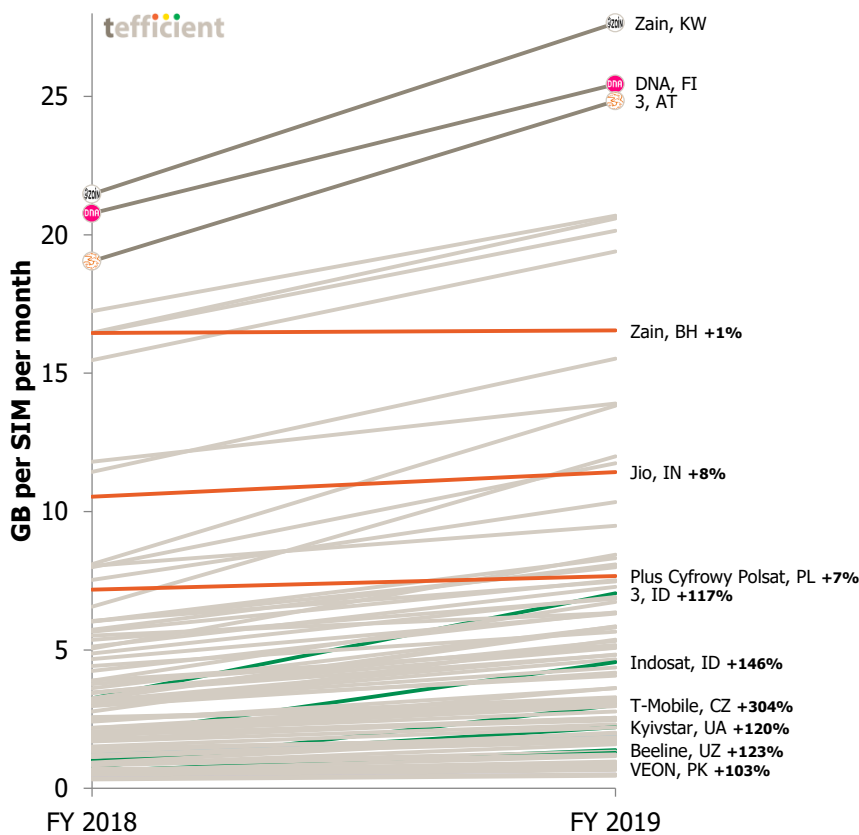


Industry analysis #1 2020

Mobile data – full year 2019

The gig economy: 58% more gigabytes generated 0.4% more revenue

5G monetisation lessons from China and Korea



Tefficient’s 26th public analysis on the development and drivers of mobile data ranks 105 operators based on average data usage per SIM, total data traffic and revenue per gigabyte in 2019.

The data usage per SIM grew for each and every operator. 44% could turn that data usage growth into ARPU growth. Identify the skilled minority that delivered on “more for more”.

In this analysis, we take 5G monetisation lessons from China and Korea. Surely 5G could increase data usage – but what happens to ARPU?

Eighteen operators above 10 GB per SIM per month in 2019

Figure 1 shows the average mobile data usage for 105 reporting or reported¹ mobile operators globally with values for the full year of 2019 or for the first half of 2019.

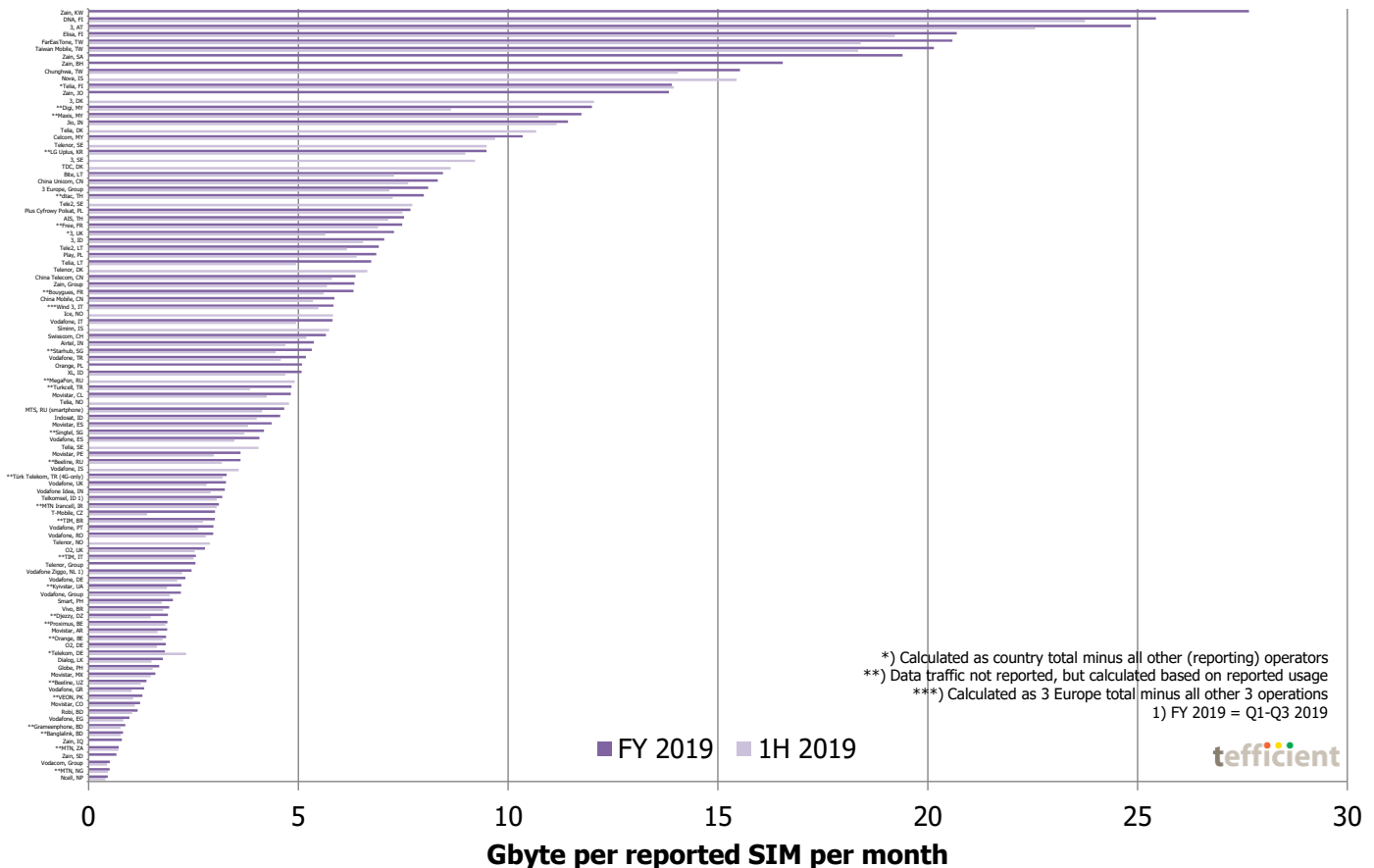


Figure 1. Average data usage per reported SIM per month – all operators

As it's not easy to read Figure 1 we will break it down into three regions of the world, but let's first identify the **global data usage podium** – see Figure 2.



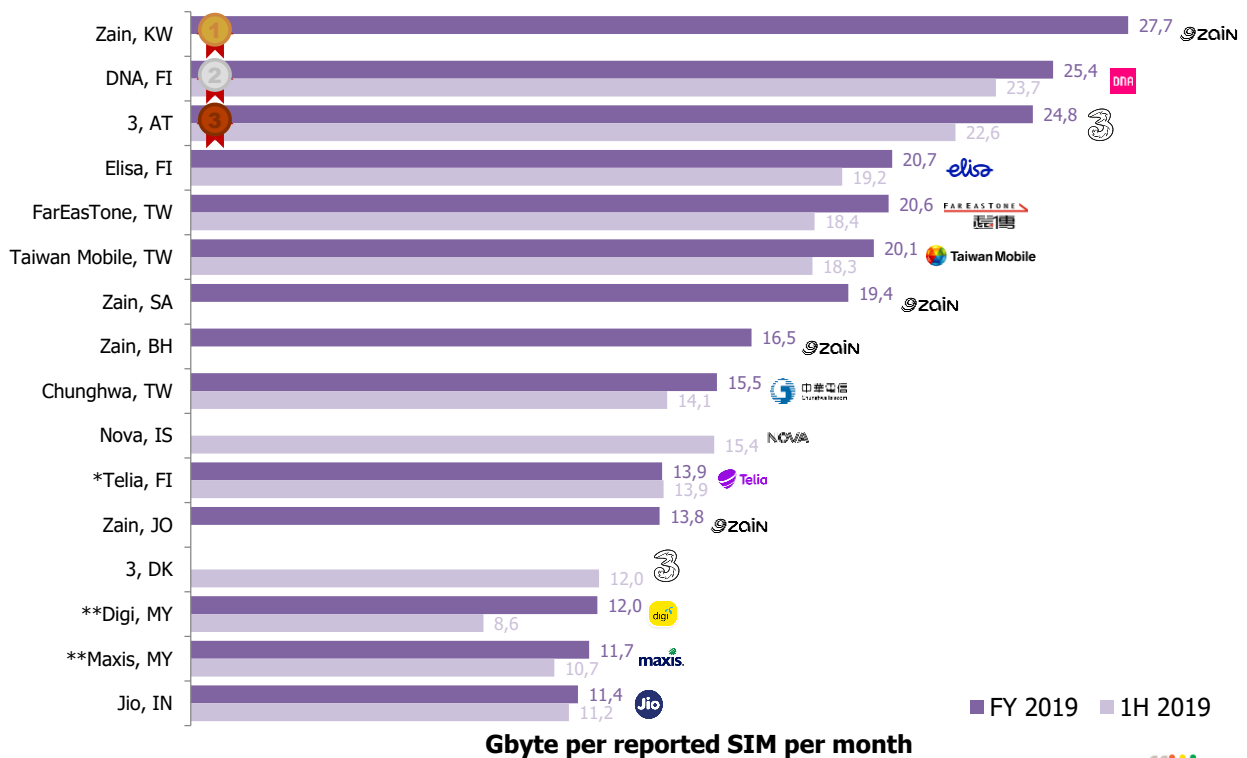
There is a change at the top: **Zain** Kuwait has overtaken DNA as the operator with the highest mobile data consumption per SIM. With **27.7 GB** of data per SIM per month in 2019, Zain records the highest-ever average usage to date. Zain launched 5G in June 2019 and sells smartphone plans with massive buckets – up to 1 TB per month with 4G and up to 2 TB per month with 5G. Zain is also offering data-only plans with buckets up to 6 TB – and one premium truly unlimited data-only plan.



With 25.4 GB, the previous number one, **DNA** from Finland, gets the silver medal. **Unlimited, speed-tiered, plans** – both for smartphones and data-only – form a key component of the Finnish

¹ By regulators – if reported latest 7 April 2020

market logic. DNA doesn't report² how large share of its base that has unlimited plans, but for Finland as a whole, that share was **74%** of non-M2M SIMs in December 2019. The Finnish operators all launched 5G in 2019, but DNA was the last to do so in December and then only as a solution for fixed wireless. (DNA has in 2020 expanded that offering into general mobile as well). DNA did nevertheless have the fastest growth in mobile data usage among the three Finnish operators in 2019, but the 22% growth rate was slower than previous years.



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

Figure 2. Average data usage per reported SIM per month – top 16 operators



Drei (3) Austria defends its bronze position from our [previous report](#). The company carried **44%** of Austria's total mobile data traffic in 2019. The Austrian home internet plans were pretty much invented by Drei and come with **unlimited, speed-tiered, data**. Hybrid routers are now offered by all operators (A1, Magenta and Drei) to speed up the slow fixed internet that is characteristic for Austria. Unlimited smartphone plans are though a relatively new thing in Austria – Magenta and A1 (and finally also Drei) introduced these in 2019.

Below the podium we find **Elisa** from Finland (20.7 GB per SIM per month in 2019). In spite of launching 5G months before its two competitors Telia and DNA (well before there were any 5G terminals to deliver), there wasn't any 5G effect on Elisa's overall mobile data usage: It grew 20% in 2019, a tad slower than for DNA.

² Telenor Group acquired DNA in 2019 and reporting standard might change

Elisa is chased by the two Taiwanese operators **FarEasTone** (20.6 GB) and **Taiwan Mobile** (20.1 GB). Zain's operations in Saudi Arabia and Bahrain follow as #7 and #8. In position 9 we find Taiwan's **Chunghwa** that has significantly lower usage (15.5 GB) compared to FarEasTone and Taiwan Mobile but the fastest growth – 36% in 2019.

The fastest growth in Figure 2 is though with **Digi** from Malaysia. In 2019, its average usage grew **83%** and Digi thereby surpassed its local competitor Maxis (+47%) in average data usage.

Zain Bahrain had the slowest growth – just 1%. It is not just slowest among the operators in Figure 2, but the slowest of all our studied operators globally. We have compiled many reports like this over the years, but we have not yet spotted an operator without growth in the overall mobile data usage.

Also **Jio** from India (#16) features slow growth – 8% in 2019.

Europe: Nordic 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, tops this chart with **Elisa** as third.

