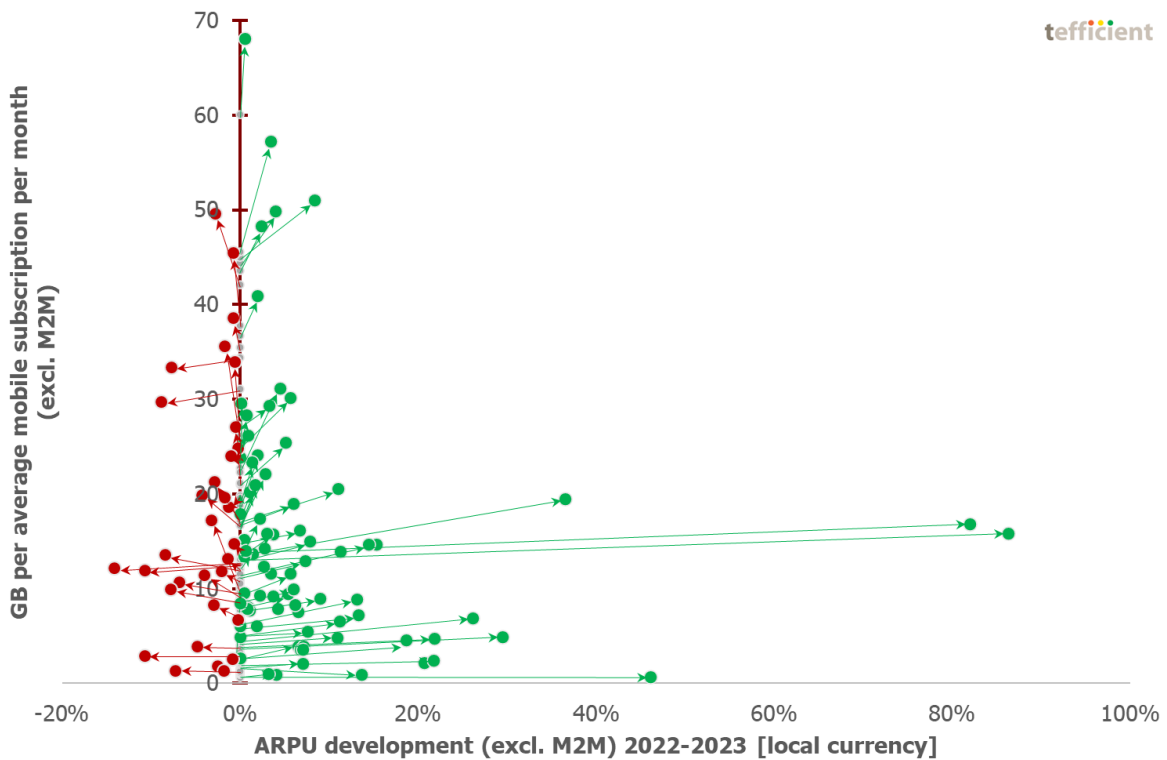


Industry analysis #2 2024

Mobile data - full year 2023 and first half of 2024

# Fewer operators capitalised on pricing power to deliver "more for more"



In Tefficient’s 42<sup>nd</sup> public analysis of mobile data trends, 123 operators are ranked based on metrics like average data usage per subscription, total data traffic, and revenue per gigabyte.

In 2023, 93% of operators experienced growth in data usage per subscription, with 71% of them successfully converting this into higher ARPU. This trend continued into the first half of 2024, where 95% of operators saw increased data usage, and 69% managed to translate this rise into ARPU growth. Compared to last year’s analysis, a lower proportion of operators were able to turn rising data usage into ARPU increases, indicating a reduced ability to leverage pricing power.



## Methodology notes on M2M/IoT

The global proliferation of M2M (Machine-to-Machine) or IoT (Internet of Things) SIMs has resulted in rapid growth, with some mobile operators boasting an equivalent number of M2M SIMs as human SIMs. Previously, we incorporated data usage statistics inclusive of M2M. We have, since 2023, however refined the data usage metrics to exclude M2M subscriptions. This adjustment enhances international comparability.

Certain mobile operators, particularly in Europe, now transparently disclose their count of M2M subscriptions in their reports. In contrast, operators like Vodafone and Telenor do not provide this breakout but specify that M2M subscriptions are not encompassed within their reported subscription totals. We find no methodological issue with either approach.

However, a noteworthy segment of operators does not clarify whether M2M subscriptions are included or excluded from their reported subscriber counts. This ambiguity is more prevalent in Asia, China, the Middle East, and Africa. While some of these operators might possess minimal to no M2M subscriptions, we have assumed, for the purposes of this analysis, that they exclude M2M subscriptions from their reported subscriber counts.

A limited number of operators, such as Telekom Germany, MTN South Africa, and T-Mobile USA, solely report their mobile subscriber totals inclusive of M2M subscriptions. While they should theoretically be excluded from our analysis of data usage per non-M2M subscription, we have chosen to include them. However, to reflect their M2M-inclusive status, we have appended an "incl. M2M" label to their names.

## Two thirds of operators now above 10 GB per subscription per month

Figure 1 shows the average mobile data usage for 123 reporting or reported<sup>1</sup> mobile operators globally with values for the full year of 2023 or the first half of 2024.

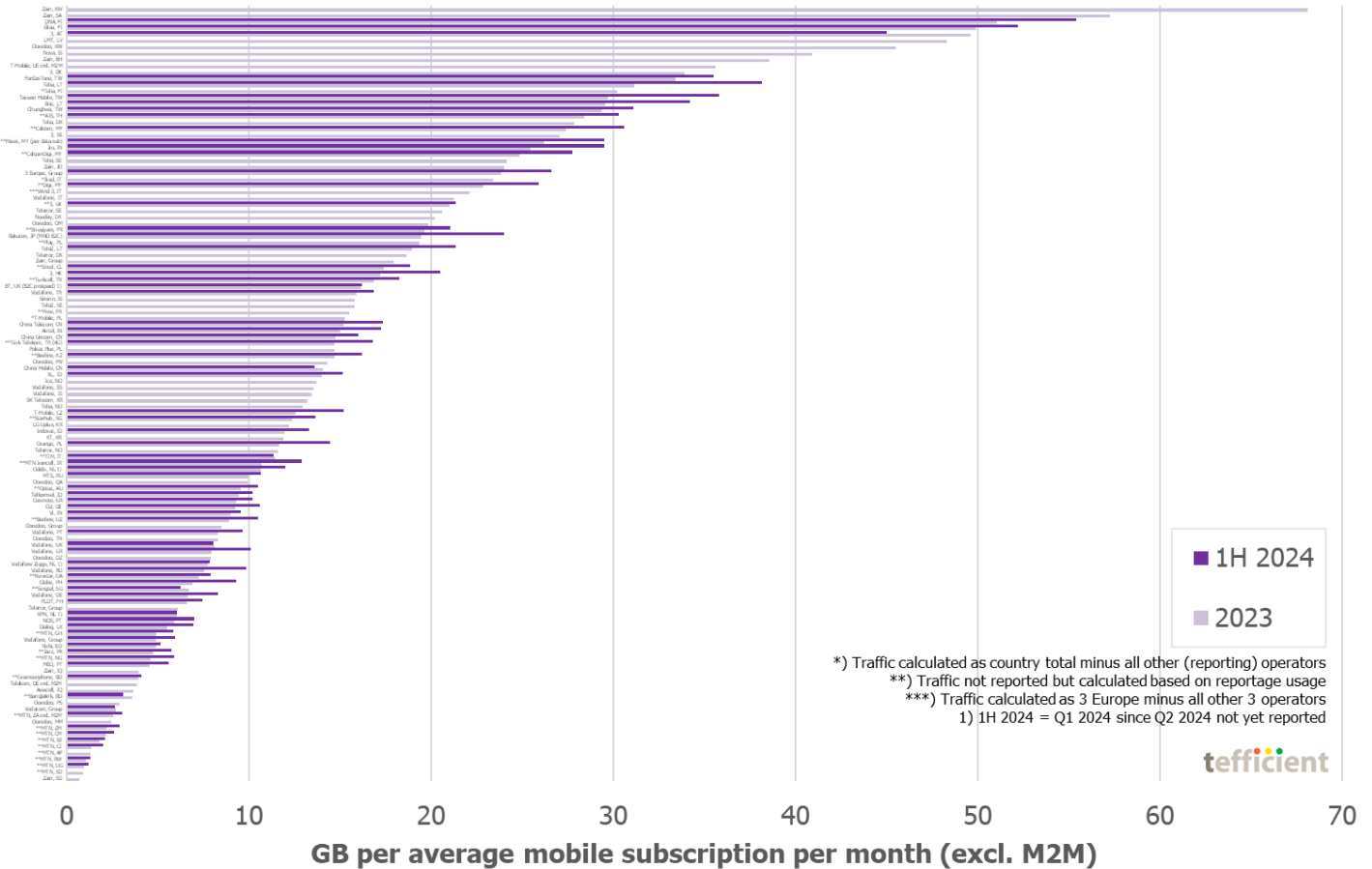


Figure 1. Average mobile data usage per subscription per month (excl. M2M) - all operators.

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. The order is based on 2023 usage.



**Zain** Kuwait defends the gold medal from our [previous analysis](#). Zain doesn't report mobile data traffic more than once a year, so the latest value is for 2023. Zain Kuwait's impressive **68.1 GB** per average SIM per month comfortably grants it the number one position of the world also this time. Zain launched **5G** in June 2019 and claimed 100% population coverage by end of 2021. The high usage comes from Zain selling smartphone plans with large buckets - with **unlimited** as the ultimate tier. But Zain is also offering **5G fixed routers** with 2 TB or, if that's not sufficient, unlimited data volume. Zain Kuwait had 13% usage growth (+8.0 GB per month) in 2023.

<sup>1</sup> By regulators - if reported by 27 September 2024.

