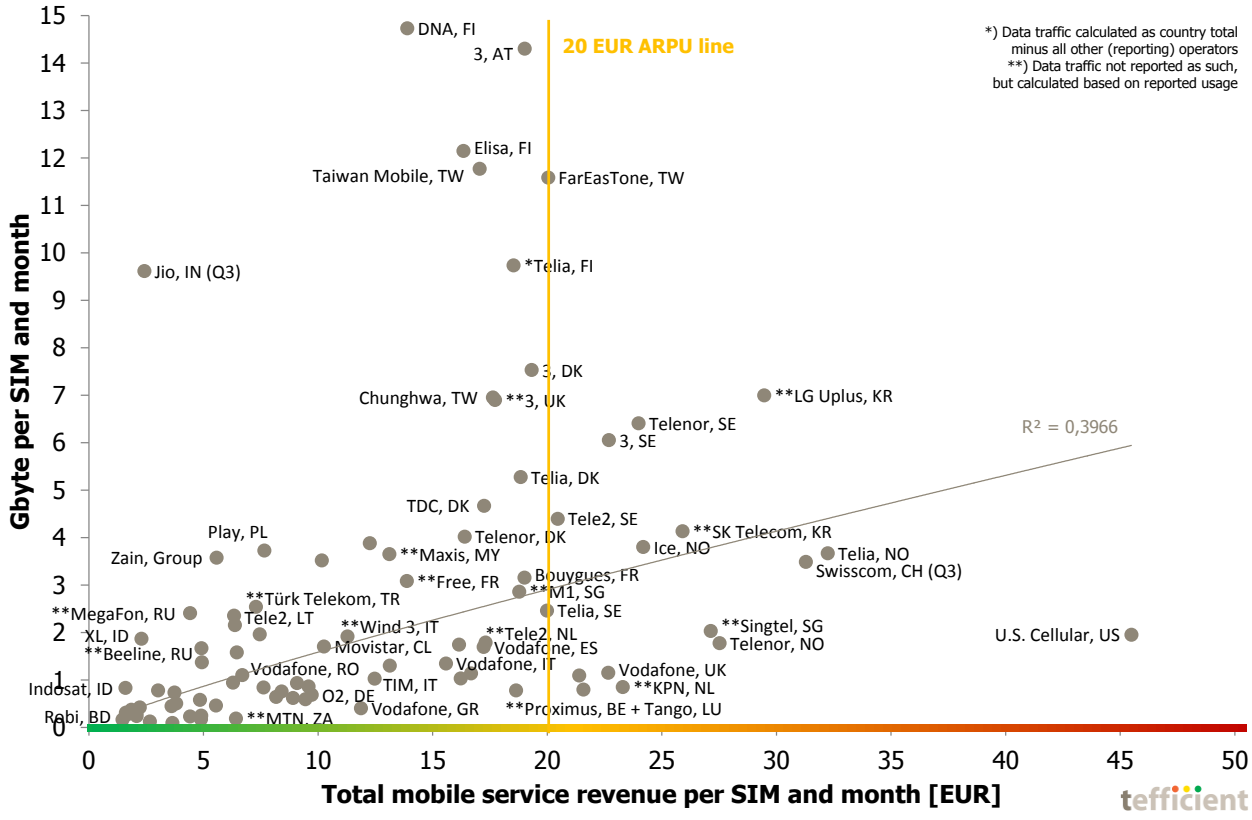


Figure 14. Mobile data usage vs. total mobile service revenue per SIM 1H 2017

Of the 89 operators in this sample[8], there is one – **U.S. Cellular** – that enjoys much higher total mobile service revenue per SIM than all other operators. It is interesting that this happens even though the mobile data usage isn't particularly high. If comparing to the corresponding graph in the country analysis, we note that USA and Canada play in this corner. If other US operators – or the Canadian operators – would have reported their data usage, they would likely have been close to the position of U.S. Cellular. Its position is thus rather more a reflection of a local market reality (high ARPU, low to medium data usage) than being unique to U.S. Cellular.

Other markets with high ARPU are **Norway**, **Switzerland**, **Singapore** and **Korea**. Korean users consume fairly much data for that high ARPU though.