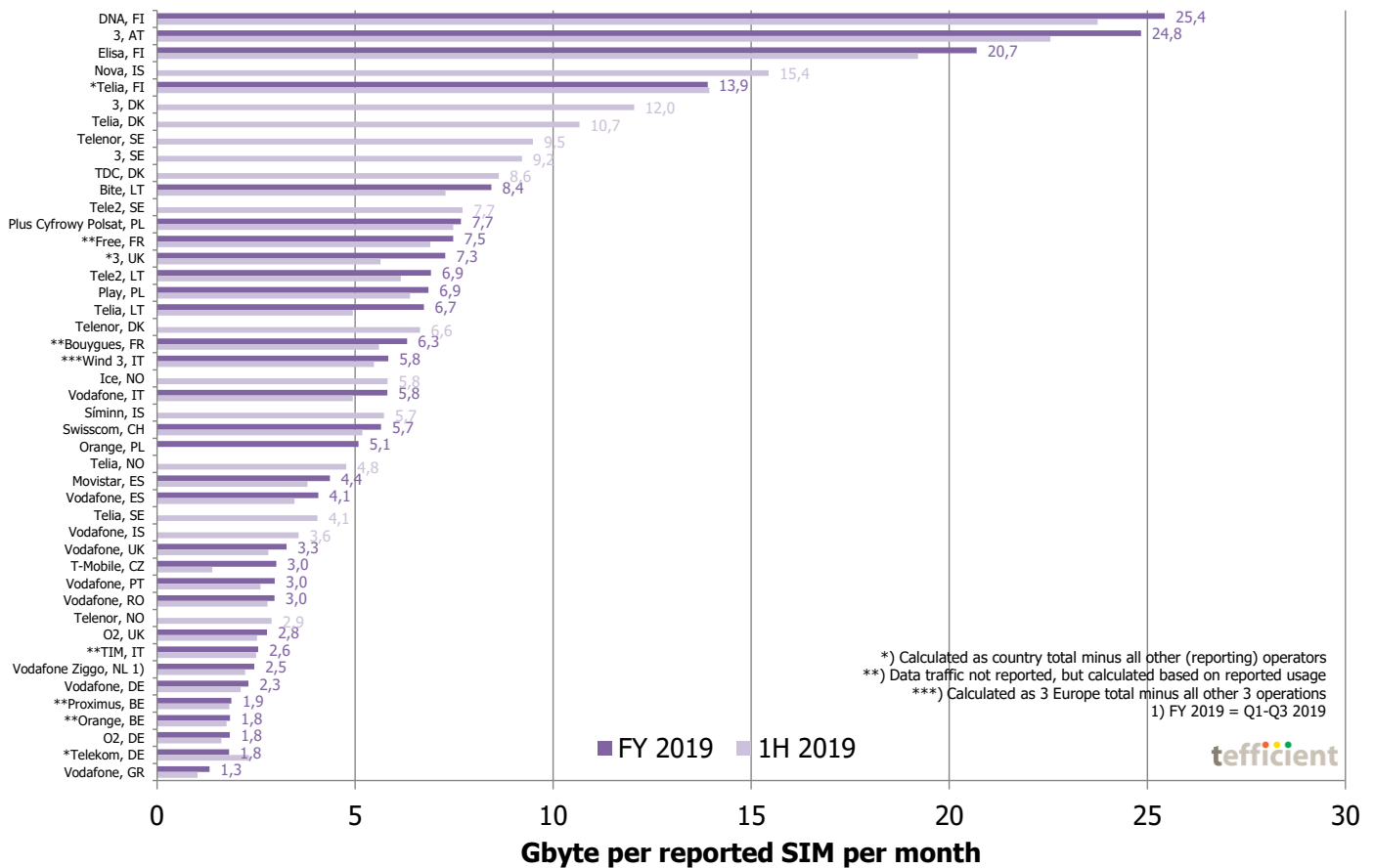


Figure 3. Average data usage per reported SIM per month – European operators

Nova from Iceland is ranked as number 4 based on the latest available 1H 2019 data. **Telia** from Finland follows. Since Telia doesn't report its mobile data traffic, we have assigned the country residual to Telia (after having deducted Elisa's and DNA's reported traffic). A bunch of Danish and Swedish operators follow based on latest available 1H 2019 data.

The bottom seven operators are from the low usage markets³ of **Greece** (Vodafone), **Germany** (Telekom, O2, Vodafone), **Belgium** (Orange, Proximus) and the **Netherlands** (Vodafone Ziggo).

T... Who is then having the fastest usage growth in Europe? It's **T-Mobile Czech Republic** with a whopping **304%** – from just 0.7 GB per month in 2018 to 3.0 GB per month in 2019. After years of

³ See our latest country data usage report: <https://tefficient.com/usage-up-but-monetisation-falters/>

[political and consumer pressure](#), the Czech operators in 2019 finally gave in and started to offer premium unlimited smartphone plans. The allowances on data-only plans were also expanded significantly – but the home internet plans with unlimited data are no longer offered, so the traffic growth in that segment may have overwhelmed T-Mobile.

At the other end of the usage growth scale we find **Plus/Cyfrowy Polsat** from Poland with just **7%**. Little by little, the Polish operators have capped its unlimited home internet plans and Plus/Cyfrowy Polsat is today no longer offering mobile-based home internet without a usage cap. And as data-only subscriptions represent a disproportionate share of the total mobile data traffic, such changes has an immediate impact on the overall data usage. There are no Polish figures reported to support this, but in e.g. Austria data-only represented 28% of the non-M2M SIMs but 76% of the mobile data traffic in 2019.

Some signs of that Europe's operators start to scale back on unlimited home internet

Asia and China: Taiwan fills the podium – but Malaysia on the move

The three Taiwanese operators **FarEasTone**, **Taiwan Mobile** and **Chunghwa**⁴ hold the top three usage positions in Asia and China. Our [previous report](#) featured a special section on Taiwan. In short, one could sum it up saying that dirt cheap unlimited plans drive traffic much more than it drives service revenue.

India's Jio has been overtaken in our ranking by **Digi** and **Maxis** from Malaysia. **Celcom**, the incumbent, is number 7 just behind Jio. Unlimited plans are becoming more common in Malaysia driven into the market by the fourth operator, U Mobile⁵.

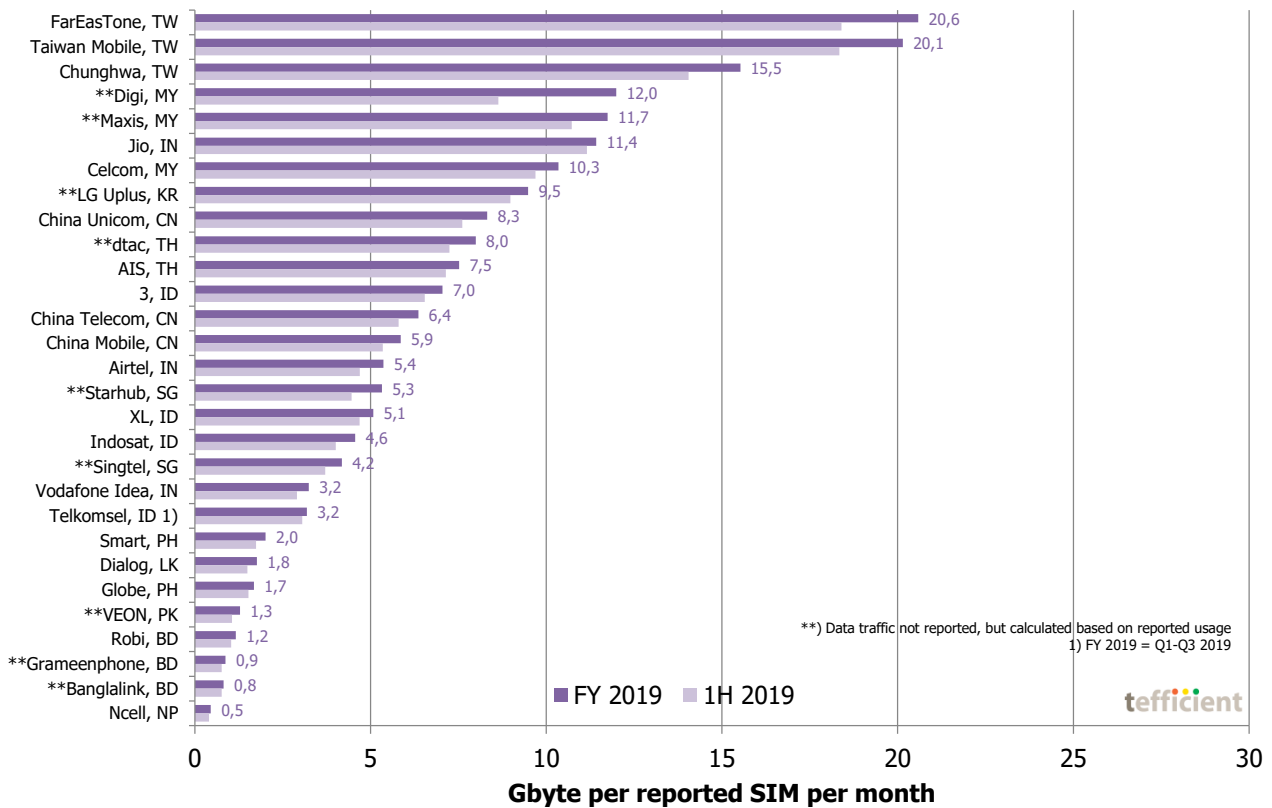


Figure 4. Average data usage per reported SIM per month – Asian and Chinese operators

There are three Asian/Chinese operators with more than 100% growth in the mobile data usage in 2019:

- Indosat Indonesia +146%
- 3 Indonesia +117%
- VEON Pakistan +103%

⁴ The operators aren't reporting their mobile data traffic themselves; it is being reported by the regulator with a certain delay. 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.

⁵ Regretfully not reporting

The slowest growth is with **Jio** – just **8%**. Having said that, Jio is still top-ranked in India with 11.4 GB per month. That usage is more than double that of Airtel and 3.5x that of Vodafone Idea. But competition is coming closer: Airtel's growth was 93% and Vodafone Idea's 75%.

Usage generally grows quickly in Asia and China

5G monetisation lessons from China and Korea

Our [previous report](#) featured a special section on 5G's impact on the data usage in Korea. We will provide an update on that in a bit, but let's first study some preliminary results from another high-profiled 5G launch in 2019: **China**.

The Chinese 5G networks were launched in November/December 2019 and Figure 5 shows the subscriber stats for February.

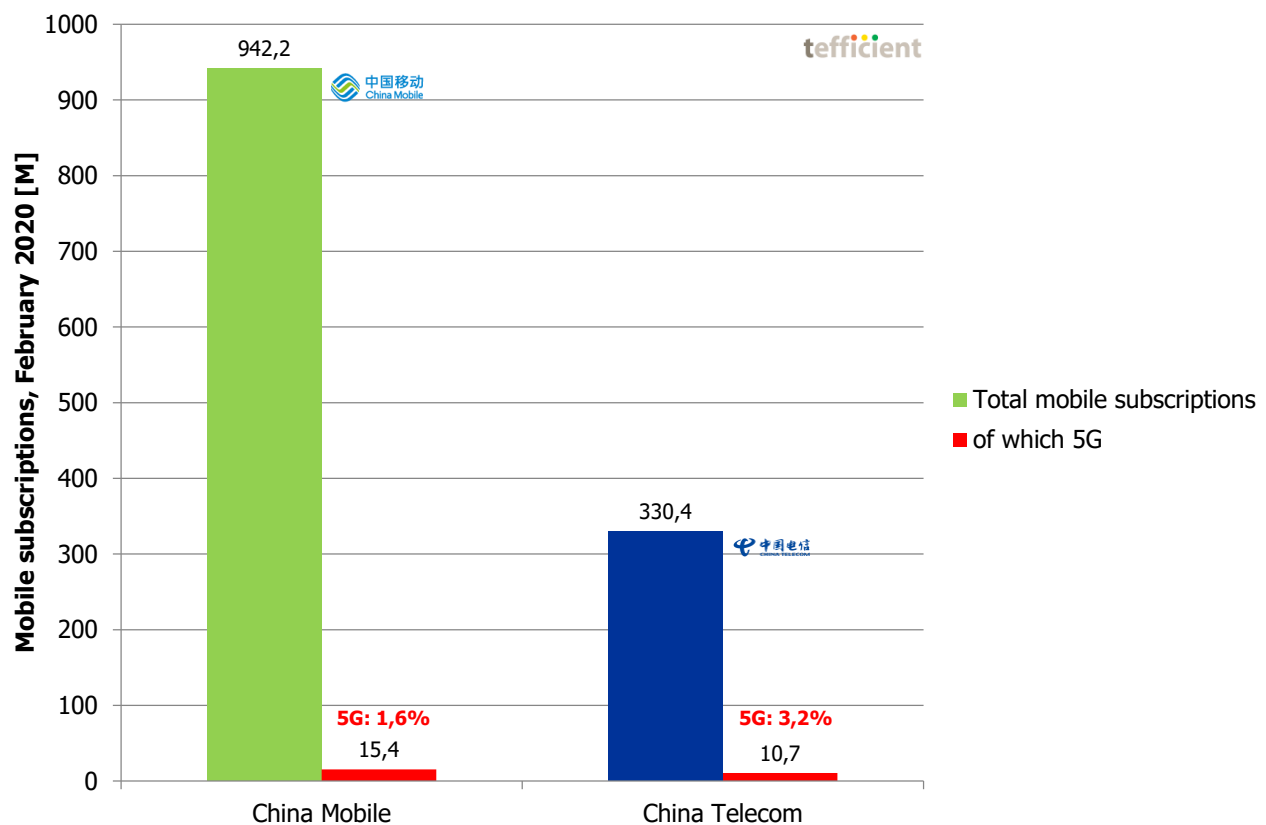


Figure 5. Reported subscriber bases – total and 5G – for China Unicom and China Telecom, February

China Mobile – with a total of 942 million mobile subscribers – had **15.4 million** 5G subscribers in February, making it the operator with the largest 5G base in the world. China Telecom had 10.7 million 5G subscriptions, but as China Telecom's total mobile base is roughly one third of China Mobile's, China Telecom's 5G adoption was actually **3.2%** – twice that of China Mobile. The third Chinese operator, China Unicom – with 318 million mobile subscribers – has yet to report its 5G base.