**Zain** Saudi Arabia grabs the silver medal with its notable **57.3 GB** per average SIM per month in 2023. Zain launched **5G** in October 2019 and did earlier this year decide on an investment plan that would double the number of cities covered with 5G, adding 7,000 sites to cover 66% of the populated area with 5G. Like Zain Kuwait, the high usage comes from Zain selling smartphone plans with large buckets - with **unlimited** as the ultimate tier. Zain is also offering speed-tiered **5G home plans** with unlimited data volume, whose popularity might explain some of the 26% usage growth (+11.7 GB per month) Zain Saudi Arabia had in 2023.

With **55.4 GB** per month for the first half of 2024 (51.1 GB per month in 2023), **DNA** from Finland gets the bronze medal this time. **Unlimited, speed-tiered, plans** - both for smartphones and data-only - form a key component of the Finnish market logic. DNA doesn't report how large share of its customer base that has unlimited plans, but for Finland as a whole, that share was **86%** of non-M2M subscriptions in December 2023. The Finnish operators all launched **5G** in 2019 and DNA said that it had almost 98% 5G population coverage in June 2024.

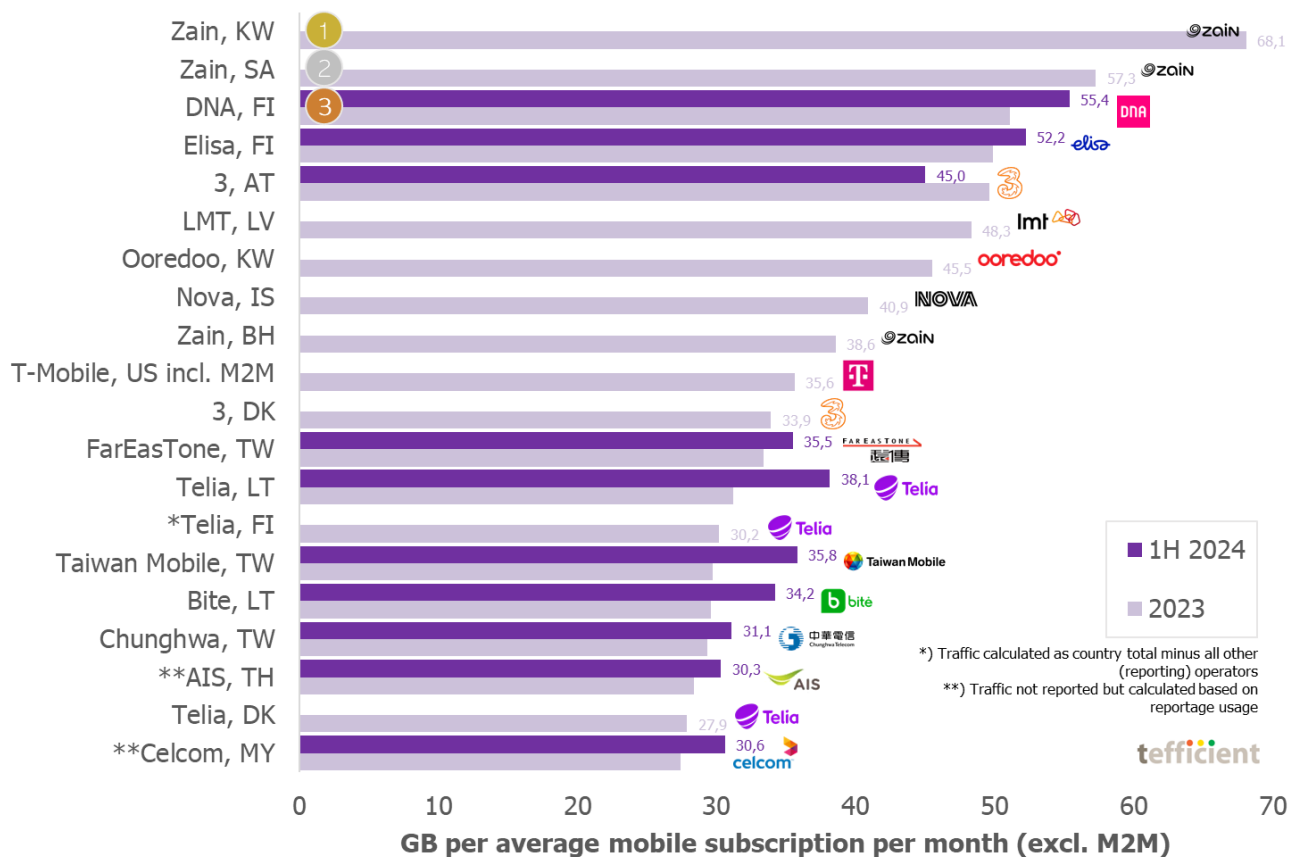


Figure 2. Average mobile data usage per subscription per month (excl. M2M) - top 20 operators.

Below the podium we find **Elisa** from Finland as number four with 52.2 GB per month for 1H 2024. **3** (Drei) from Austria is fifth with 49.6 GB per month in 2023 and a seasonally lower 45.0 GB per month in 1H 2024. Latvia's **LMT** is positioned as number six with 48.3 GB per month in 2023.

**Ooredoo** from Kuwait is seventh-ranked with 45.5 GB per month in 2023. **Nova** from Iceland follows with a regulator-reported 40.9 GB per month in 2023. **Zain Bahrain** had 38.6 GB whereas the top ten ends with **T-Mobile USA**<sup>2</sup> with 35.6 GB per average subscription (here including M2M) per month in 2023.

The rest of Figure 2 consists of Denmark's **3** and **Telia**, Taiwan's **FarEasTone**, **Taiwan Mobile**, and **Chunghwa**, Lithuania's **Telia** and **Bite**, **Telia** Finland, **AIS** from Thailand and Malaysia's **Celcom**<sup>3</sup>.

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<sup>2</sup> Based on T-Mobile's energy consumption per GB and energy consumption as reported by DT in its CR report 2023.

<sup>3</sup> Celcom and Digi have merged into CelcomDigi but the company is still reporting the data usage separately for the old Celcom and the old Digi.

## Europe: Nordic & Baltic operators and '3' dominate the top

Now to the first of three breakdowns: Europe. The number 3, 4, and 5 of the world, **DNA**, **Elisa** (both from Finland) and **3** Austria, form the European podium.

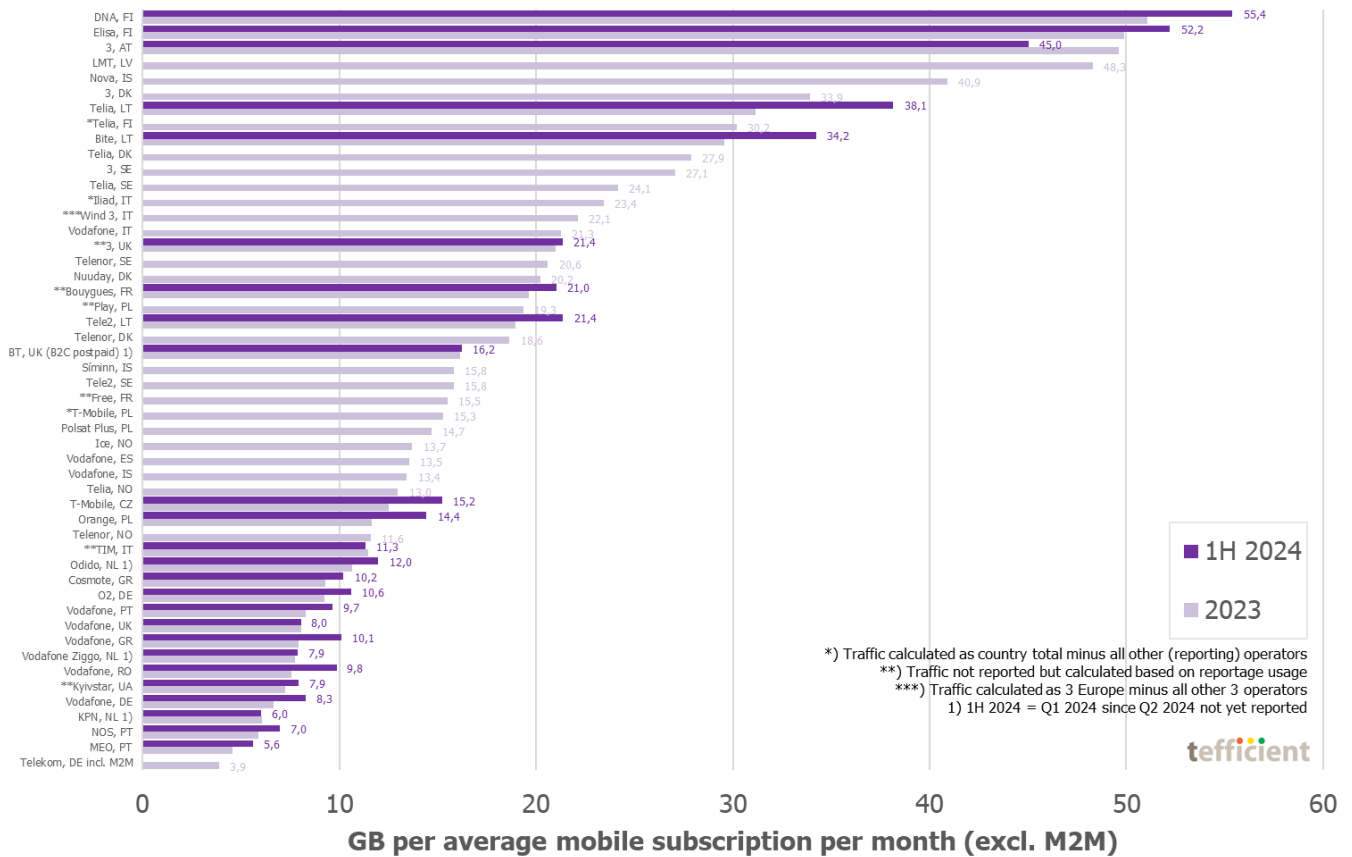


Figure 3. Average mobile data usage per subscription per month (excl. M2M) – European operators.