The most generous operators are found in the upper left corner: **Jio** India (obviously), **DNA**/**Elisa** Finland, **Taiwan Mobile**/**FarEasTone**, **3** Austria, **Play** Poland, **Zain** Group, **MegaFon** Russia and **XL** Indonesia.

But there's hope in Figure 14: The grey regression line suggests that **operators with higher data usage have higher ARPU**.

Operators with higher data usage tend to have higher ARPU

[8] All that report both mobile data traffic/usage and mobile service revenue

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.

Dressing the Christmas tree

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?

In our mature market focused country analysis, we were disappointed with the asymmetric look of the Christmas tree. Here it looks more balanced:

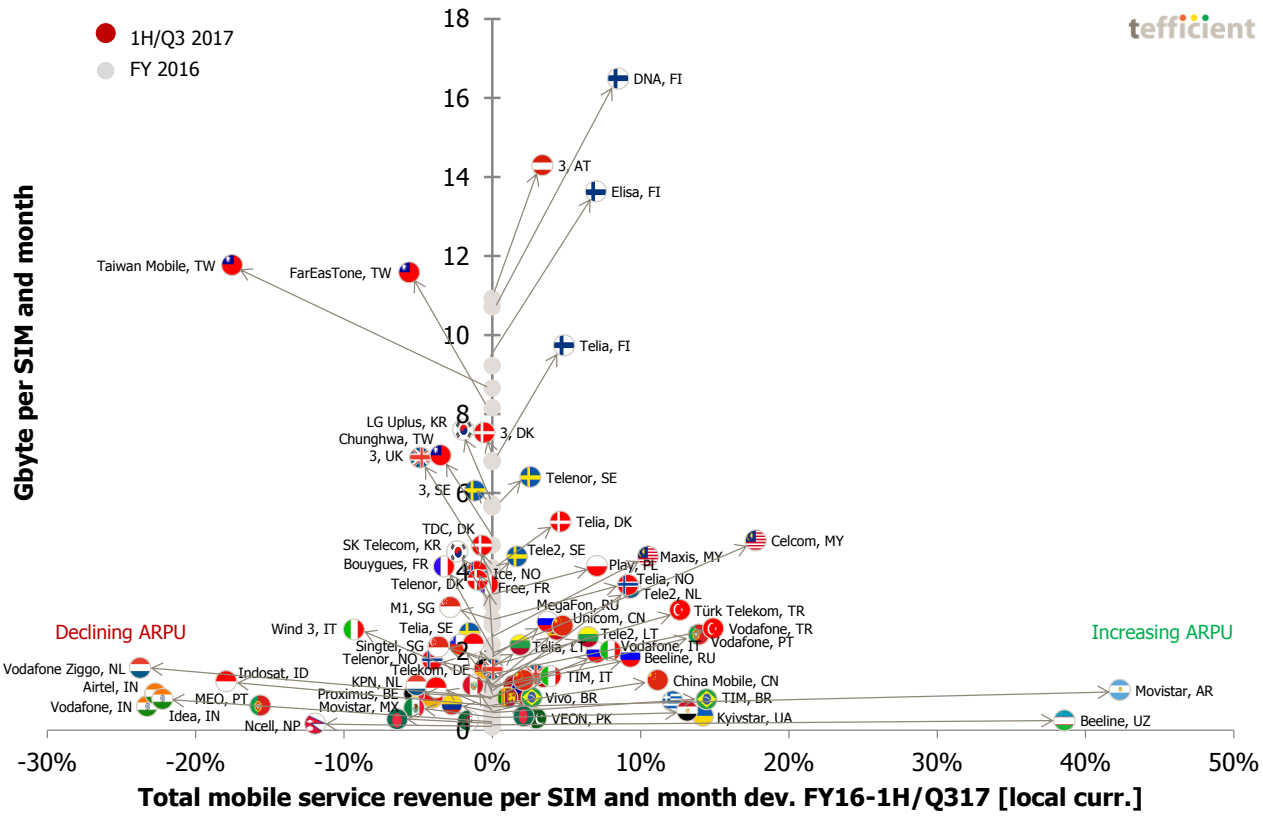


Figure 15. Mobile data usage development vs. ARPU[9] development – FY 2016 to 1H 2017 or Q3 2017[10]

For every single operator in Figure 15, data usage has grown. But it's just **53% of the operators that have managed to use that to grow ARPU**. These operators are having branches growing to the *right* in the Christmas tree.