The Chinese 5G plans are not unlimited, but come with very large data buckets. Most likely, some of these plans are used by customers *not* having purchased a 5G handset. It's not easy to match the time series with that of e.g. [Counterpoint](#), but the 5G subscriber numbers in China appears to be larger than the number of

shipped 5G handsets. The Chinese operators are also pointing out that what they report is “mobile customers who have subscribed to 5G tariff plans”. But the two 5G-reporting operators, China Mobile and China Telecom, are keen to show that the 5G customers have **much higher data usage**, see Figure 6.

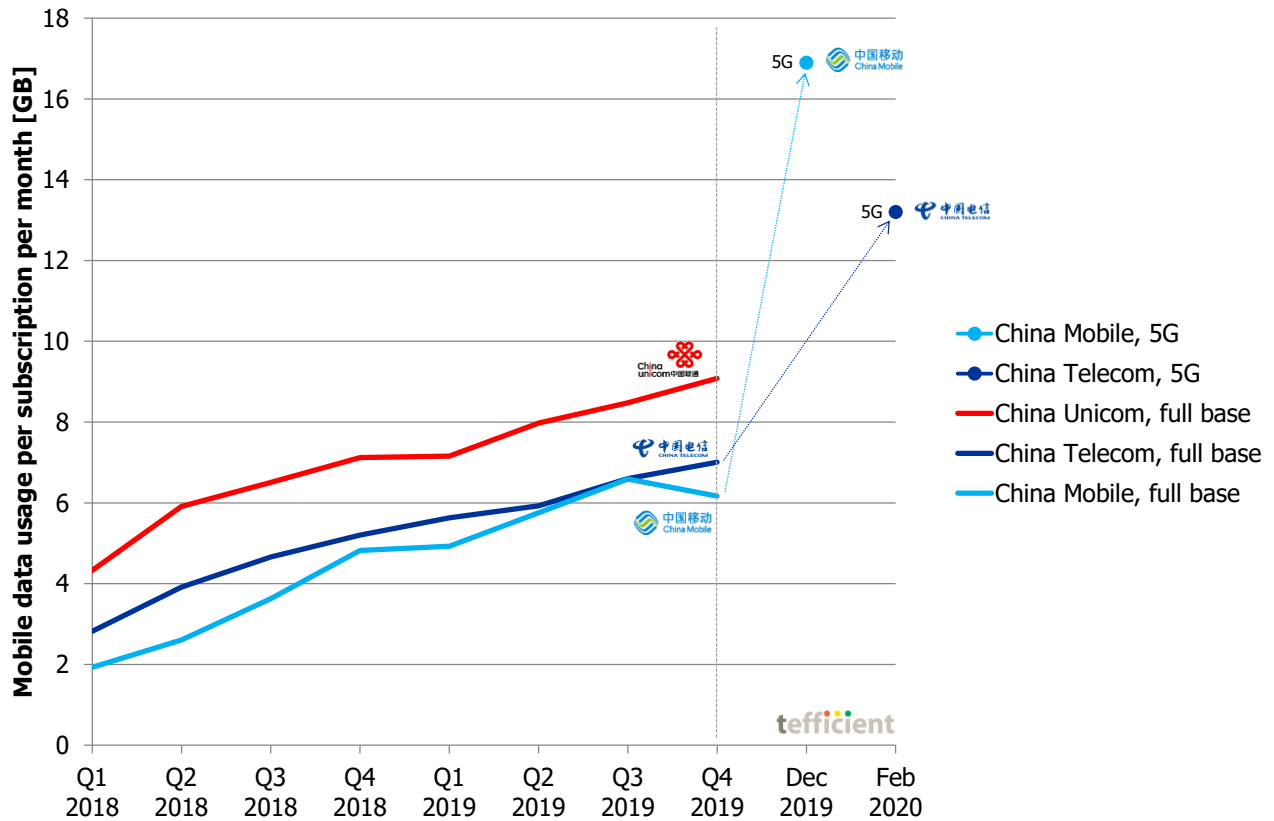


Figure 6. Development in mobile data usage – Chinese operators

The lines are showing the average mobile data usage per any subscription for the three Chinese operators. Traffic is reported on a quarterly basis. By the end of 2019, the average Chinese mobile subscription used about 7 GB per month.

China Mobile reported an average data usage of **16.9 GB** per 5G subscriber for December. That’s roughly **three times** that of the average China Mobile subscription in Q4 2019. In December, China Mobile only had 2.6 million 5G subscribers (compared to 15.4 million two months later) so one could suspect that the usage wouldn’t stay at the 16.9 GB level. And we do not of course know what usage the early adopters of 5G had before they migrated to 5G.

Well actually we do, since China Mobile reported these two before/after figures for February:

- Data usage **+16.8%** vs. pre-migration
- ARPU **+6.5%** vs. pre-migration

So if we trust this, a 5G plan customer had 16.8% higher data usage after having migrated from a 4G plan to a 5G plan. More importantly, that customer **paid 6.5% more**. That sounds much better than the headline of this analysis – *58% more gigabytes generated 0.4% more revenue*.

Returning to Figure 6, we can see that also China Telecom dropped a figure for the data usage among its 5G customers: **13.2 GB** for February. That's roughly double that of the average China Telecom subscription in Q4 2019. Also here, it led to a like-for-like increase in ARPU:

- ARPU **+10%** vs. pre-upgrade

Does this mean that any operator should expect to see similar growth rates in ARPU once 5G is launched? Not necessarily; the Chinese competition logic is different than that of most other markets. And it doesn't happen without investments. The Chinese operators operate sizeable 5G networks:

- China Mobile **50k** 5G sites by end of December
- China Unicom **60k** 5G sites by end of February
- China Telecom **80k** 5G sites by mid-March

Most of the 5G sites operated by China Unicom and China Telecom are shared, but the total number of 5G sites in China has still surpassed that of the previous rollout leader, South Korea, who had about 110k 5G sites in total by the end of February.

Over to **Korea** then. The green line in Figure 7 shows the development in the average usage per 4G subscription: It has been quite stable at around 9-10 GB per month. The introduction of 5G in April 2019 has not had any major impact on the average 4G usage.

Chinese operators report quite significant ARPU increase for customers upgrading to 5G

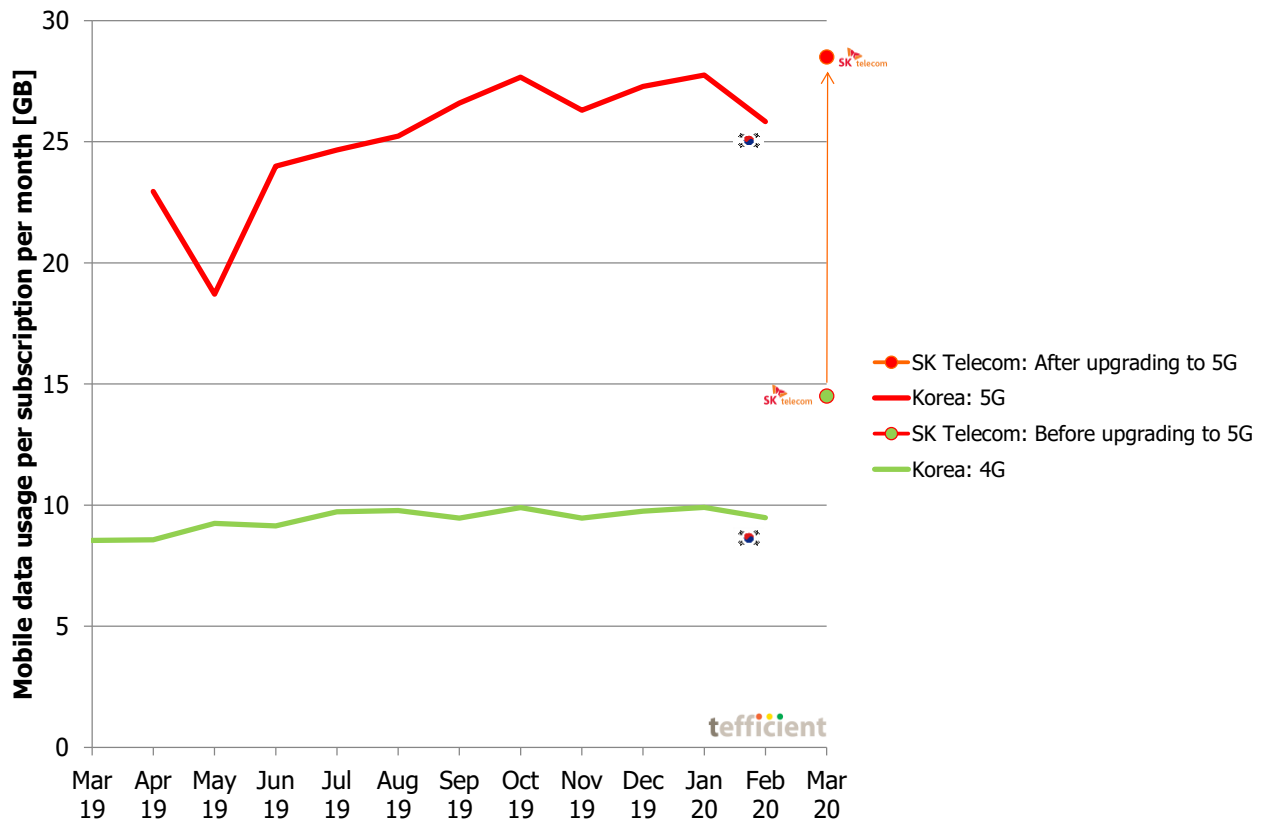


Figure 7. Development in mobile data usage per 4G and 5G subscription – South Korea⁶

The upper, red, line shows the 5G usage. Most months, it has been **three times higher** than the 4G usage. As we mentioned in our [previous report](#), 5G has de facto introduced truly unlimited plans to the general public in Korea – so thinking that 5G in itself triples usage is incorrect. Or?

Pre-empting the one year anniversary of 5G, SK Telecom [reported](#) these before/after figures in March 2020:

- Data usage: From 14.5 GB to **28.5 GB** (2x)

You can see these two data points to the right in Figure 7. Note that the upgrading customers of SK Telecom had significantly higher data usage already when in 4G; 14.5 GB vs. the country average of about 9-10 GB. But nevertheless that usage doubled after having moved to 5G. SK Telecom mentions that the usage of **VR, video streaming and gaming** increased with 5G. In a previous update, SK Telecom also mentioned that subscribers spent 37% less time connected to Wi-Fi after the transition to 5G – suggesting that some 5G subscribers simply toggled Wi-Fi off. That behaviour could rather be driven by the introduction of unlimited than the introduction of 5G, though.

In October 2019, SK Telecom reported that the doubling of data usage for customers upgrading to 5G had resulted in a **50% increase in ARPU**. It sounds almost too good to be true and perhaps it isn't any longer – as SK Telecom didn't provide an update to it in its one year anniversary release. Looking at Figure 8,

⁶ As reported by the ministry, MSIT

though, we can see that the launch of 5G seems to have helped to lift the *overall* ARPU into the growth territory again after two years of y-o-y decline. It's only LG U+ that still has to pass the zero line.