**LMT** from Latvia is ranked as number four. Iceland’s **Nova** is number five. **3** Denmark is number six followed by **Telia** Lithuania. **Telia** Finland is number eight. Since Telia itself doesn’t report its mobile data traffic, we have assigned the Finnish country residual to Telia (after having deducted Elisa’s and DNA’s reported traffic). **Bite** Lithuania and **Telia** Denmark finish the European top ten.

The bottom five operators are from the low usage markets<sup>4</sup> of **Germany** (Telekom incl. M2M, Vodafone), **Portugal** (MEO, NOS) and the **Netherlands** (KPN).

Who had the fastest usage growth in Europe? Let’s look at Table 1.

<sup>4</sup> See our latest country data usage report: <https://tefficient.com/change-at-the-top-as-growth-slows/>.

Fastest	1H 2024 vs. 1H 2023		2023 vs. 2022	
	Telia, LT	+9.9 GB	+35%	+8.5 GB
Vodafone, GR	+3.5 GB	+54%	+2.9 GB	+58%
Telia, DK	n/a	n/a	+9.1 GB	+49%
Slowest	1H 2024 vs. 1H 2023		2023 vs. 2022	
	Vodafone, UK	+0.2 GB	+2%	+1.0 GB
BT, UK (B2C postpaid) 1)	+0.2 GB	+1%	+1.5 GB	+10%
Telenor, DK	n/a	n/a	-1.2 GB	-6%

Table 1. Operators with fastest and slowest usage growth in 2023 and 1H 2023-1H 2024 – European operators.

If examining who had the highest absolute growth in gigabyte, the winner was **Telia Lithuania** in the twelve months to June 2024<sup>5</sup> (+9.9 GB) and **Telia Denmark** in 2023 (+9.1 GB). If instead measured in percent, the winner was **Vodafone Greece** with 54% in the twelve months to June 2024 and 58% in 2023. Vodafone Greece was also the growth winner in our report from last year.

In the other end, it was **Vodafone UK** that had the slowest absolute growth in the twelve months to June 2024, +0.2 GB (+2%). **BT UK** (based on its reported postpaid B2C) had the slowest growth in percent, +1%<sup>6</sup>. In 2023, **Telenor Denmark** experienced a *decline* in the average mobile data usage per subscription with 6% (-1.2 GB) according to regulatory data<sup>7</sup>.

<sup>5</sup> The Lithuanian regulator RRT seems to have mixed up the mobile data traffic numbers for Bite with those for Tele2. We believe we have been able to correct it.

<sup>6</sup> 1H 2024 traffic = Q1 2024 traffic\*2 as BT has not yet reported its data usage for Q2 2024.

<sup>7</sup> It worries us that Telia Denmark had the fastest growth while Telenor Denmark had the slowest. Has there been a mixup in the regulatory data from Klimadastyrrelsen?

### Asia and China: Taiwan fills the podium - Malaysia challenged by Thailand & India

As in our previous reports, the three Taiwanese operators **FarEasTone**, **Taiwan Mobile**, and **Chunghwa** hold the top three usage positions in Asia and China. There has been consolidation in the Taiwanese mobile market since last report: FarEasTone acquired APT (Gt) and Taiwan Mobile acquired T Star. This affects the comparability between 2023 and 1H 2024 for FarEasTone and Taiwan Mobile and has, in general, dampened the data usage growth rate in Taiwan - as one could anticipate when five MNOs become three. **5G** was launched relatively late in Taiwan - in 2020 - but the three major operators rolled out coverage very fast.

The rest of the top ten consists of Malaysia’s leading operators **Maxis**, **Celcom** and **Digi** (and the merged entity, **CelcomDigi**) together with Thailand’s **AIS** and India’s **Jio**. In tenth place we find a newcomer, **Rakuten** from Japan. The value shown is for the MNO consumer segment only as that’s the only reported segment. Neither B2B customers nor the relatively few remaining Rakuten MVNO customers are thus included.

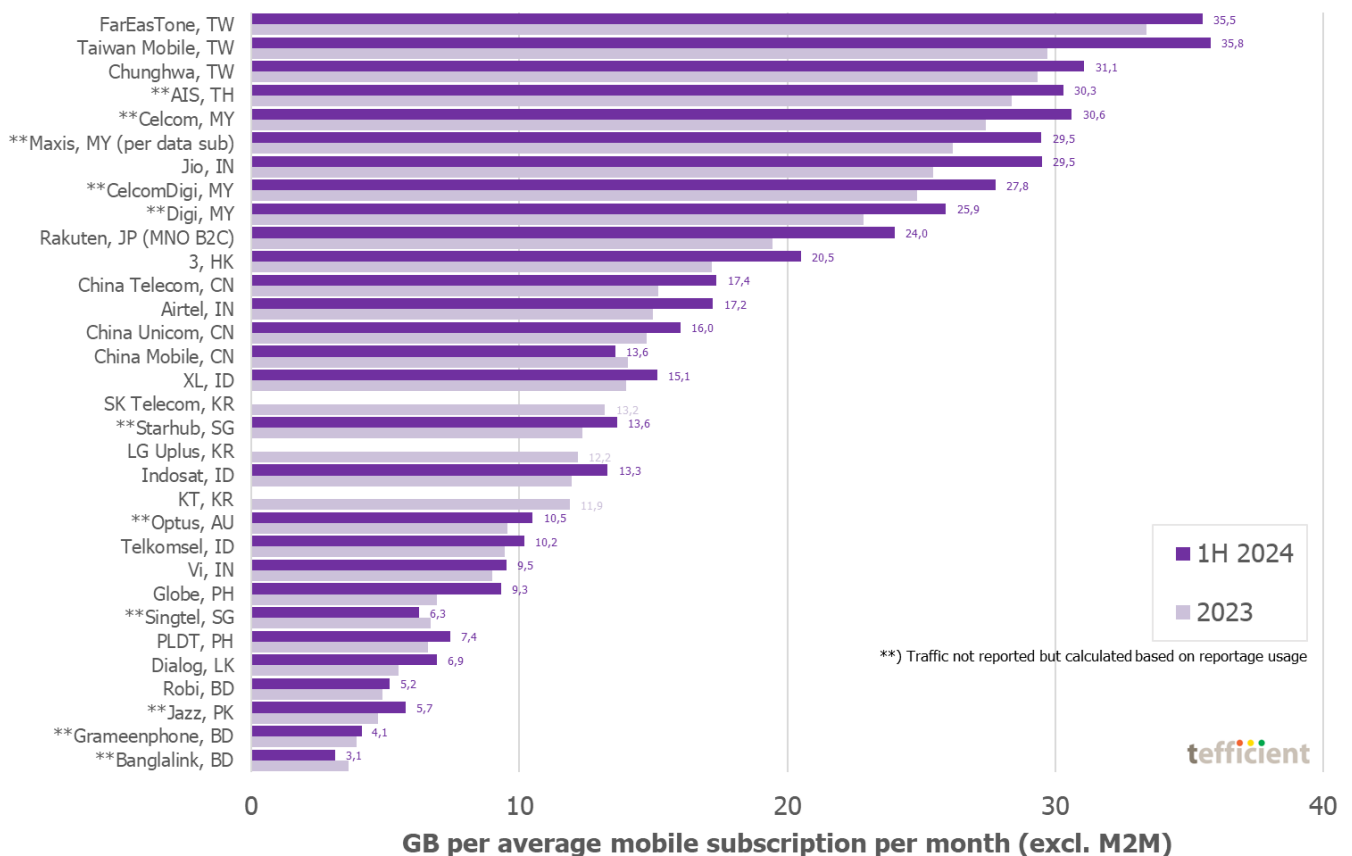


Figure 4. Average mobile data usage per subscription per month (excl. M2M) – Asian and Chinese operators.

Whereas 5G already is rolled out to a high extent in Japan, the Indian 5G spectrum auction ended as late as August 2022, but the two leading Indian operators, Jio and Airtel, quickly rolled out 5G in India. In



**Malaysia**, 5G rollout was delayed when the government decided to create a state-controlled wholesale company, Digital Nasional Berhad (DNB), who would be responsible for all 5G in Malaysia. The mobile operators were instructed to sign agreements with DNB, but it took time. This 5G hiccup affected the mobile data usage growth in Malaysia: Malaysia initially lost ground to other Asian countries but are now seeing quicker usage growth again.

Bangladeshi operators (**Banglalink**, **Grameenphone**, and **Robi**) occupy the four lowest usage positions in Asia/China together with **Jazz** from Pakistan.

The Asian/Chinese operators with the fastest and slowest annual growth in mobile data usage in the twelve months to June 2024 and in 2023 are:

Fastest	1H 2024 vs. 1H 2023		2023 vs. 2022	
	Rakuten, JP (MNO B2C)	+6.2 GB	+35%	+5.8 GB
Globe, PH	+3.8 GB	+68%	+2.4 GB	+54%
3, HK	+4.6 GB	+29%	+7.2 GB	+72%
Slowest	1H 2024 vs. 1H 2023		2023 vs. 2022	
	FarEasTone, TW	-0.5 GB	-1%	-1.0 GB
Banglalink, BD	-0.5 GB	-13%	+0.5 GB	+13%
Taiwan Mobile, TW	+3.4 GB	+11%	-1.4 GB	-4%
LG Uplus, KR	n/a	n/a	-0.7 GB	-6%

Table 2. Operators with fastest and slowest usage growth in 2023 and 1H 2023-1H 2024 - Asian and Chinese operators.

The Japanese challenger **Rakuten** had the fastest growth in its mobile data usage from MNO consumer customers in the year to June 2024: +6.2 GB (+35%). The fastest percentage growth, +68%, was recorded by **Globe** in the Philippines - an operator that bets on 5G.

**3 Hong Kong** had the highest growth in the average mobile data usage in 2023: +72% or 7.2 GB. Hong Kong has always been a very competitive market - data buckets are very large given the low price points - and the 5G penetration had reached 27% in December 2023 according to the regulator, OFCA.