There are quite a few good performances here which we soon will highlight. But we need to comment on the positions of Movistar Argentina and Beeline Uzbekistan where ARPU grew around 40% in local currency. The explanation can be due to prices rising following a significant depreciation of the local currency (-85% in

[9] 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.
[10] Q3 2017 used if available, otherwise 1H 2017. The same time period is always used for the data usage and the revenue development.

Uzbekistan, -24% in Argentina vs. EUR). The position of the two Turkish operators Vodafone and Türk Telekom is likely also because of the weakened Turkish Lira (-23% vs. EUR).

47% of the operators are on branches facing left. They have had data usage growth, but still a **decline in ARPU**. There are a couple of markets standing out quite negatively here: **India**, bottom left, is one. Jio's disruptive entry has not only increased the data traffic a lot, it has been quite negative for the ARPU development of Vodafone, Airtel and Idea.

Data usage grows for 100% of operators

ARPU grows for 53% of operators

Taiwan is another market with issues: All three major operators – Taiwan Mobile, FarEasTone and Chunghwa – are experiencing quick ARPU depreciation in spite of fast expansion of the data usage.

To better be able to analyse the Christmas tree, let's first highlight the maturing markets and then the mature markets.

Maturing markets

After having highlighted only the maturing markets, it becomes quite clear why our operator Christmas tree looks better than our mature market focused Christmas tree in our country analysis: The contribution from the maturing market operators is generally positive.