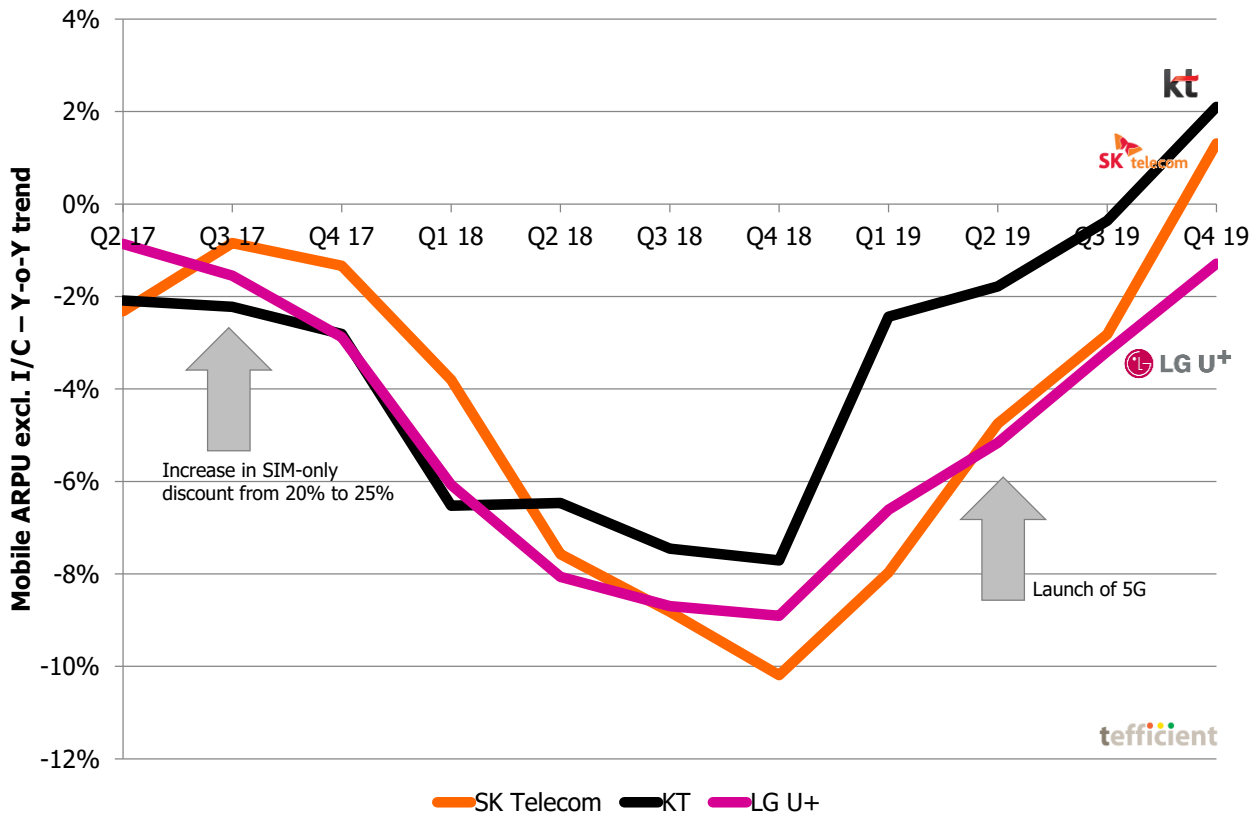


Figure 8. Development in overall mobile ARPU per operator – South Korea

The number of 5G subscriptions in Korea was 5.4 million by the end of February. That's **8%** of the total mobile base. 5G's share of traffic was 23%.

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 9.

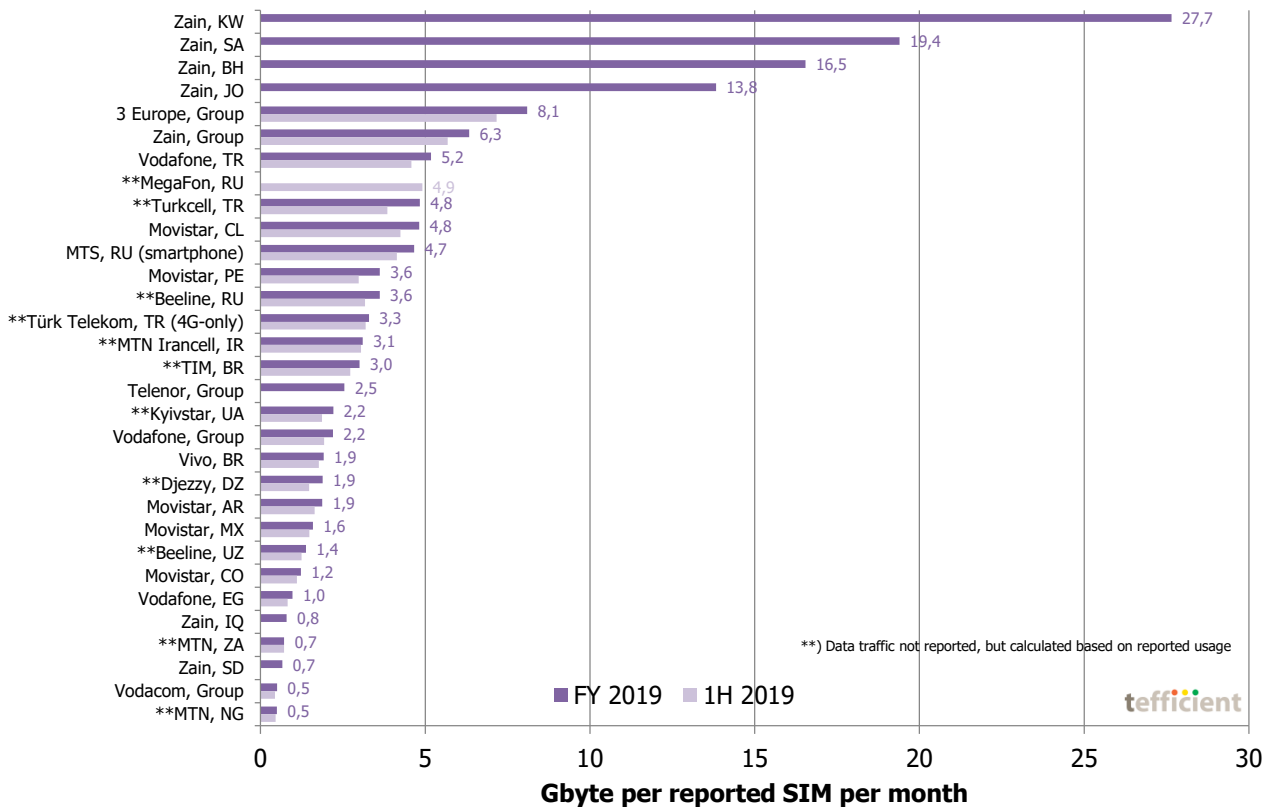


Figure 9. Average data usage per reported SIM per month – RoW operators

The world leader, **Zain Kuwait**, tops this chart. Actually all of the top four operators are Zain operations. Zain Group is though just ranked as number 6, showing that two Zain operations, Iraq and Sudan, pull that group average down significantly. Two thirds of the subscriptions in Zain Group are in these two countries.

3 Europe Group is ranked as number five and it's easy to see why; in the European comparison (Figure 3), several operations of '3' are top-ranked: Austria, Denmark and Sweden.

Russian and Turkish operators have relatively high usage but the growth has slowed considerably compared to previous years. The Latin American operators have – with the exception of Chile and Peru – fairly low average usage.

It is a pity that none of the US or Canadian operators report their data traffic or usage. Otherwise they would have been in this chart.

African operators are – together with Zain Iraq – having the lowest monthly data usage per SIM in our sample.

There are three RoW operators with more than 100% growth in the mobile data usage in 2019:

- Beeline Uzbekistan +123%
- Kyivstar Ukraine +120%
- Djezzy Algeria +103%

As mentioned earlier, Zain Bahrain has the slowest usage growth rate in the world: 1%.

China Mobile carried 86% more traffic in 2019 than in 2018

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 10.

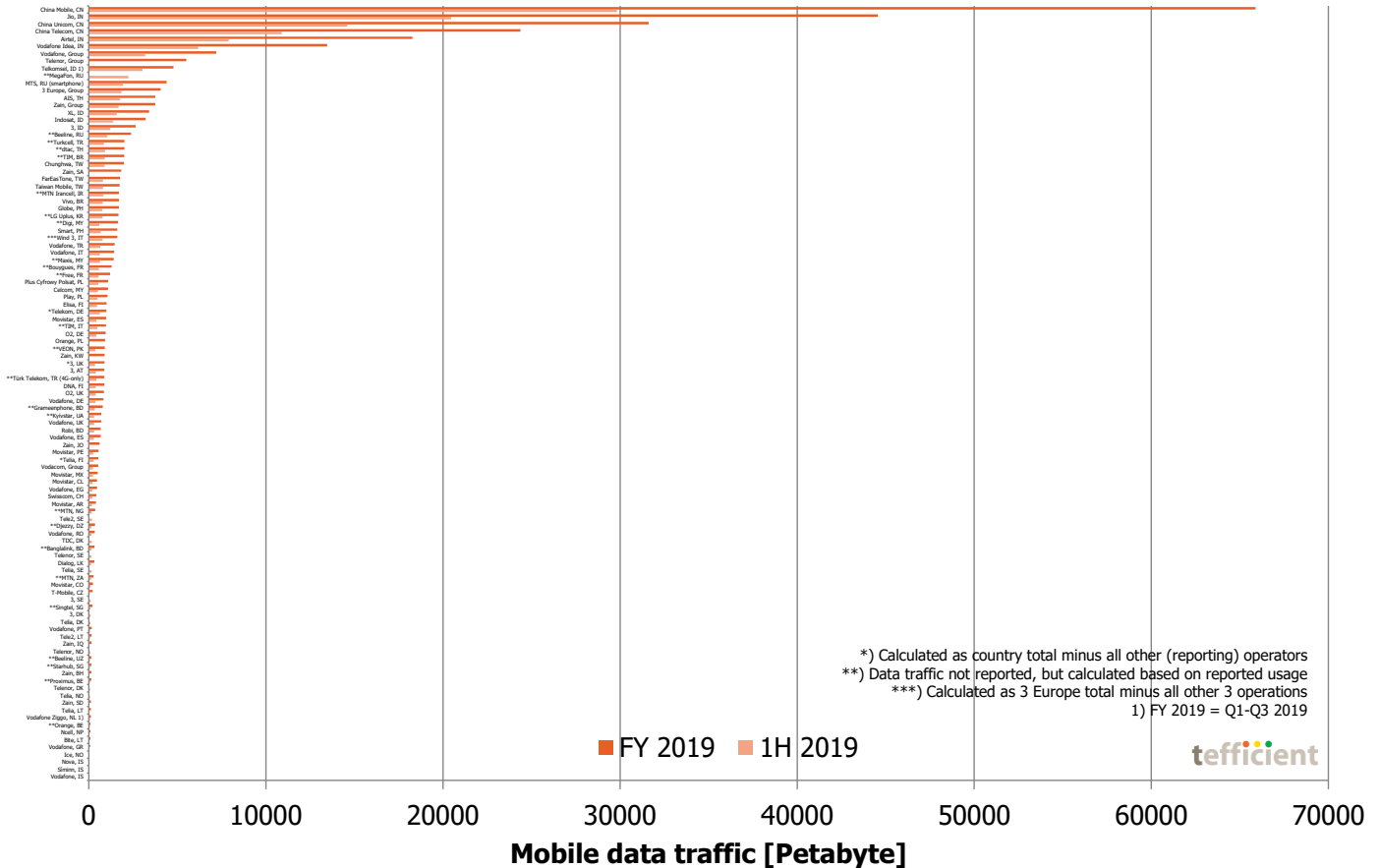


Figure 10. Total data traffic – all operators

As it's difficult to read Figure 10 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 11.

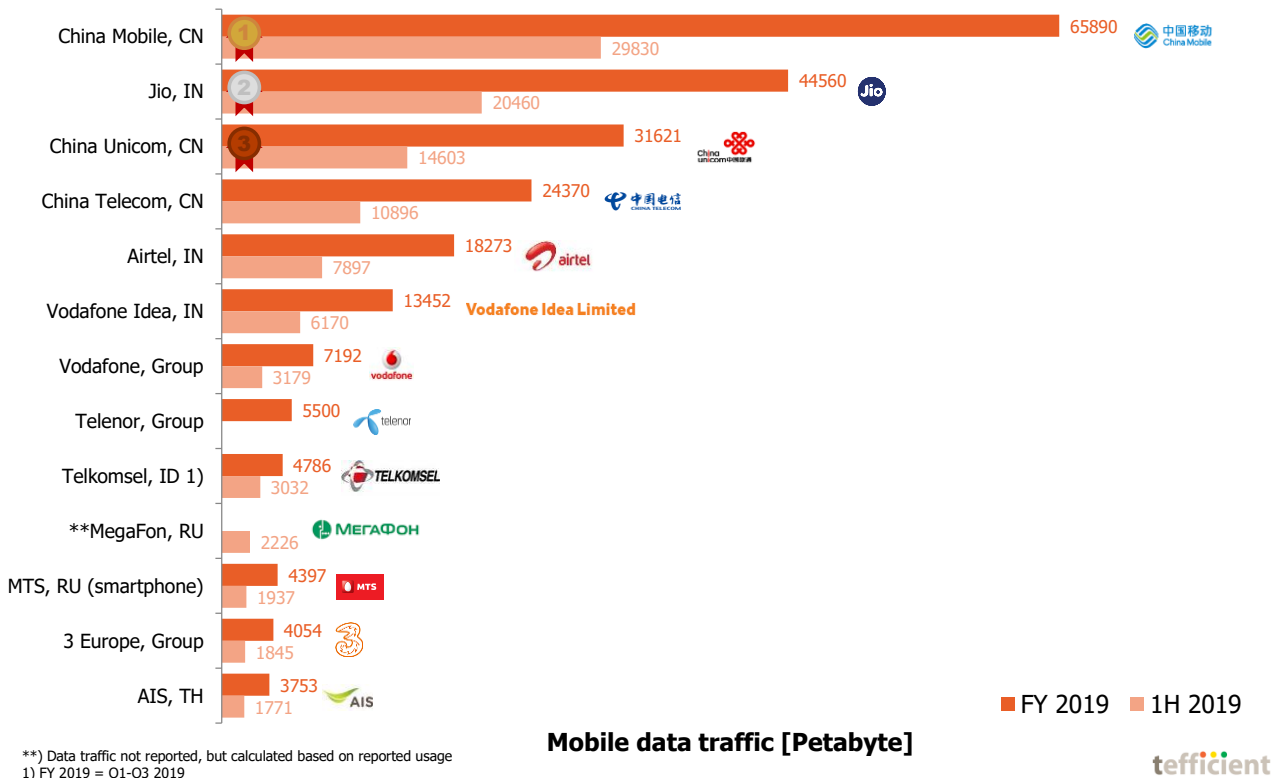


Figure 11. Total data traffic – top 13 operators



China Mobile has 950 million mobile subscribers and is now, by far, the largest operator in the world in mobile data traffic. Its total handset traffic grew **86%** from 2018 to 2019.