Due to the described consolidation of the Taiwanese market, both FarEasTone and Taiwan Mobile populate the slowest part of Table 2. In the twelve months to June 2024, **Banglalink** had the weakest relative development in mobile data usage, -13%. In 2023, it was instead South Korea's **LG Uplus** who had the slowest development, -6%, as Korea's consumers downgraded their mobile data plans and more

of them put their trust with 4G MVNOs rather than the 5G-focussed three MNOs who continue to struggle with low customer satisfaction. The market share for MVNOs in the regular phone segment increased from 14.4% in June 2023 to 16.4% in June 2024 when the Korean **MVNO base grew 15%** while the MNO base at the same time decreased 1%.

## RoW: Middle East, US and Chile dominate the top

The rest of world (RoW) ranking combines Middle Eastern, North American, Latin American, Turkish, African, and Russian/Eurasian operators with reporting international groups, see Figure 5.

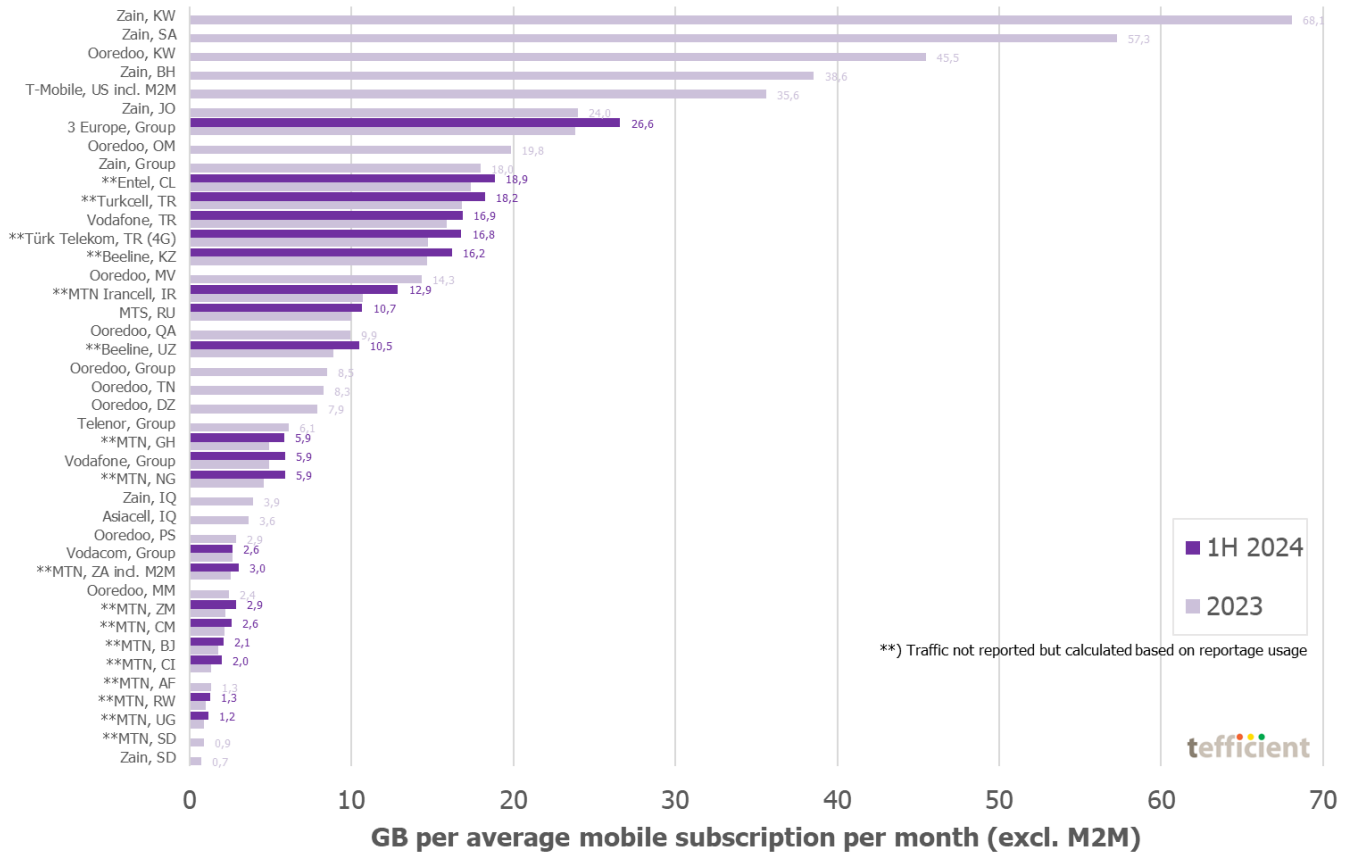


Figure 5. Average mobile data usage per subscription per month (excl. M2M) - RoW operators.

The world number 1 and 2, **Zain Kuwait** and **Zain Saudi Arabia**, obviously top this chart too. **Ooredoo Kuwait** takes the RoW bronze medal.

**Zain Bahrain** is number four followed by **T-Mobile USA** (including M2M), **Zain Jordan**, **3 Europe Group**, **Ooredoo Oman** and **Zain Group**. **Entel Chile** comes in as number ten.

**African** operators are, together with **MTN Afghanistan**, occupying the nine lowest monthly data usage positions in our RoW sample. **MTN Ghana** and **MTN Nigeria** have much higher mobile data usage and are positioned just below the middle of the graph. **Ooredoo Tunisia and Algeria** have yet higher usage.

These are the RoW operators with the fastest and slowest growth in mobile data usage in the twelve months to June 2024 and in 2023:

Fastest	1H 2024 vs. 1H 2023		2023 vs. 2022	
	3 Europe, Group	+3.9 GB	+17%	+4.3 GB
MTN, ZM	+1.0 GB	+55%	+0.9 GB	+69%
Zain, SA	n/a	n/a	+11.7 GB	+26%
Asiacell, IQ	n/a	n/a	+1.6 GB	+77%
Slowest	1H 2024 vs. 1H 2023		2023 vs. 2022	
Vodafone, Group	-0.4 GB	-6%	-0.6 GB	-10%
Telenor, Group	n/a	n/a	-0.9 GB	-13%
MTN, SD	n/a	n/a	-0.6 GB	-41%

Table 3. Operators with fastest and slowest usage growth in 2023 and in 1H 2024 - RoW operators.

**3 Europe Group** grew the fastest in absolute usage in the twelve months to June 2024, +3.9 GB. **MTN Zambia** had the fastest relative growth, 55%. In 2023, the fastest absolute usage growth was with **Zain Saudi Arabia**, +11.7 GB, while the average data usage at **Asiacell** Iraq grew fastest in percent, 77%.

Due to changes in the group composition, Vodafone Group had the most negative development in both absolute and relative data usage growth in the twelve months to 1H 2024. The same explanation applies to the development of Telenor Group's average data usage in 2023. **MTN Sudan's** average mobile data usage reduced further in 2023, -41%. The reason is of course the civil war starting in 2023.

## Traffic growth continued - but not everywhere

We have seen that the average data usage varies much between 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.

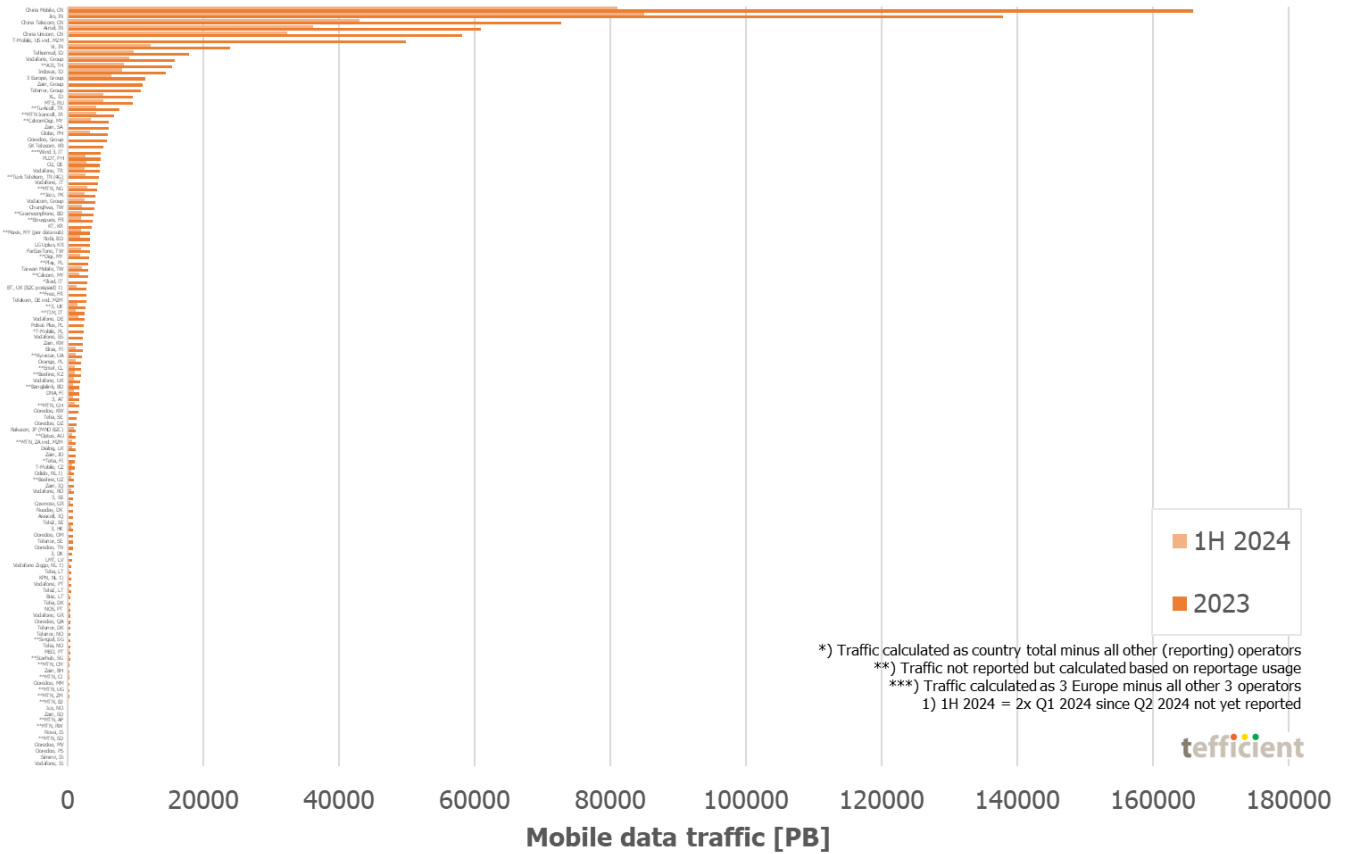


Figure 6. Total mobile data traffic - all operators.