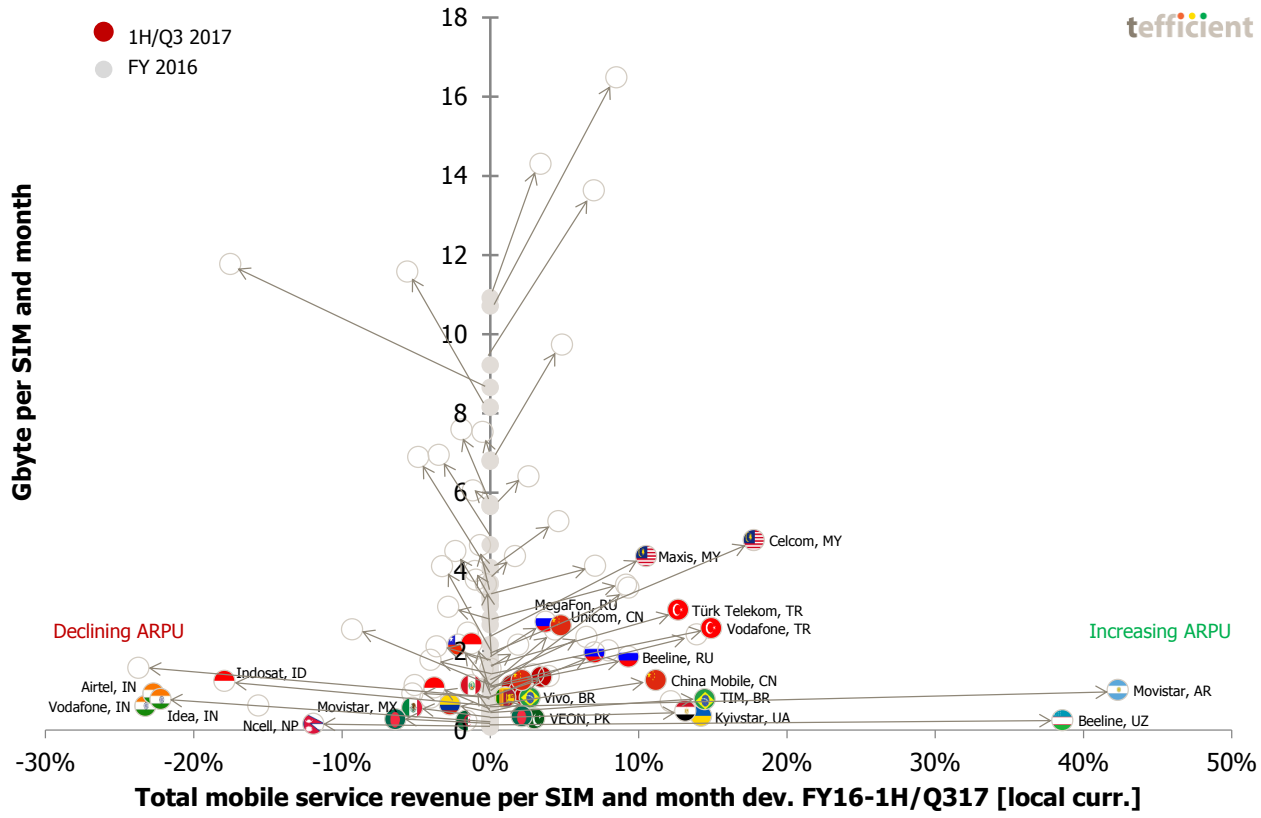


Figure 16. Mobile data usage development vs. ARPU development – FY 2016 to 1H 2017 or Q3 2017 – maturing markets

Let's identify a few maturing market best practices from Figure 16 – where local currency depreciation doesn't seem to be the explanation:

- The Malaysian operators **Celcom** and **Maxis** have both been able to grow ARPU – also beyond the depreciation of the local currency (-9% vs. EUR)
- The Russian operators **Beeline**, **MTS** and **MegaFon** have all been able to grow ARPU
- The Argentinian operator **Movistar** has been able to grow ARPU – also beyond the depreciation of the local currency (-24% vs. EUR)
- **China Mobile** has been able to grow ARPU – also beyond the depreciation of the local currency (-7% vs. EUR)
- The Brazilian operators **TIM** and **Vivo** have both been able to grow ARPU

Mature markets

The mature market tree, see Figure 17, is providing a view with less ARPU growth compared to the maturing markets. Generally speaking, it seems to be more of a zero-sum game where ARPU overall isn't growing.