The Indian challenger **Jio** is now the operator with the largest subscriber base in India – 370 million. The data traffic growth in 2019 was **60%**. Airtel India had a traffic growth of **91%** whereas the struggling Vodafone Idea only had **54%**. As shown in the previous section on usage, Jio’s usage *per subscription* didn’t grow much in 2019 – just 8%.



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 318 million. Even China Telecom has a larger base now (336 million). The total handset data traffic of Unicom grew slower than China Mobile’s and China Telecom’s: **46%** in 2019.

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: Italy, France and Poland take the first six positions

First to the European breakdown. Since the highest ranked European operator is just number 32 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 12.

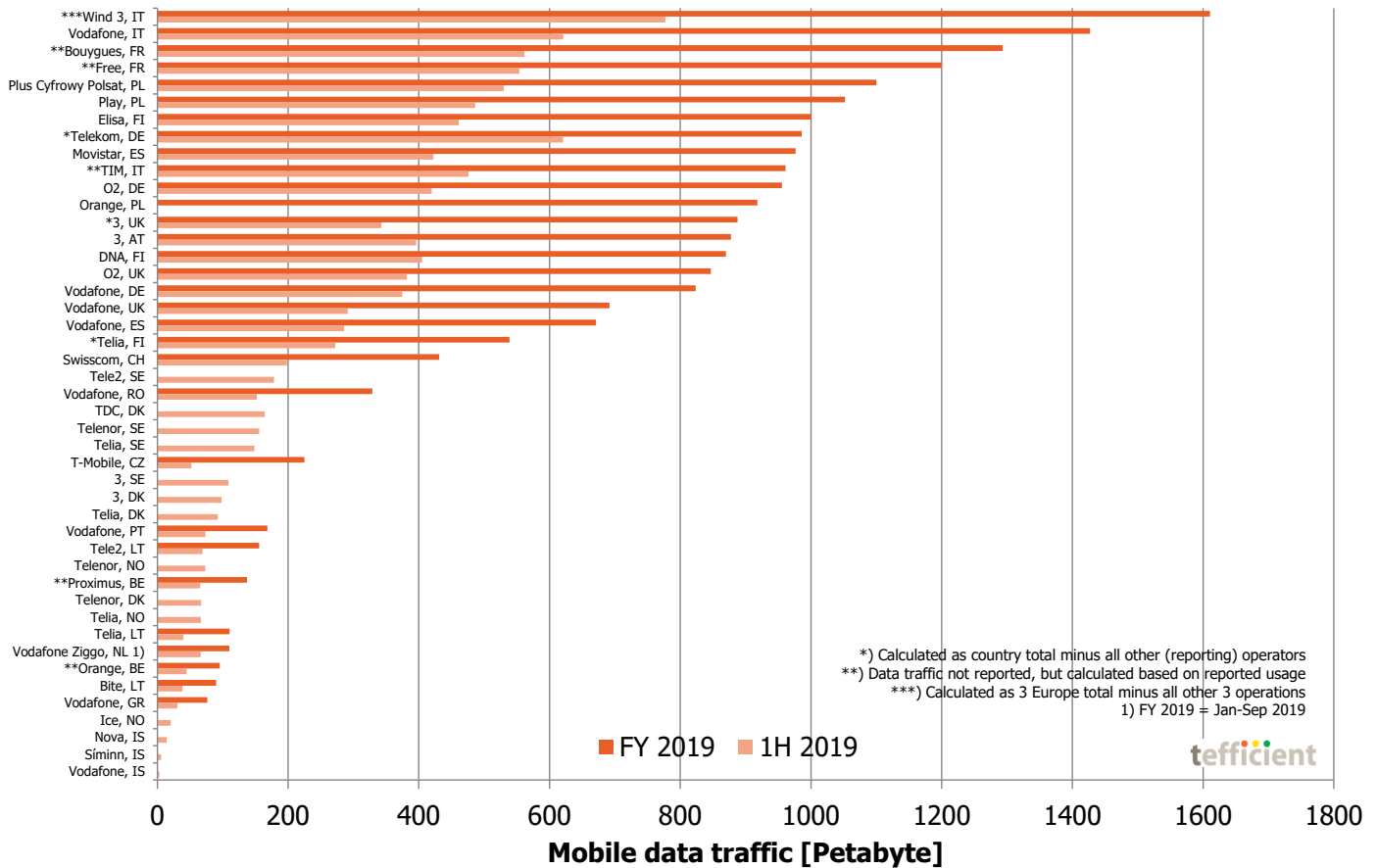


Figure 12. Total data traffic – European operators

The Italian operator **Wind 3** is likely⁷ Europe’s largest operator in total data traffic. **Vodafone** Italy is the runner-up. Italy has had an explosion in mobile data usage ever since the new fourth operator, Iliad, launched 30 GB for 5.99 EUR in May 2018 – and all of competition copied.

⁷ CK Hutchison has taken over the full ownership of Wind 3 and as it was their previous shareholder VEON that reported data usage, we miss input from Wind 3. In this analysis we have assigned the residual traffic of 3 Europe Group after having subtracted the calculated traffic of UK, Denmark, Austria, Sweden and Ireland. When the Italian regulator reports the total mobile data traffic for Italy for 2019, we should be able to check this calculation vs. the residual traffic of Italy – as TIM and Vodafone Italy report their traffic and Iliad’s traffic on its own network (beyond national roaming) should have been limited in 2019.

The two French operators **Bouygues** and **Free** follow⁸. The two Polish operators **Plus/Cyfrowy Polsat** and **Play** come in as number 5 and 6 whereas the relative base midget **Elisa** (with 4.1 million subs) finishes seventh.

The operators with the fastest traffic growth in Europe are:

- T-Mobile Czech Republic +307%
- Telia Lithuania +73%
- Vodafone Italy +70%
- Orange Belgium +67%
- Bite Lithuania +65%

It's interesting to note that with the exception of Vodafone Portugal, the European operators with the slowest traffic growth in 2019 are operators that are or have been renowned for **unlimited**:

- Swisscom Switzerland +25%
- DNA Finland +23%
- Free France +22%
- Elisa Finland +21%
- Vodafone Portugal +17%
- Telia Finland +16%
- Plus/Cyfrowy Polsat Poland +10%

The European operators renowned for unlimited had quite slow traffic growth

⁸ Orange and SFR could have been high-ranked as well, but neither are reporting data traffic or usage

Asia and China: Quick 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**. The 2018 to 2019 growth rates are high for all these operators (46-91%).

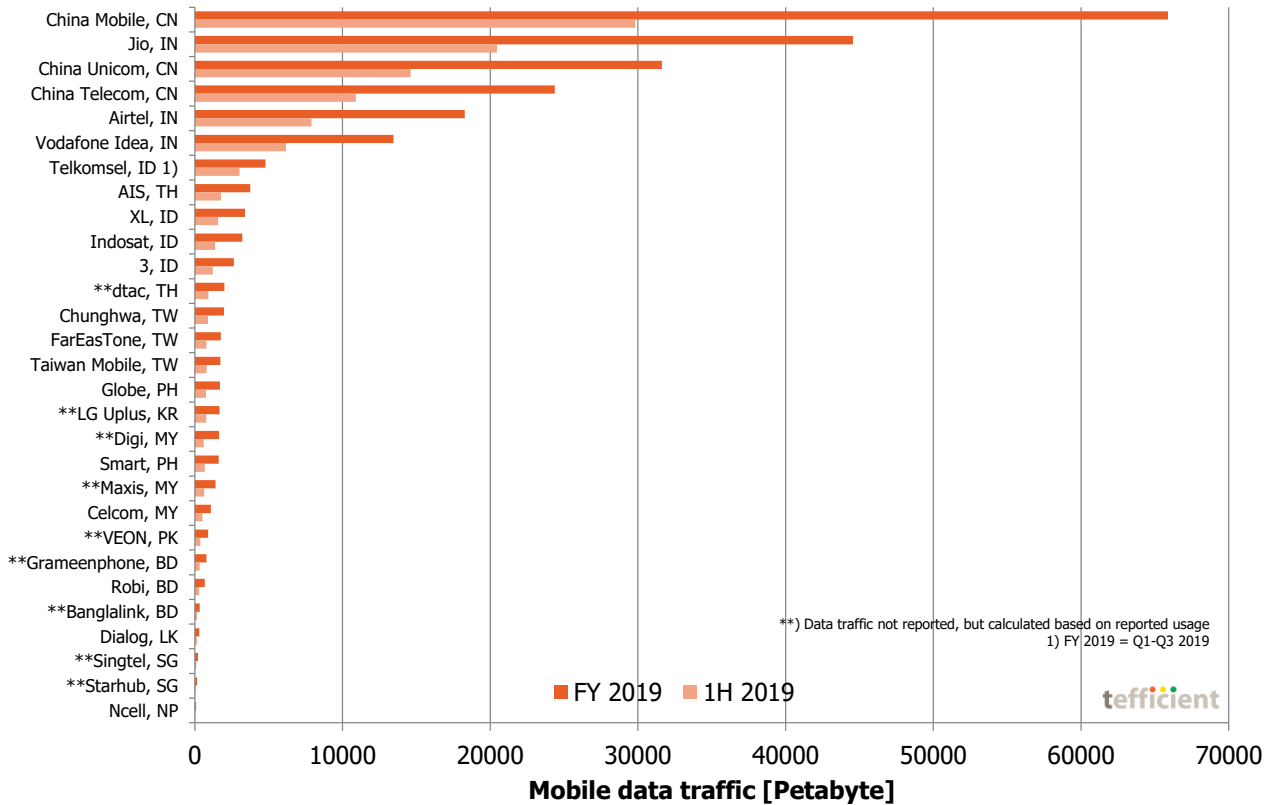


Figure 13. Total data traffic – Asian and Chinese operators

The **Indonesian** operators (Telkomsel⁹, XL, Indosat and '3') and the **Thai** operators (AIS, dtac) follow. Although not matching the traffic growth of most of the Chinese and Indian operators, the Indonesian operators are still experiencing pretty fast traffic growth:

- Indosat Indonesia +72%
- XL Indonesia +51%
- 3 Indonesia +41%

Faster still is the traffic growth of **VEON** Pakistan (+115%), **Smart** Philippines (+96%) and **Robi** Bangladesh (+95%). **Airtel** India isn't far behind with **91%**, **Banglalink** Bangladesh with **88%** and, not to forget, **China Mobile** with **86%**.

Fastest traffic growth in Pakistan, Philippines and Bangladesh – but India/China close

⁹ Represented with its Jan-Sep 2019 traffic for FY 2019 as Q4 2019 hasn't yet been reported

RoW: MegaFon larger than 3 Europe Group and Zain Group

Figure 14 collects operators from the rest of the world, but also a few reporting international groups.