As it's difficult 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. The order is based on 2023 traffic.

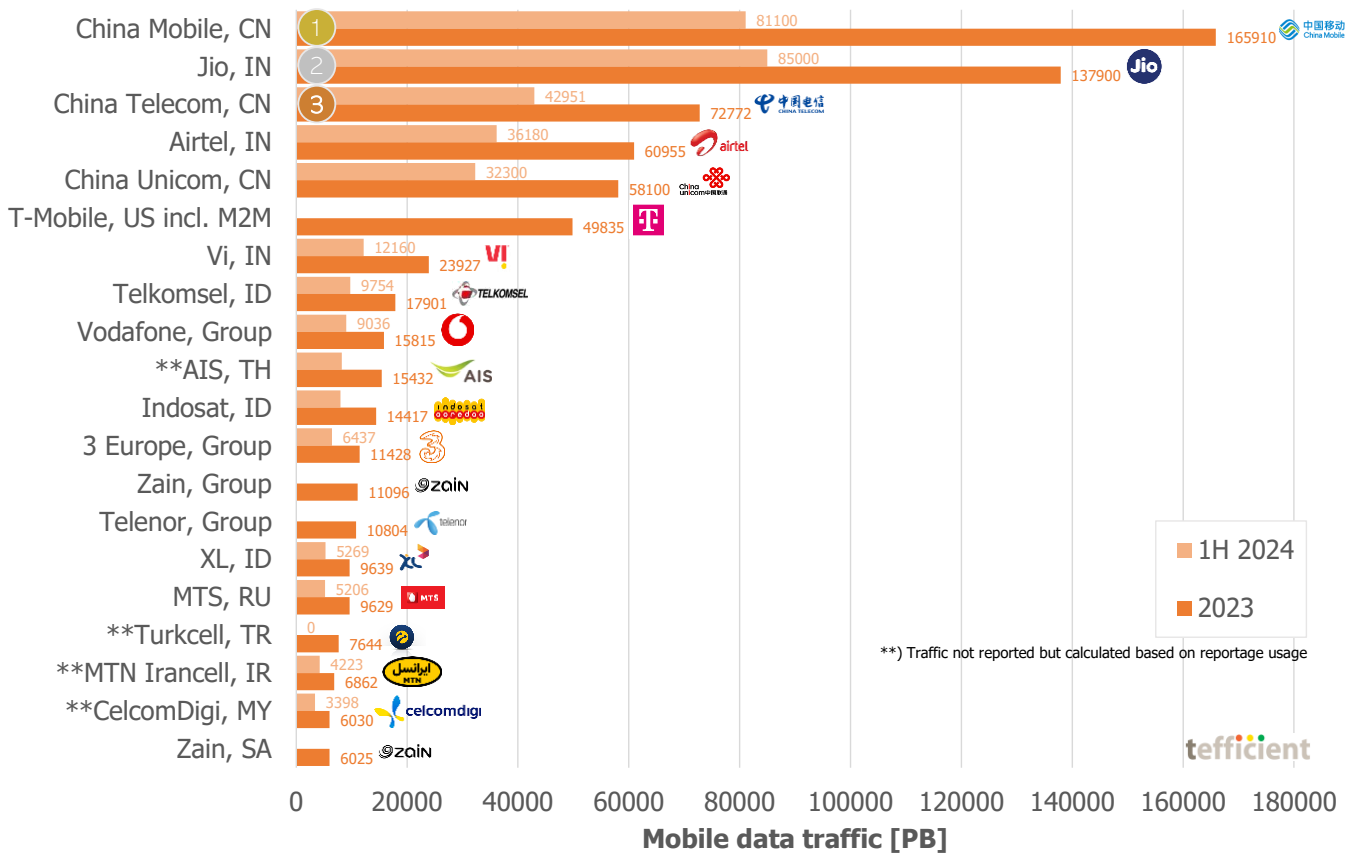


Figure 7. Total mobile data traffic - top 20 operators.



**China Mobile** surpassed 1 billion mobile subscribers in June 2024 (of which 51% are on its huge 5G network consisting of 2.29 million base stations) and was in 2023 the largest operator in the world in mobile data traffic. But 2024 has not started as great: In the first six months of 2024, India’s Jio overtook the number one position from China Mobile. China Mobile’s total traffic grew **15%** in 2023 but just **2%** from 1H 2023 to 1H 2024.



India’s **Jio** is the operator with the largest mobile subscriber base in India - 490 million in June 2024. Jio’s data traffic growth was **28%** in 2023, and it grew further to **34%** for the 1H 2023 to 1H 2024 period. In comparison with China, India had very late (2022) licensing of 5G, but it has been the catalyst for India catching in on Chinese mobile data traffic - and even surpassing it.



**China Telecom** had the fastest traffic growth in China: **21%** in 2023 and **28%** in the twelve months to June 2024. It doesn’t report the number of 5G network customers, but 81% of its customers subscribed to 5G packages in June 2024.

**Airtel** India comes in as number four, having overtaken **China Unicom**. With its fast traffic growth in 2023, 46%, **T-Mobile USA** defends the global number six position, breaking the Chinese and Indian dominance of the top.

Figure 8 below shows a quarterly comparison of the mobile data traffic reported by the Chinese and Indian operators occupying positions 1-5 and 7 globally.

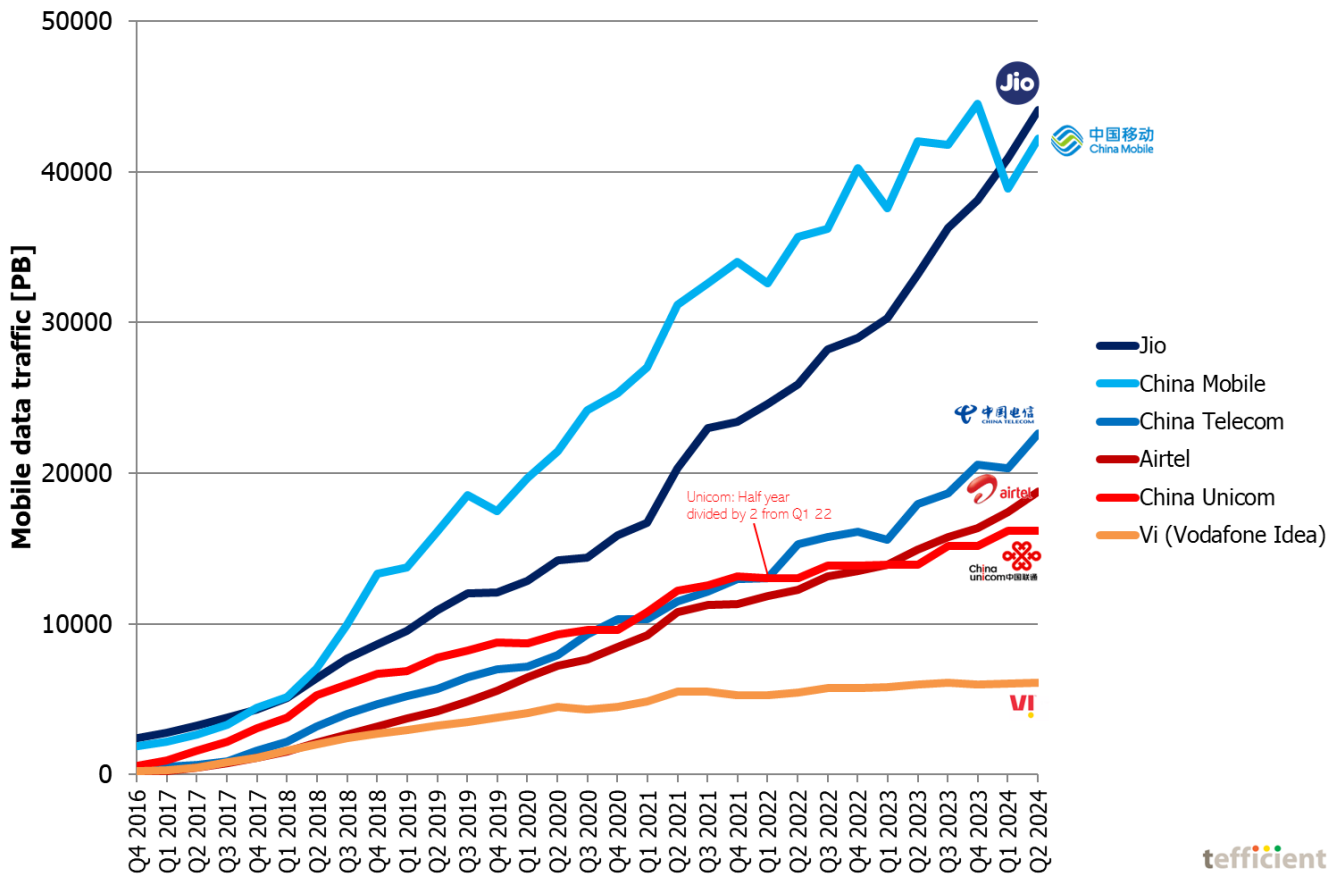


Figure 8. Total mobile data traffic - Chinese and Indian operators.

Jio has been the world’s largest operator in mobile data traffic already in the past - back in 2016-2017 - but lost that position to China Mobile early 2018. Six years later, in 2024, **Jio** regained the number 1 spot. **China Unicom** went from being number three globally to becoming number five as first **China Telecom** and now **Airtel India** overtook it. **Vi**, who has not been able to follow the 5G rollout of Jio and Airtel, has had much slower growth in its mobile data traffic.