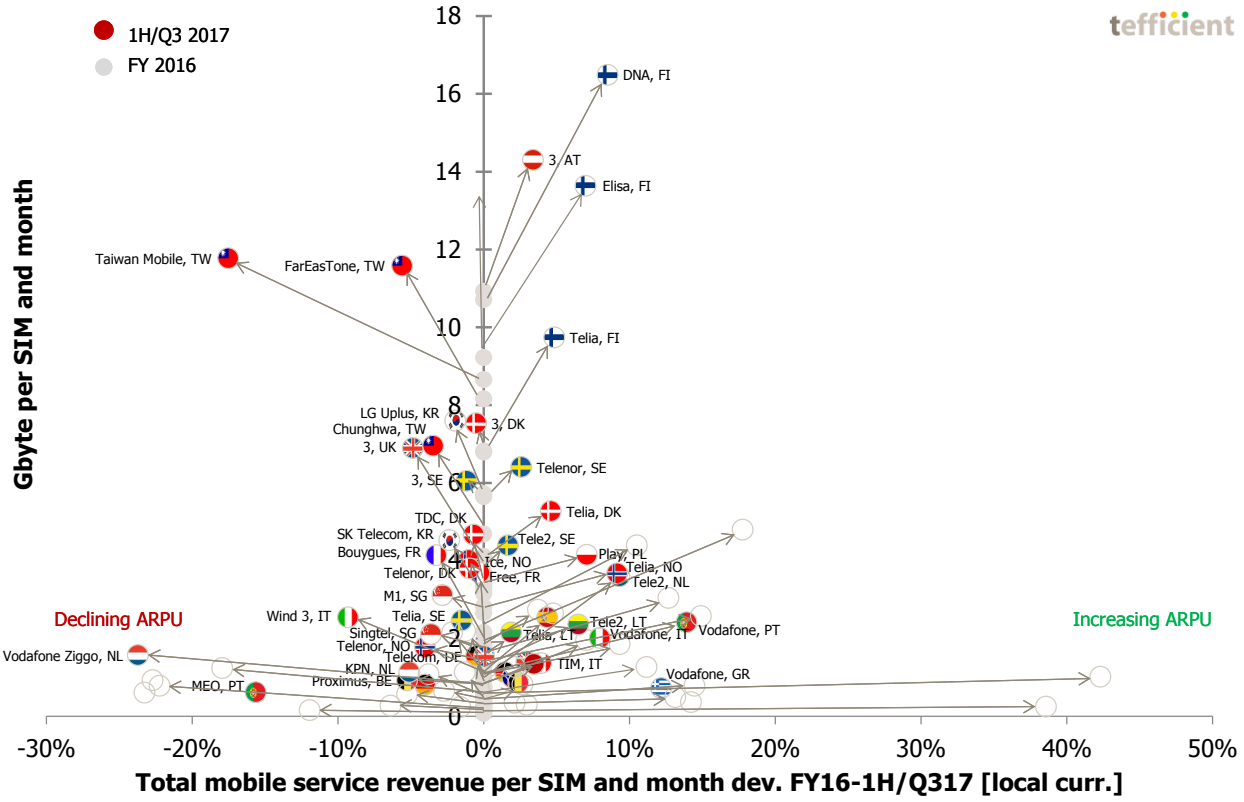


Figure 17. Mobile data usage development vs. ARPU development – FY 2016 to 1H 2017 or Q3 2017 – mature markets

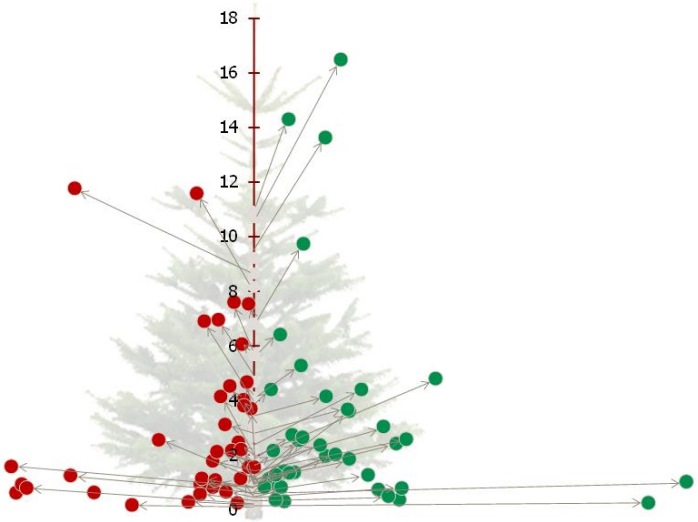
But there are a few best practices also in mature markets:

- The Finnish operators **DNA**, **Elisa** and **Telia** have all been able to grow ARPU following the data traffic growth even though, as said, most of their contracts come with unlimited data volume
- **Play** in Poland has also been able to grow its ARPU
- **Telia** in Norway has also had a good growth in ARPU – in contrast to Telenor that declined
- **Tele2** in the Netherlands (hiding under Telia Norway) has had a good growth in ARPU – in contrast to Vodafone Ziggo[11] and KPN that both declined
- **Tele2** Lithuania (and to some extent Telia) have had ARPU growth
- **Vodafone** Italy (and to some extent TIM) have had ARPU growth – at the expense of 3 Wind
- **Vodafone** Portugal has had ARPU growth – at the expense of MEO
- **Vodafone** Greece has – from a low level – been able to increase data usage and ARPU

[11] Vodafone sold its fixed business when creating the JV with Ziggo. The ARPU trend is exaggerated as Vodafone included its small fixed business in its reported service revenue. The mobile service revenue of Vodafone Ziggo is in decline also in 2017 (Q3 vs. Q1 -4.4%).

Conclusion

Our Christmas tree graph shows that data usage grows for all operators – and that **53%** of these operators have been able to turn that into ARPU growth.



Operators in maturing markets – with India as a clear exception – are generally faring better in ARPU growth than operators in mature markets. Even if so, we have been able to identify around ten mature market operators that clearly are delivering on the "**more for more**" promise. These are the operators that have proven their capability to monetise an increasing mobile data usage.

For **47%** of the operators, the reality is different: Data usage increases, sometimes strongly, but the ARPU still decreases. These operators are following the "more for less" stream.