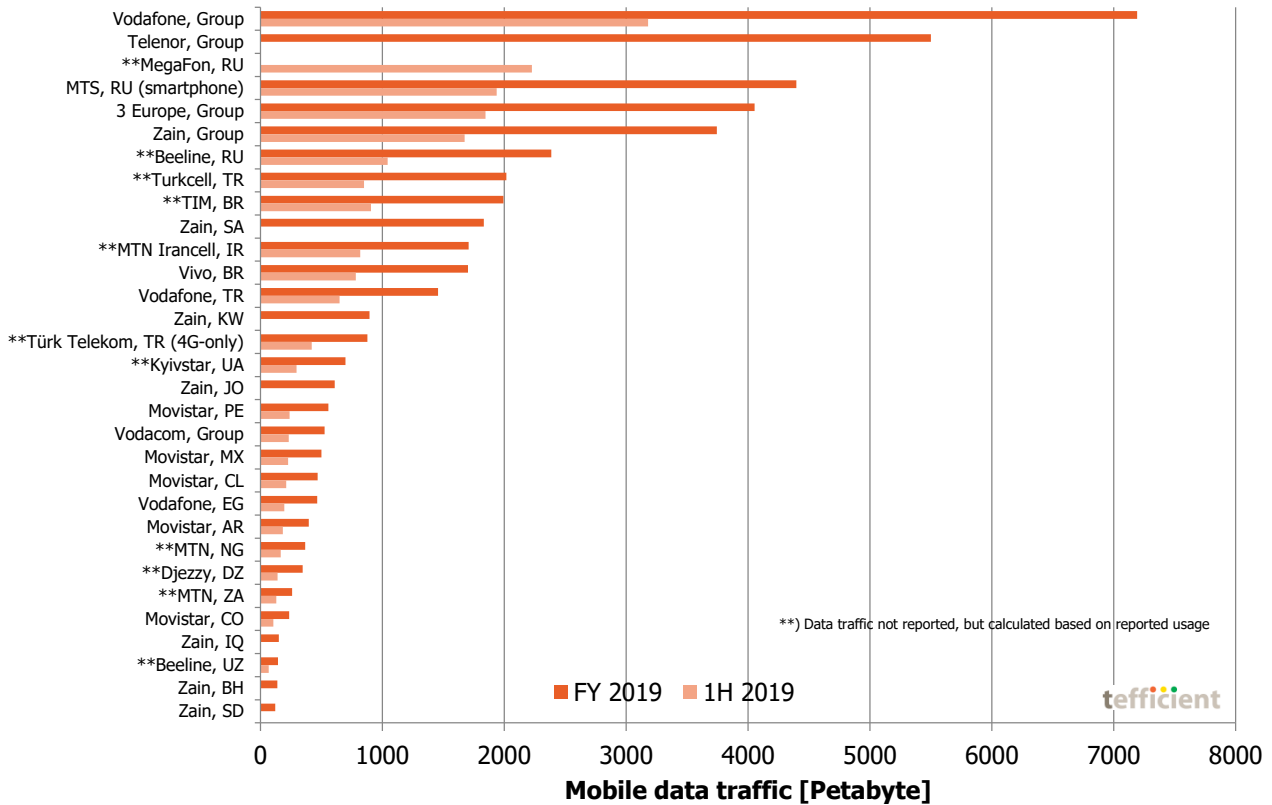


Figure 14. Total data traffic – Rest of world operators

Vodafone Group and **Telenor Group** are number 1 and 2 in this RoW ranking. The other two groups, **3 Europe** and **Zain**, are ranked as number 5 and 6.

MegaFon has regrettably stopped reporting data usage and is therefore represented with its last reported 1H 2019 traffic.

The Russian competitor **MTS** shadows whereas **Beeline** (#7) has a significantly lower traffic. Turkish, Brazilian and Saudi operators follow – together with **MTN Irancell**.

The operators with the fastest growth in mobile data traffic in 2019 are:

- Kyivstar Ukraine +119%
- Beeline Uzbekistan +105%
- Djezzy Algeria +101%

Slowest growth? Zain Bahrain – just 4%.

How much money can you make on mobile data?

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 think that the operators ending up with the highest effective revenue per gigabyte would thus be operators from maturing markets. You do find three African operators in the lower parts of Figure 15 accompanied by Zain Iraq – but otherwise the operators with the highest revenue per GB are from six European countries: **Greece, Belgium, Norway, Germany, the Netherlands and Switzerland.**

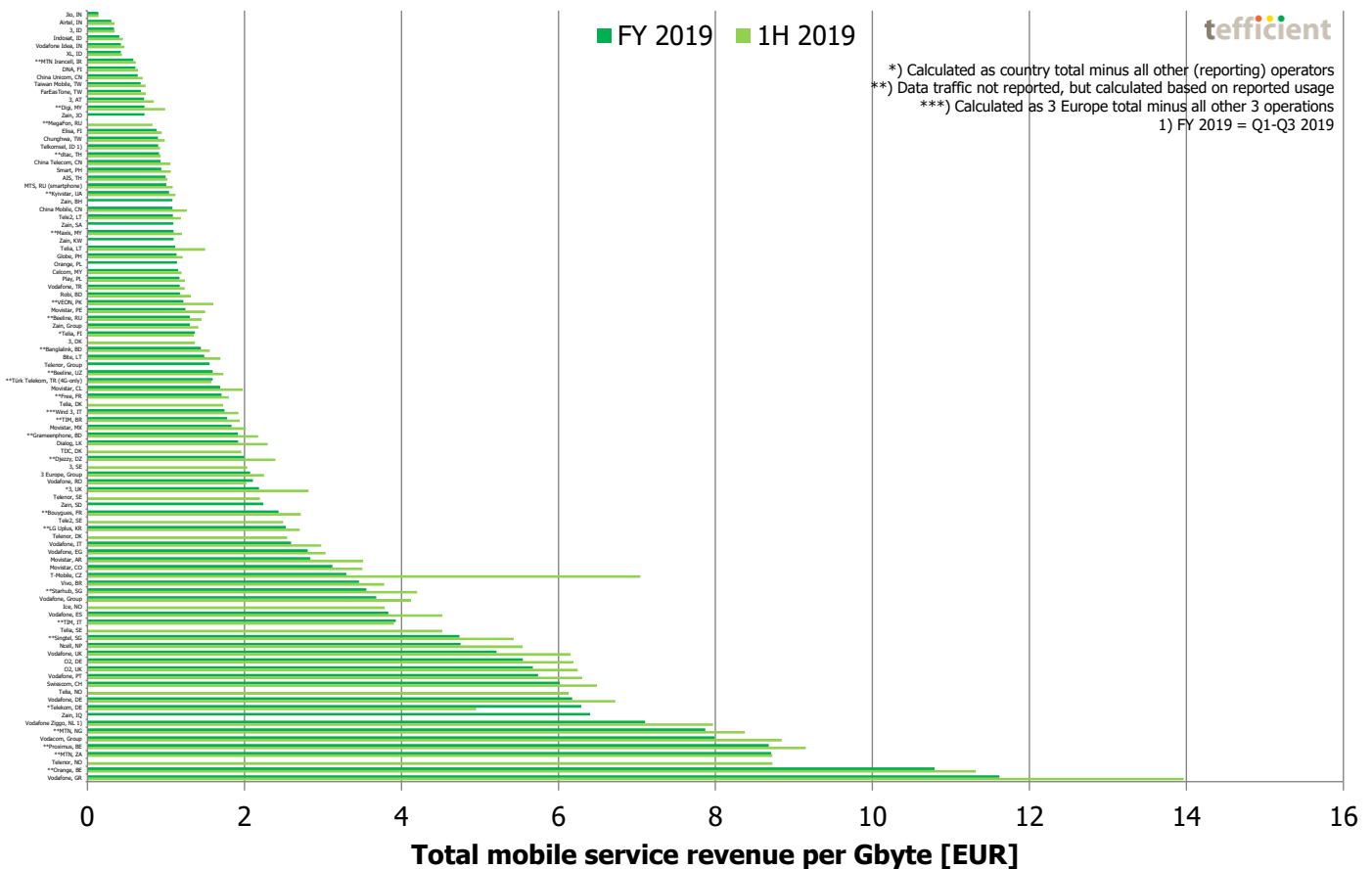


Figure 15. Total mobile service revenue per gigabyte – all operators¹⁰

¹⁰ That also report mobile service revenue

We will – for readability reasons – soon break Figure 15 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

Most 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 many 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. Exceptions to that operators reporting usage aren’t reporting the number of associated users are e.g. **VEON Group**, **MTN Group** and **AIS** that report the usage per mobile data customer *and* the number of such mobile data customers (a subset of the total customer base). Well done.

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 15 identify the ten operators that get the *lowest* total mobile service revenue per gigabyte in the world:

	<u>1H 2019</u>	<u>FY 2019</u>
1. Jio , India	0.1 EUR	0.1 EUR ↓
2. Airtel , India	0.3 EUR	0.3 EUR ↓
3. 3 , Indonesia	0.3 EUR	0.3 EUR ↓
4. Indosat , Indonesia	0.5 EUR	0.4 EUR ↓
5. Vodafone Idea , India	0.5 EUR	0.4 EUR ↓
6. XL , Indonesia	0.4 EUR	0.4 EUR ↓
7. MTN Irancell , Iran**	0.6 EUR	0.6 EUR ↓
8. DNA , Finland	0.6 EUR	0.6 EUR ↓
9. China Unicom , China	0.7 EUR	0.6 EUR ↓
10. Taiwan Mobile , Taiwan	0.7 EUR	0.7 EUR ↓

These operators are either active in mature high data usage markets (Finland, Taiwan) or in highly competitive maturing markets (India, Indonesia).

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

	<u>1H 2019</u>	<u>FY 2019</u>	
1. Vodafone , Greece	14.0 EUR	11.6 EUR	↓
2. Orange , Belgium**	11.3 EUR	10.8 EUR	↓
3. Telenor , Norway	8.7 EUR	n/a	
4. MTN , South Africa**	8.7 EUR	8.7 EUR	↓
5. Proximus , Belgium**	9.2 EUR	8.7 EUR	↓
6. Vodacom , Group	8.8 EUR	8.0 EUR	↓
7. MTN , Nigeria**	8.4 EUR	7.9 EUR	↓
8. Vodafone Ziggo , Netherlands 1)	8.0 EUR	7.1 EUR	↓ 1) FY 2019=Q1-Q3 2019
9. Zain , Iraq	n/a	6.4 EUR	
10. Telekom , Germany* ¹¹	n/a	6.3 EUR	

In our mature market focused [country analysis](#) you can identify Belgium, Germany, Greece, Norway and the Netherlands 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 2019 there was **83x difference** between the operator with the highest total service revenue per gigabyte (Vodafone Greece) and the operator with the lowest (Jio India).

¹¹ Since Telekom doesn't report mobile data traffic, but the two competitors O2 and Vodafone both do, we have calculated Telekom's traffic as the country residual. The regulator BNetzA has not yet reported the final mobile data traffic figure for 2019, though – just a preliminary figure. If the final figure deviates significantly, Telekom's position will change.

Europe: Wide spread in the revenue per GB

Figure 16 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.

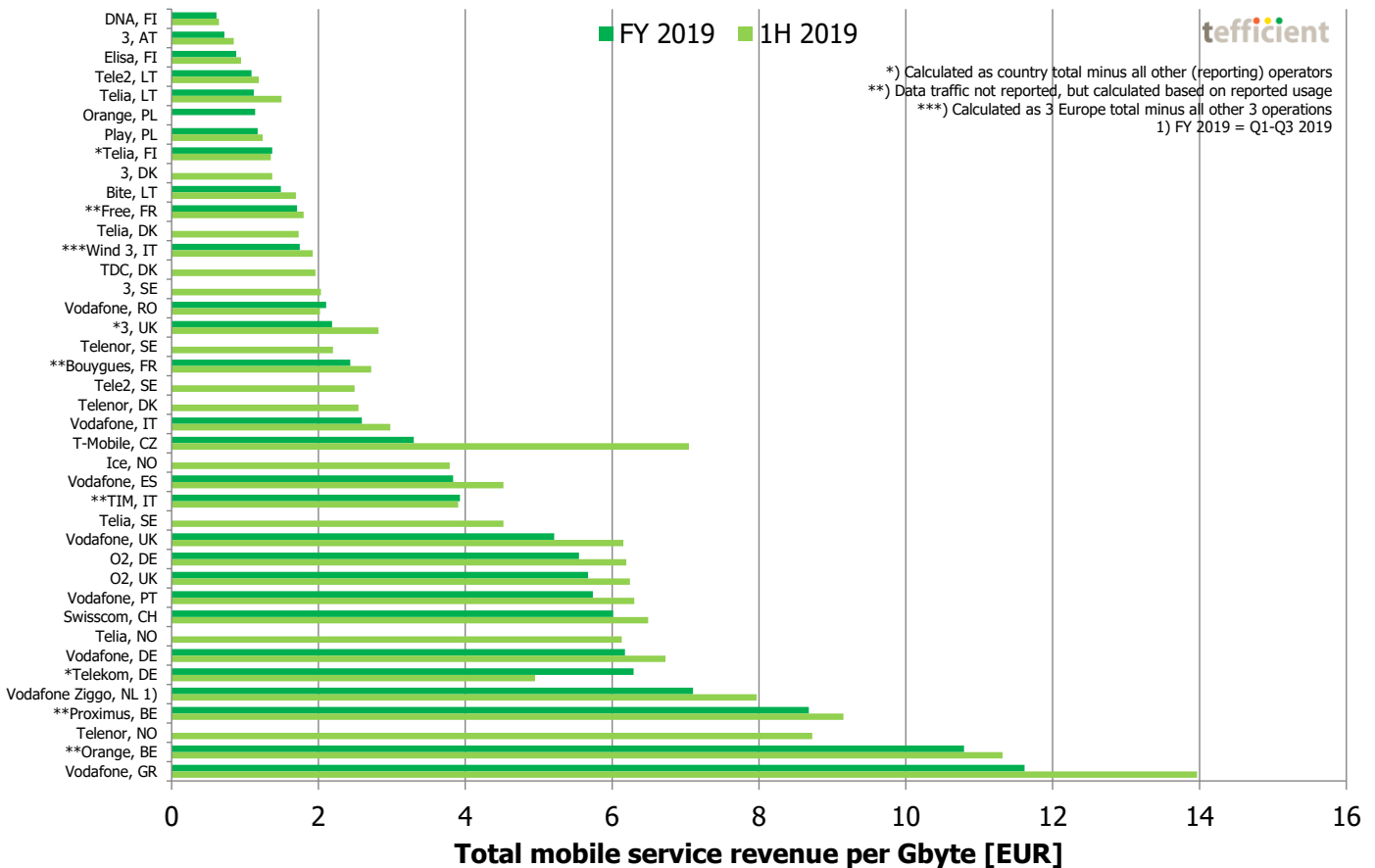


Figure 16. Total mobile service revenue per gigabyte – European operators

As pointed out in the global section, Greek, Belgian, Norwegian, German, Dutch 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, Lithuania** and **Poland**.