## Europe: Italy, Germany, France, Poland and the UK hold the first fourteen positions

Now to the European breakdown: Since the highest ranked European operator is just number 24 in our global ranking, we could generally conclude that the European countries are less populated than the global traffic leaders. And it's not always the operators that you necessarily would suspect (with the largest SIM base) that are in the top of Figure 9.

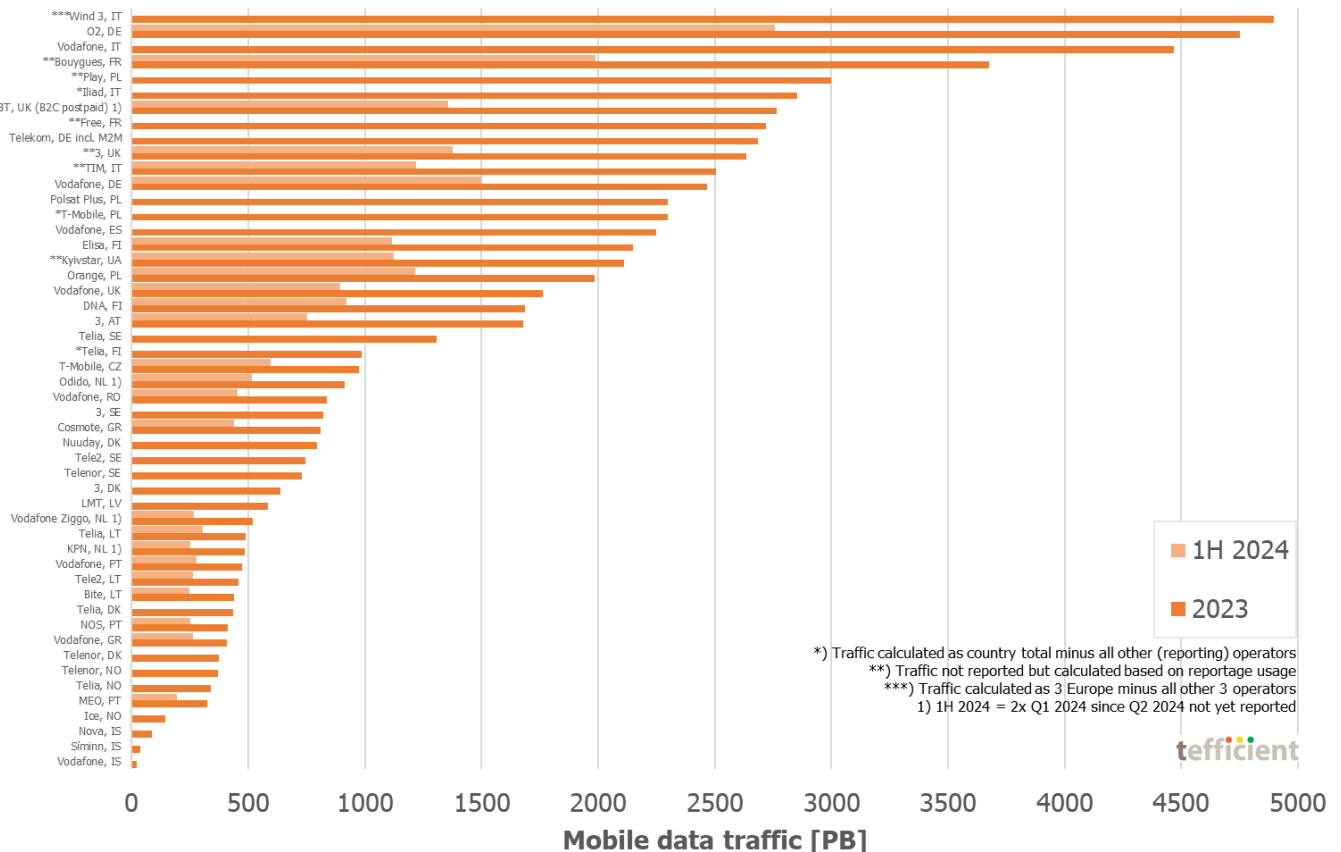


Figure 9. Total mobile data traffic - European operators.

Italy's **Wind 3** is no longer reporting but based on our calculation<sup>8</sup> we believe Wind 3 is the number one in Europe. Italy has experienced an explosion in mobile data usage ever since the new fourth operator, Iliad, launched 30 GB for 5.99 EUR in May 2018 - which all of competition copied. **Vodafone Italy** is ranked number three, **Iliad** is ranked number six and **TIM** number eleven.

The new number two in Europe is **O2 Germany**. Europe's largest operator in number of mobile subscriptions had 36% traffic growth in 2023 and 24% in the twelve months to June 2024 - on par with Vodafone Germany (ranked #12) but significantly faster than Telekom's 12% in 2023 (ranked #9).

<sup>8</sup> 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 to Wind 3.



The French operator **Bouygues** is number four<sup>9</sup> while its competitor **Free** is number eight. **Play** from Poland is number five. Based on its reported usage per B2C postpaid customer, **BT** ranks as number seven. The top ten ends with **3 UK**.

These are the European operators with the fastest and slowest growth (in %) in mobile data traffic in the twelve months to June 2024 and in 2023:

<b>Fastest</b>	<b>1H 2024 vs. 1H 2023</b>	<b>2023 vs. 2022</b>
Vodafone, GR	+55%	+59%
<b>Slowest</b>	<b>1H 2024 vs. 1H 2023</b>	<b>2023 vs. 2022</b>
BT, UK (B2C postpaid) 1)	-1%	+9%
Telenor, DK	n/a	-5%

Table 4. Operators with fastest and slowest data traffic growth in 2023 and 1H 2023-1H 2024 - European operators.

**Vodafone Greece** had the fastest growth in mobile data traffic in 2023 and in the twelve months to June 2024. After many years of being a European mobile data laggard, Greece is quickly improving its position overall, see Tefficient's [country analysis](#) in which Greece leads the world in mobile data usage growth in 2023.

Based on its reported usage per B2C postpaid customer for Q1 2024, **BT** had the slowest traffic growth of all reporting European operators in the twelve months to June 2024 - a decline of 1%. If looking at the trend in 2023, it's instead **Telenor Denmark** that, according to the regulatory data, had the worst data traffic development, -5%.

<sup>9</sup> Orange, SFR and Free could have been high ranked as well but aren't reporting data traffic or usage.

## Asia and China: China and India dominate the top, but Rakuten and 3 HK grew fastest

We find the five global traffic leaders in the top of the Asian/Chinese comparison: **China Mobile**, **Jio**, **China Telecom**, **Airtel**, and **China Unicom**. The annual growth rates have come down for these operators (2%-34%), but in absolute petabyte terms, the growth was still massive.

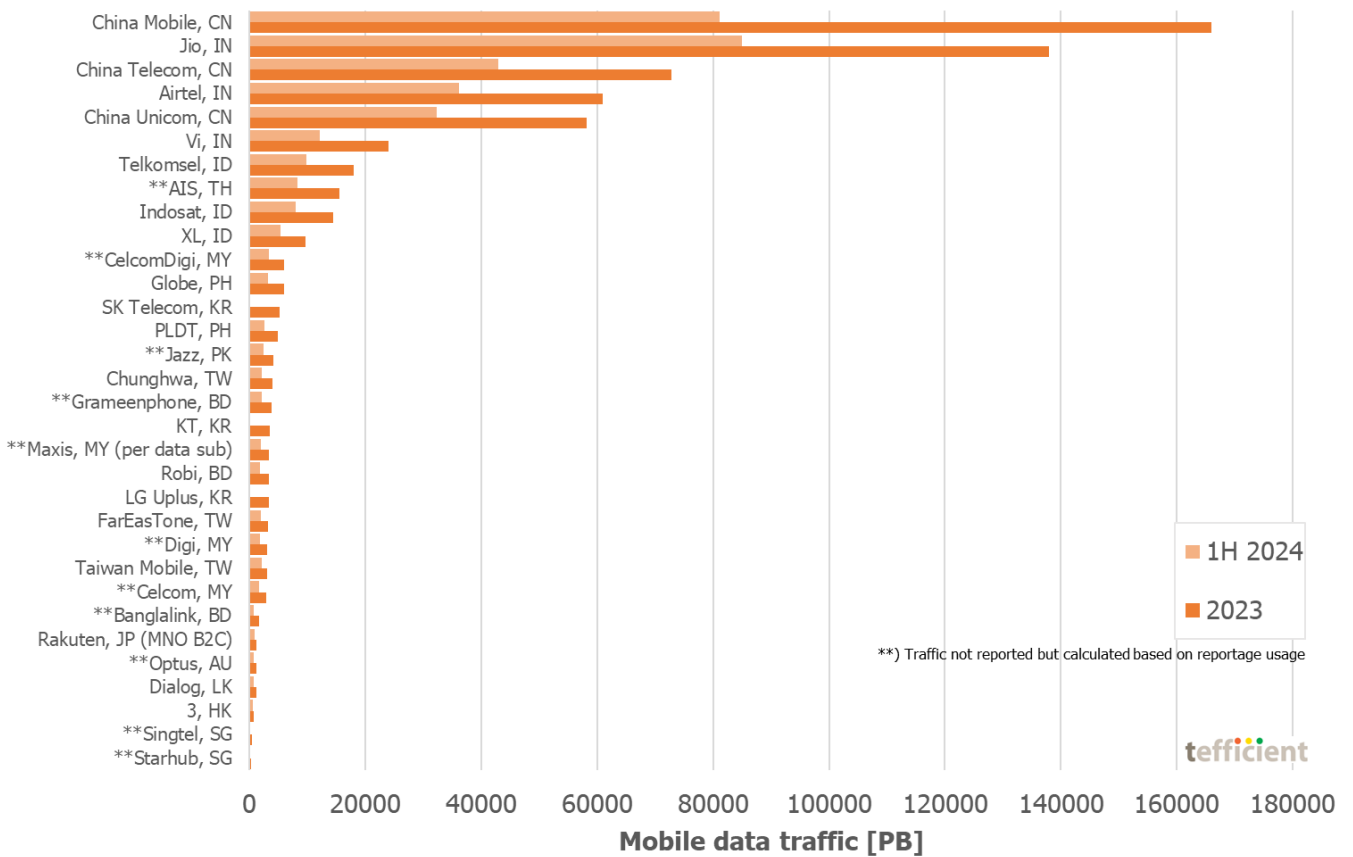


Figure 10. Total mobile data traffic - Asian and Chinese operators.

India’s **Vi**, the **Indonesian** operators (Telkomsel, Indosat, and XL) and the Thai operator **AIS** follow.

These are the Asian/Chinese operators with the fastest and slowest growth (in %) in mobile data traffic in the twelve months to June 2024 and in 2023:

<b>Fastest</b>	<b>1H 2024 vs. 1H 2023</b>	<b>2023 vs. 2022</b>
Rakuten, JP (MNO B2C)	+87%	+64%
3, HK	+58%	+91%
<b>Slowest</b>	<b>1H 2024 vs. 1H 2023</b>	<b>2023 vs. 2022</b>
Banglalink, BD	-7%	+24%
Maxis, MY	+20%	+5%

Table 5. Operators with fastest and slowest data traffic growth in 2023 and 1H 2023-1H 2024 - Asian and Chinese operators.

We commented **Rakuten's** and **3 Hong Kong's** very fast growth in the previous, usage, section already.

Malaysia's **Maxis** had the slowest traffic growth (in %) in 2023, 5%, whereas **Banglalink** from Bangladesh had the slowest growth (a decline) in the twelve months to June 2024, -7%.

## RoW: T-Mobile USA larger than all reporting groups

Figure 11 collects operators from the rest of the world, but also a few reporting international groups.

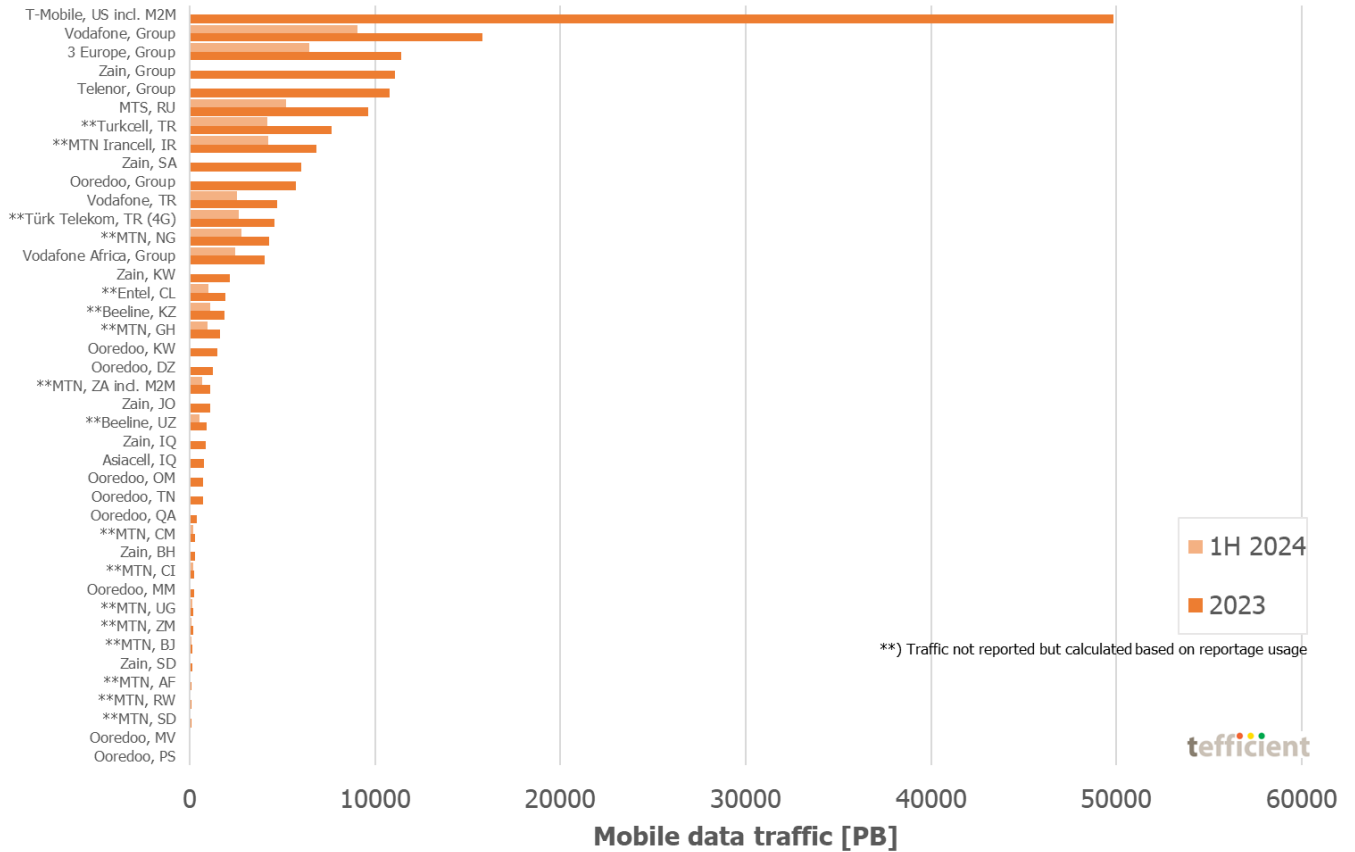


Figure 11. Total mobile data traffic - rest of world operators.

Our only North American operator, **T-Mobile**, tops the chart, followed by **Vodafone Group**, **3 Europe Group**, **Zain Group** and **Telenor Group** in this RoW ranking.

The Russian operator **MTS** is number six followed by **Turkcell**, **MTN Irancell**, **Zain Saudi Arabia** and **Ooredoo Group**.

These are the RoW operators with the fastest and slowest growth in mobile data traffic (in %) in the twelve months to June 2024 and in 2023:

<b>Fastest</b>	<b>1H 2024 vs. 1H 2023</b>	<b>2023 vs. 2022</b>
MTN, CI	+53%	+23%
Asiacell, IQ	n/a	+87%
<b>Slowest</b>	<b>1H 2024 vs. 1H 2023</b>	<b>2023 vs. 2022</b>
Vodafone, Group	-15%	-14%
MTN, SD	n/a	-53%

Table 6. Operators with fastest and slowest data traffic growth in 2023 and 1H 2023-1H 2024 - RoW operators.

**MTN Côte d'Ivoire** had the fastest growth between 1H 2023 and 1H 2024 while **Asiacell** from Iraq had it in 2023.

Due to changes in the group composition, Vodafone Group had the most negative development in mobile data traffic in the twelve months to June 2024. The slowest growth in traffic in 2023 (a steep decline) was in **MTN Sudan** and obviously explained by the civil war.

## 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. This is only partly true: Mixed with operators from **Sudan** and **Uganda** are European and Asian operators with equally high revenue per GB: **KPN, Telenor and Telia Norway, Singtel, Telekom** and **Vodafone UK**.

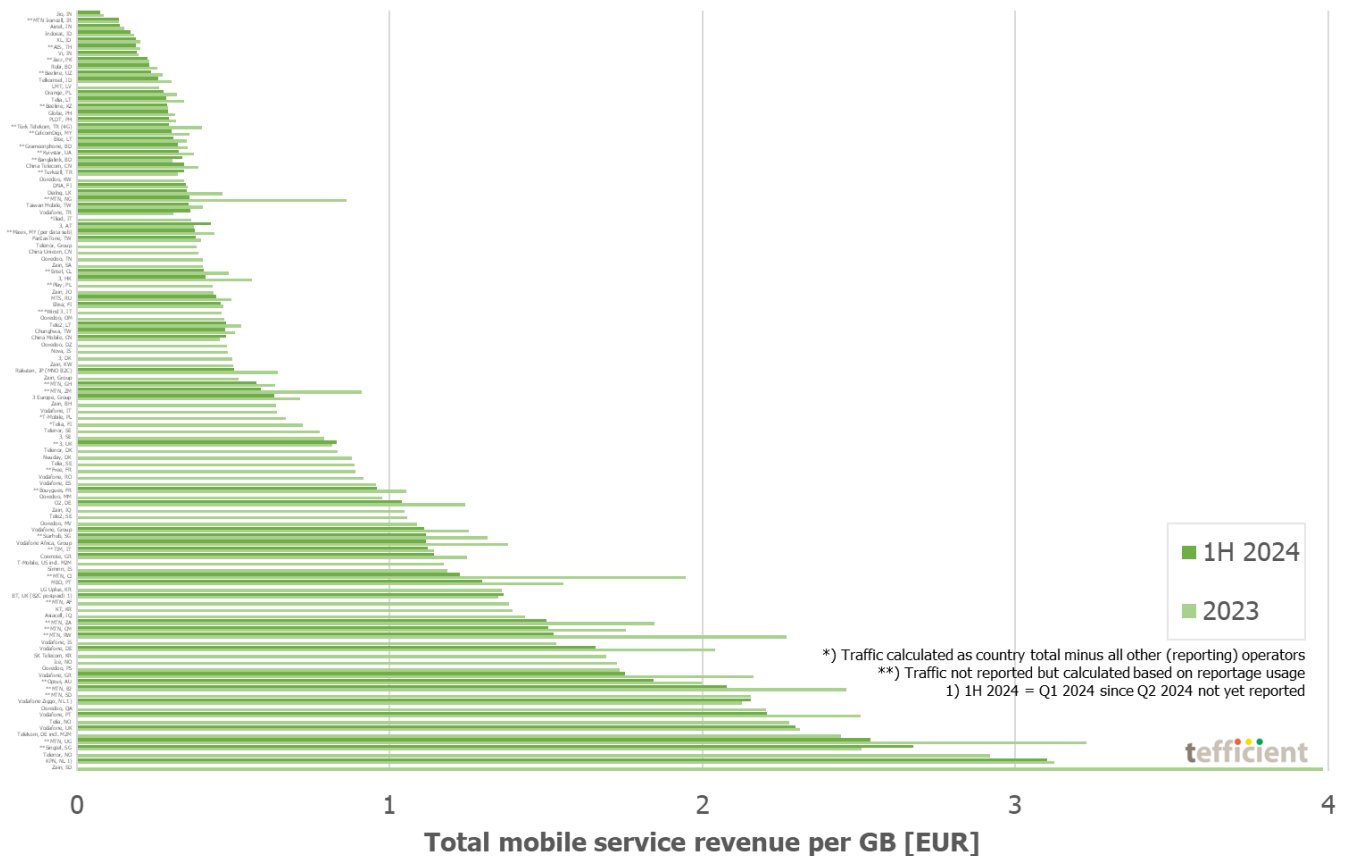


Figure 12. Total mobile service revenue per gigabyte - all operators<sup>10</sup>.