Asia and China: Revenue per GB decreasing, but not as fast as before

Figure 17 shows the Asian and Chinese operators. Indian and Indonesian operators have the lowest revenue per gigabyte whereas no operator is having very high revenue.

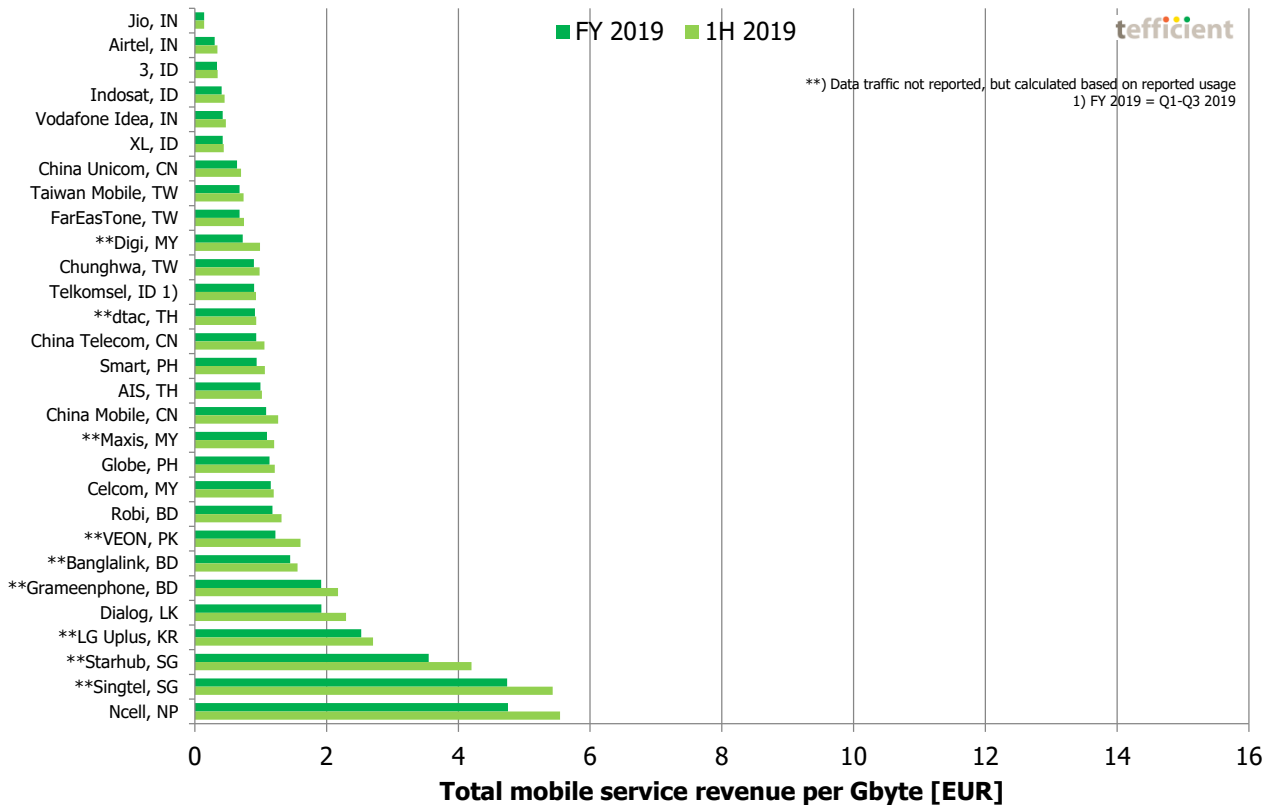


Figure 17. Total mobile service revenue per gigabyte – Asian and Chinese operators

The erosion in revenue per gigabyte in Asia/China is no longer as quick as it has been in our previous reports. In most cases, data usage has reached new highs – of these operators, only Bangladesh’s Banglalink and Grameenphone plus Nepal’s Ncell were below 1 GB per SIM per month in 2019.

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

We are ending this section with Figure 18 – showing the operators in the rest of the world alongside a few groups that separate out mobile service revenue in their reporting.

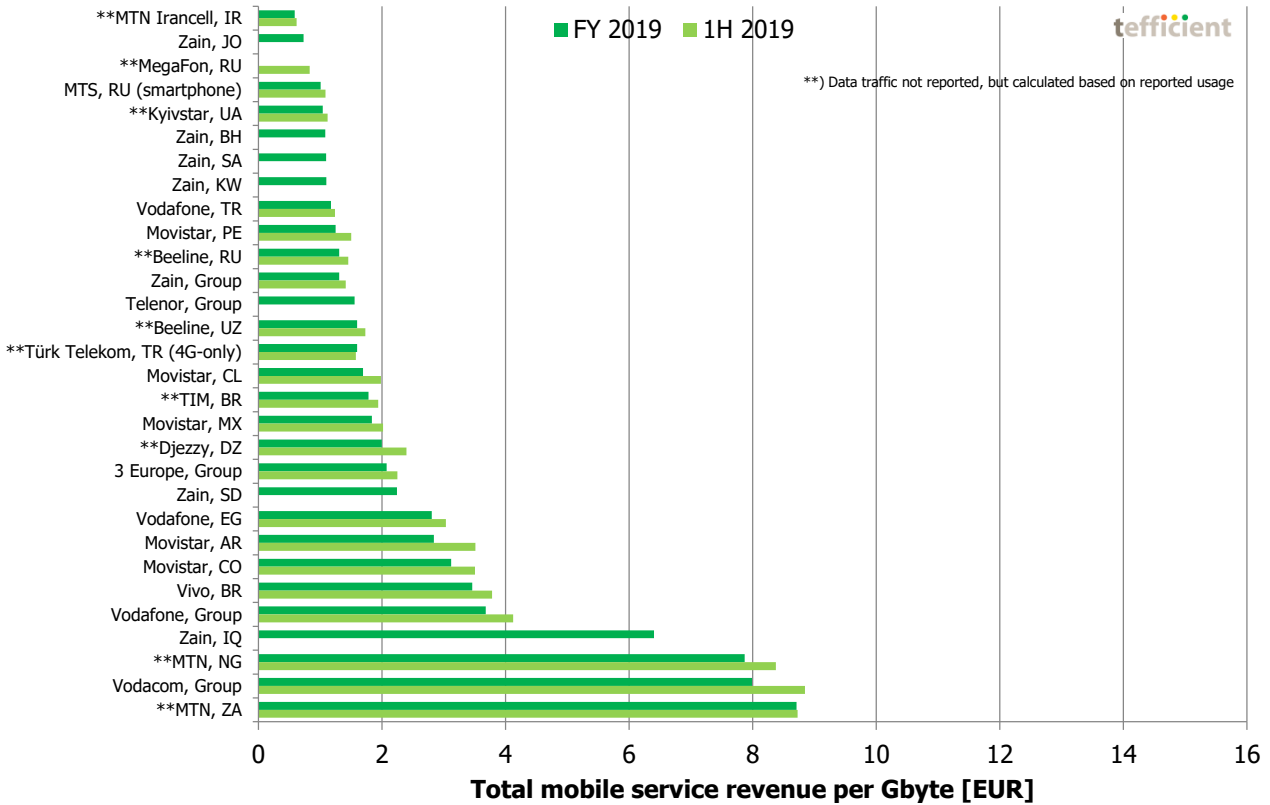


Figure 18. Total mobile service revenue per gigabyte – rest of world operators

MTN Irancell, Russian operators, Kyivstar from Ukraine and Zain’s Middle East operations dominate the top 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, MTN Irancell, Movistar in Peru and Mexico and Djezzy from Algeria had very significant drops in the revenue per gigabyte in 2019.

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, see Figure 19.

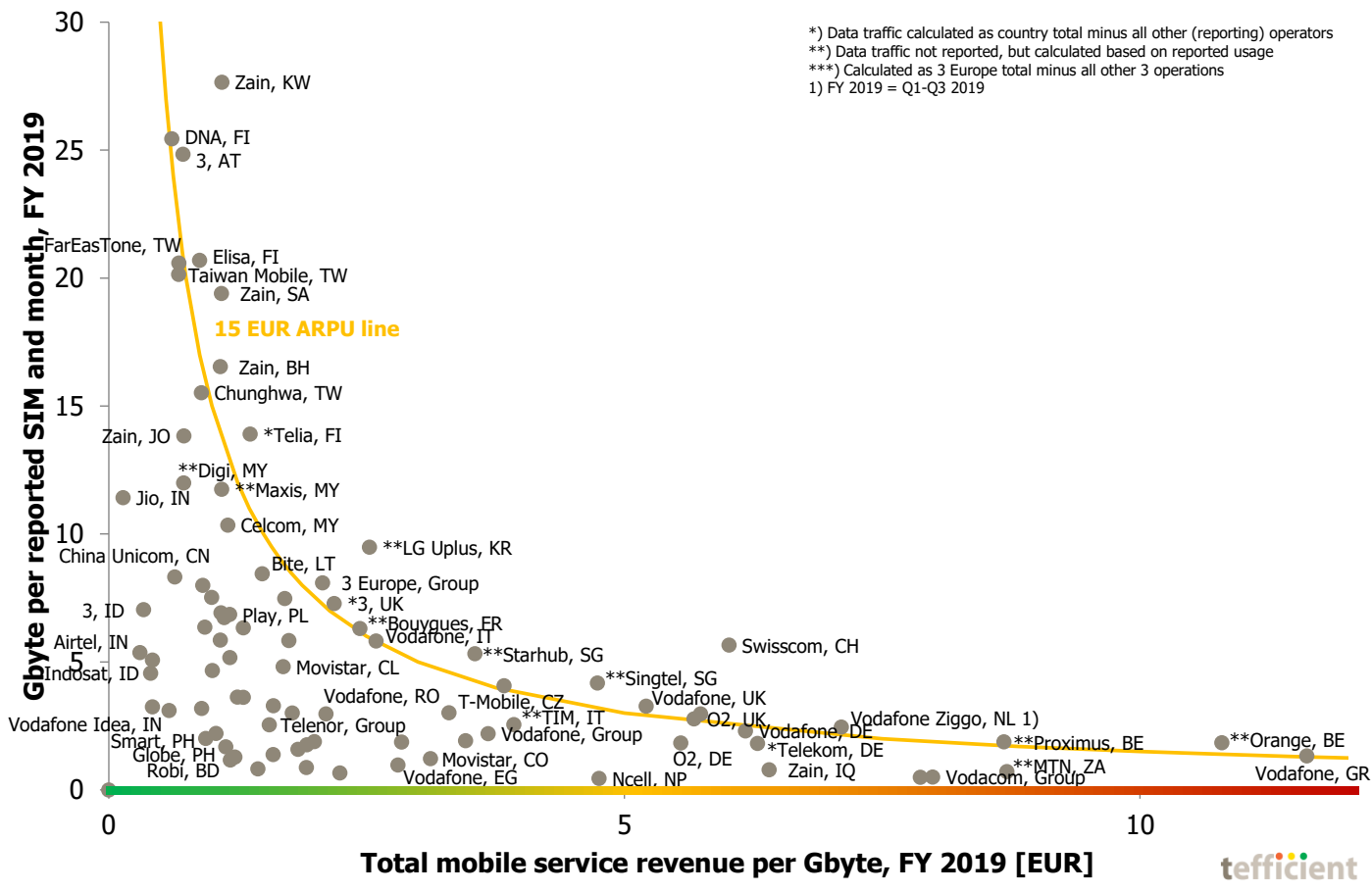


Figure 19. Mobile data usage vs. total mobile service revenue per Gbyte

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 15 EUR of ARPU is earned. Operators above the line earn more – and operators below the line less than 15 EUR.

Most mature markets operators operate with an APRU of around 15 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 20, is therefore comparing the number of gigabytes with the revenue per subscription, i.e. the ARPU. And that is perhaps even more interesting.

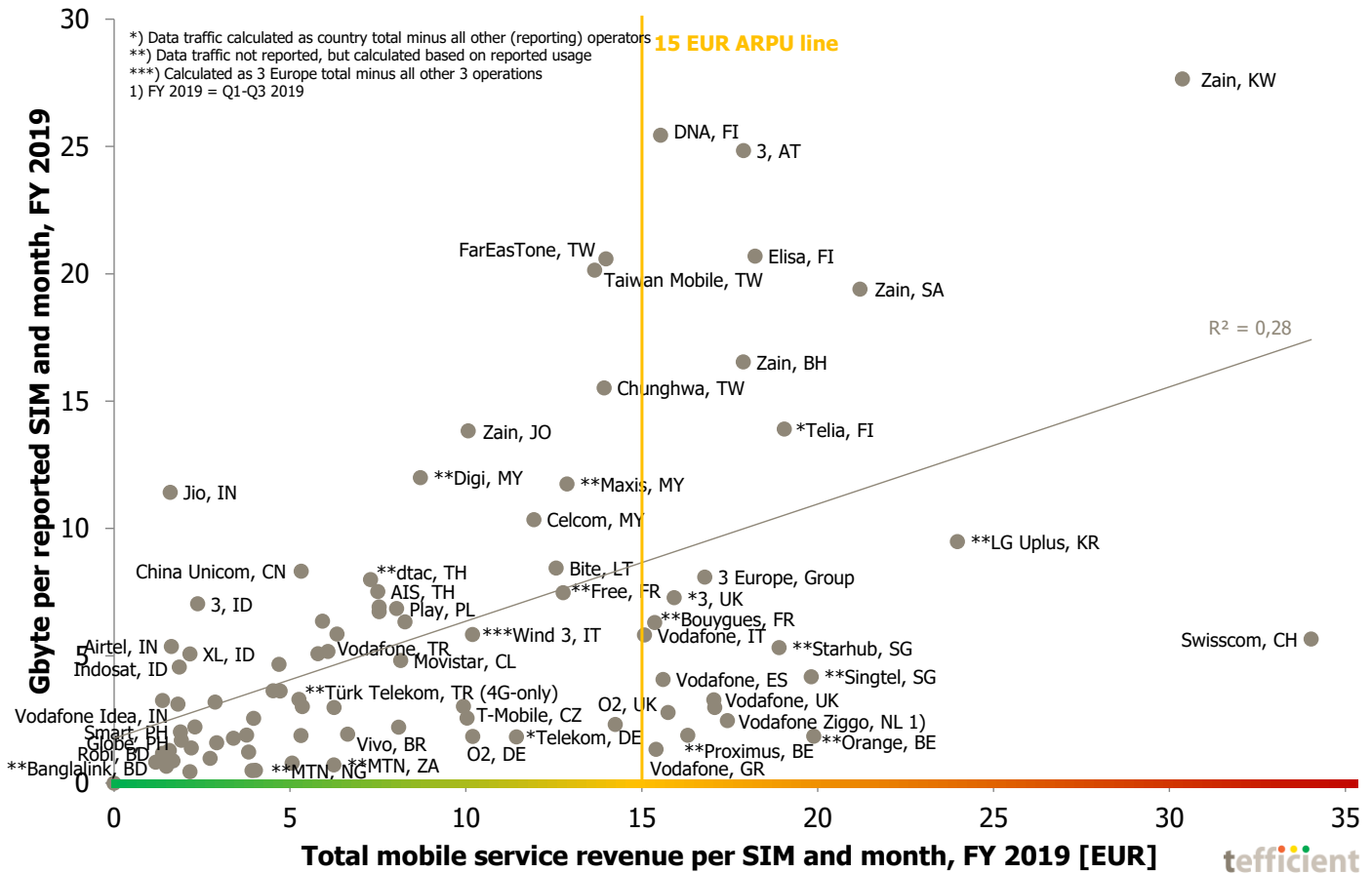


Figure 20. Mobile data usage vs. total mobile service revenue per SIM

Of all the operators there are three¹² – **Swisscom**, **Zain** Kuwait and **LG Uplus** – that enjoy much higher total mobile service revenue per SIM than all other operators. In the case of Zain the data consumption is also very high – highest in the world. Swisscom’s subscribers – although many are on speed-tiered unlimited plans – are not using particularly much data, but the ARPU is the highest in this group of reporting operators.

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 **Drei** (3) Austria and **Zain** in Bahrain and Saudi Arabia.

¹² Of the operators that have reported data usage and mobile service revenue in 2019

And then there's **Jio**. Its ARPU isn't the lowest, but considering an average data usage above 11 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.

International trend:
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 isn't the prettiest Christmas tree you've seen, but it is at least relatively well balanced: When data usage increased, **44% of operators could grow ARPU** (with branches growing to the right) – 56% could not.

Data usage grew for 100% of operators

ARPU grew for 44% of operators

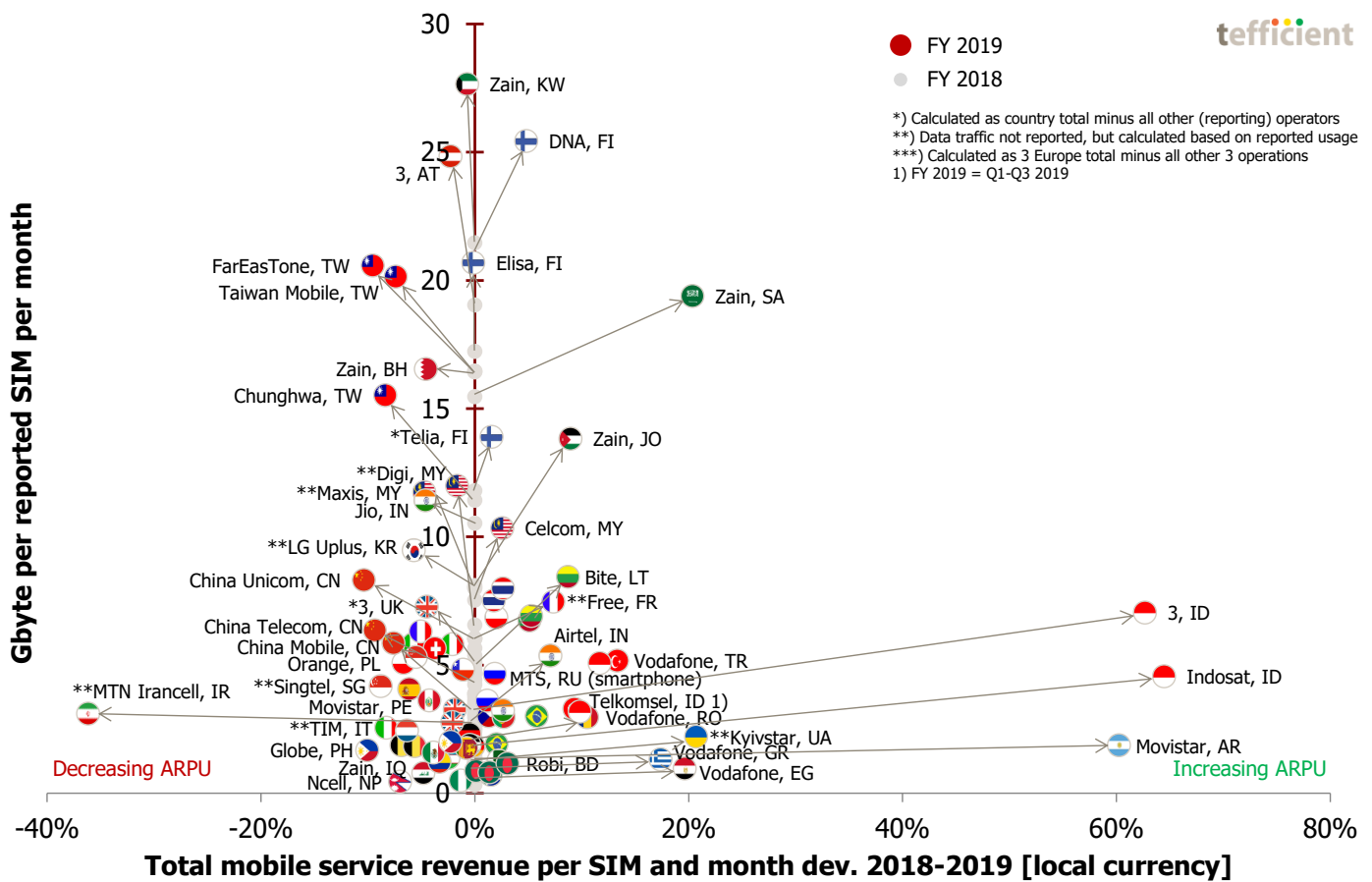


Figure 21. Mobile data usage development vs. ARPU¹³ development – 2018 to 2019

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

¹³ 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.

- The Finnish operators **DNA** and, to a lesser extent, **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. Based on its reported service revenue (which includes Estonia), Elisa was just below zero.
- **Zain** in Saudi Arabia could increase revenues in 2019 in spite of a fall in subscriber base. The company launched a large-scale 5G network in October 2019.
- **Celcom** in Malaysia managed to turn the usage growth into ARPU growth when the two local competitors Maxis and Digi could not.
- **Free** in France isn't growing its total mobile base any longer – but are gradually increasing the share of customers who subscribe to their premium unlimited 4G¹⁴ plans, thereby lifting ARPU. Local competitor Bouygues is also growing its data usage, but with a falling ARPU.
- All three **Lithuanian** operators Tele2, Telia and Bite could once again turn usage growth into ARPU growth.
- India's **Airtel** experienced the most disruptive entrant ever, Jio, but has now managed to turn the expansion in mobile data usage into ARPU growth. Airtel has fared much better than its competitor Vodafone Idea even though also Vodafone Idea also had a bit of ARPU growth. Note that Jio's ARPU is now in decline.
- **3** and **Indosat** in Indonesia had a massive ARPU expansion but the main reason is the mandatory SIM registration in Indonesia in 2018 that halved the subscription bases of the two operators. In spite of this, 3 and Indosat could still grow revenue y-o-y which suggests that most of these disconnected non-registered SIMs were not generating much revenue. **Telkomsel** is also on the right side of the Christmas tree based on its reported Q1-Q3 2019 data.

We do not mention Movistar in Argentina as the development mainly is due to hyperinflation.

56% of the operators are on the branches facing left. They had data usage growth, but anyhow a **decline in ARPU**. There are a few operators standing out quite negatively here:

- **Taiwan** where the three incumbent mobile operators FarEasTone, Taiwan Mobile and Chunghwa all continued to experience decreasing ARPU in spite of growing data usage.
- All the three Chinese operators – **China Mobile**, **China Unicom** and **China Telecom** – have experienced significant growth in data usage while ARPU has been falling 8% to 10%.
- Finally **MTN Irancell** where data usage grew but ARPU collapsed when further sanctions worsened the country's financial crisis.

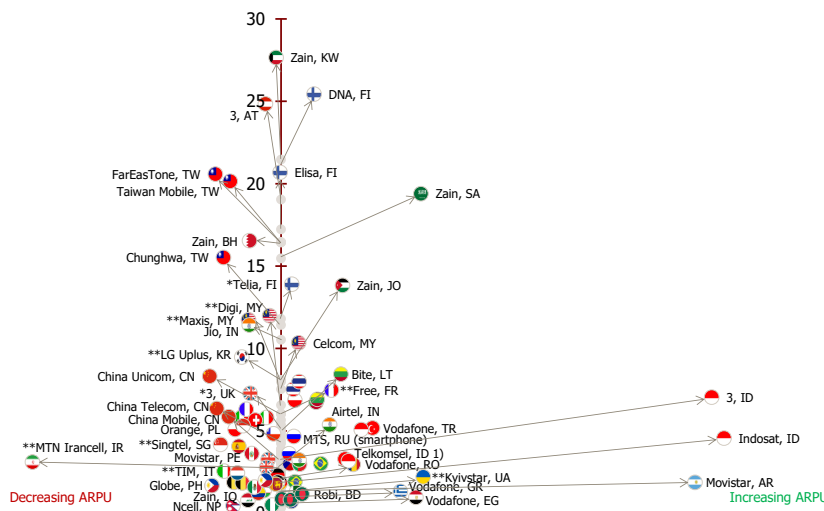
The fact that less than half (44%) of the operators managed to turn data usage growth into ARPU growth is regrettably a **deterioration** compared to our Christmas tree graph for the first half of 2019 – in which a majority, for the first time, could grow ARPU. Let's hope that our 1H 2020 analysis – supported by 5G – could show an improvement. The ongoing COVID-19 pandemic might have unforeseen consequences, though.

¹⁴ Unlimited in conjunction with a Freebox (triple-play) subscription – otherwise limited to 50 or 100 GB

Conclusion

In this analysis, we have presented fourteen updated 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. Generally speaking, data usage and traffic grow – while service revenue is flat. If summing up all our studied operators, they carried **58% more gigabytes** in 2019 compared to 2018 – but only generated **0.4% more revenue**. It’s remarkable that a product that is so much in demand can’t be monetised better.

Our special section this time focused on how **5G** affects data usage and ARPU in **China** and **South Korea**. Let’s see if this extends to the rest of the world – but according to Chinese and Korean operators, **5G customers use much more data** after having upgraded from 4G. Better news still: Figures from China speak about **ARPU increasing 6.5% or 10%** for upgrading customers. And in Korea, 5G – although just adopted by 8% of the subscribers – has been a factor behind the turnaround in total market ARPU. After two years of y-o-y decline, ARPU rose again in Q4.



Our beloved Christmas tree graph shows that data usage grows for all operators – but that less than half of these operators have been able to turn that into ARPU growth; **44%** delivered on a “more for more” promise. They proved their capability to monetise an increasing mobile data usage.

How do you do that? Well, there are **many initiatives**

tried out – unlimited, zero-rating, rollover, speed/video/priority tiers, inclusive content, FMC, all-digital brands – and, of course, 5G. As specialists in mobile data monetisation, we can help you to understand what works.