We will - for readability reasons - soon break Figure 12 down into Europe, Asia/China, and RoW, but let's first look into a disclaimer with regards to operators marked with \* or \*\*.

<sup>10</sup> Who also report mobile service revenue.

### When reporting mobile data traffic, take inspiration from Vodafone and Axiata

Most graphs in this analysis carry this legend:

\*) Traffic calculated as country total minus all other (reporting) operators

\*\*\*) Traffic not reported, but calculated based on reported usage

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

Some operators are instead reporting – or occasionally indicating – **data usage**. These are the operators labelled 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** and **MTN Group** 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.

Most operators are still not reporting anything, though. Orange Group and Telia Company are such examples. And, of course, most 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 the total. On 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 labelled with \*.

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

So, if any operator (\*-labelled or \*\*-labelled) 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 from Figure 12 identify the ten operators that have the *lowest* total mobile service revenue per gigabyte in the world:

	<u>2023</u>	<u>1H 2024</u>
1. <b>Jio</b> , India	0.09 EUR ↓	0.08 EUR ↓
2. <b>MTN Irancell</b> , Iran**	0.14 EUR ↓	0.13 EUR ↓
3. <b>Airtel</b> , India	0.15 EUR ↓	0.14 EUR ↓
4. <b>Indosat</b> , Indonesia	0.18 EUR ↓	0.17 EUR ↓
5. <b>XL</b> , Indonesia	0.20 EUR ↓	0.19 EUR ↓
6. <b>AIS</b> , Thailand**	0.20 EUR ↓	0.19 EUR ↓
7. <b>Vi</b> , India	0.20 EUR ↓	0.19 EUR ↓
8. <b>Jazz</b> , Pakistan**	0.23 EUR ↓	0.23 EUR ↓
9. <b>Robi</b> , Bangladesh	0.26 EUR ↓	0.23 EUR ↓
10. <b>Beeline</b> , Uzbekistan**	0.28 EUR ↓	0.24 EUR ↓

Table 7. Operators with the lowest total mobile service revenue per consumed gigabyte.

These operators are active in maturing high data usage markets and/or in highly competitive markets. As before, you also find MTN Irancell in the list. Beeline Uzbekistan has entered the list.

None of the bottom ten operators was this time able to increase their revenue per gigabyte.

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

	<u>2023</u>	<u>1H 2024</u>
1. <b>Zain</b> , Sudan	4.0 EUR ↑	n/a
2. <b>KPN</b> , Netherlands 1) <sup>11</sup>	3.1 EUR ↓	3.1 EUR ↓
3. <b>Telenor</b> , Norway	2.9 EUR ↓	n/a
4. <b>Singtel</b> , Singapore	2.5 EUR ↓	2.7 EUR ↑
5. <b>MTN</b> , Uganda**	3.2 EUR ↓	2.5 EUR ↓
6. <b>Telekom</b> , Germany (incl. M2M)	2.4 EUR ↓	n/a
7. <b>Vodafone</b> , UK	2.3 EUR ↓	2.3 EUR ↓
8. <b>Telia</b> , Norway	2.3 EUR ↓	n/a
9. <b>Vodafone</b> , Portugal	2.5 EUR ↓	2.2 EUR ↓
10. <b>Ooredoo</b> , Qatar	2.2 EUR ↓	n/a

Table 8. Operators with the highest total mobile service revenue per consumed gigabyte.

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

**Zain Sudan's** entry into the top ten list is regrettably explained by the civil war. The only other operator with an increase in the total revenue per GB is **Singtel** from Singapore whose mobile data usage fell in 1H 2024 although revenues increased. The disruptive impact of the fourth operator, Simba (formerly TPG), hence seems to have ended in Singapore.

We conclude that there in 2023 was **36x difference** between the operator with the highest total service revenue per gigabyte (KPN Netherlands<sup>12</sup>) and the operator with the lowest (Jio India). In the first half of 2024, the multiplier was **41x**. These multipliers are essentially unchanged compared to last year's analysis.

<sup>11</sup> 1) = Q1 2024 for 1H 2024 as Q2 2024 not yet reported by the regulator, ACM.

<sup>12</sup> We here passed over Zain Sudan to instead use the second highest, KPN.



## Europe: Widespread revenue per GB - increasing in a few instances

Figure 13 shows the European breakdown. Since European operators played both in the bottom and some close to the top of the global chart, the spread is almost as large as in the global view.

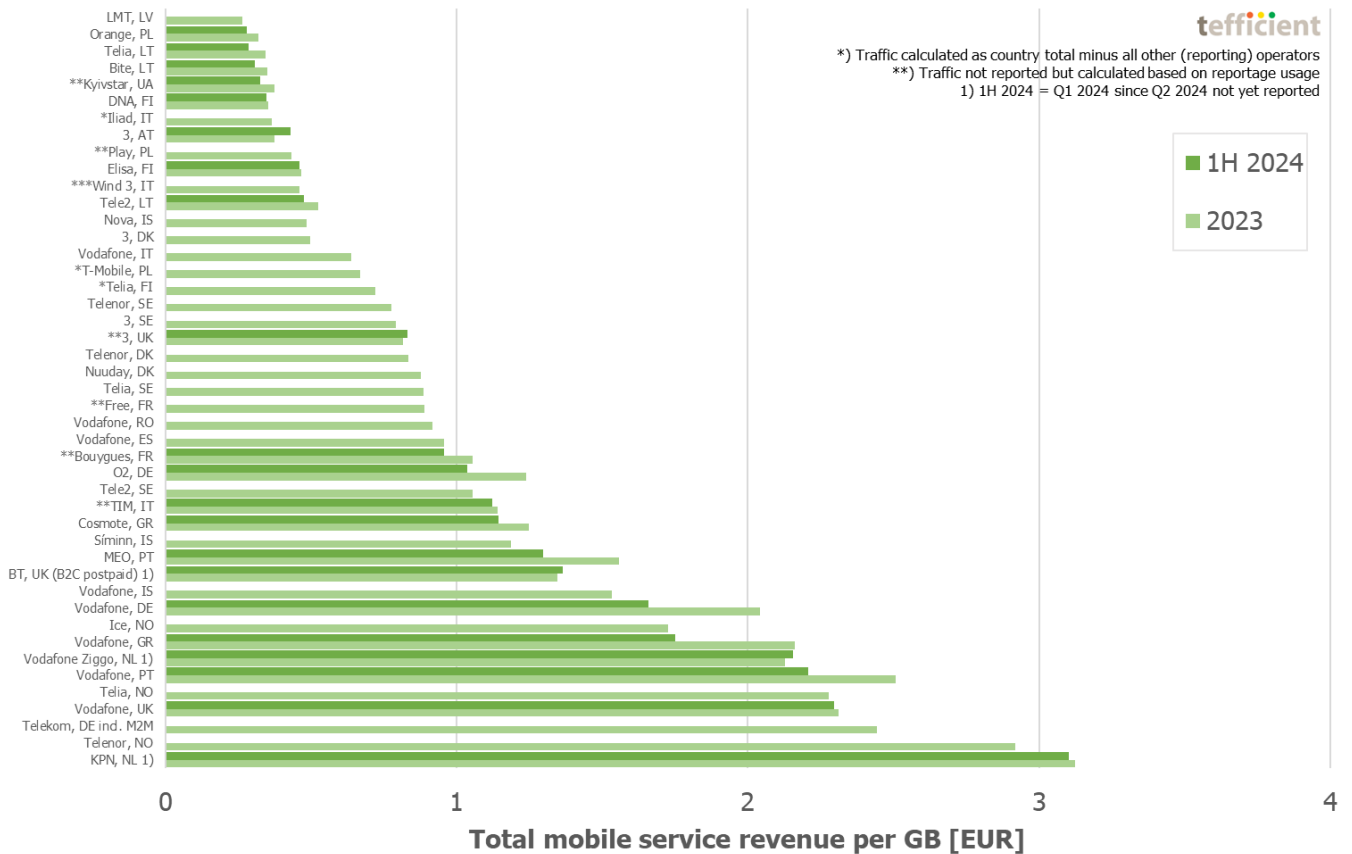


Figure 13. Total mobile service revenue per gigabyte - European operators.

Dutch, Norwegian, German, UK, and Portuguese 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 **Latvia, Poland, Lithuania, Ukraine, Finland, Italy, and Austria.**

Four European operators had higher revenue per GB in 1H 2024 than in 2023: **Vodafone Ziggo** from the Netherlands<sup>13</sup>, **BT, 3 UK** and **3 Austria.**

<sup>13</sup> Q1 2024 for 1H 2024 as Q2 2024 not yet reported by the regulator, ACM.

### Asia and China: Revenue per GB no longer decreasing fast

Figure 14 shows the Asian and Chinese operators. Indian, Indonesian, Thai, Pakistani, Bangladeshi, and Philippine operators had the lowest revenue per gigabyte whereas Singaporean, Australian, and South Korean operators had much highest revenue than the rest.

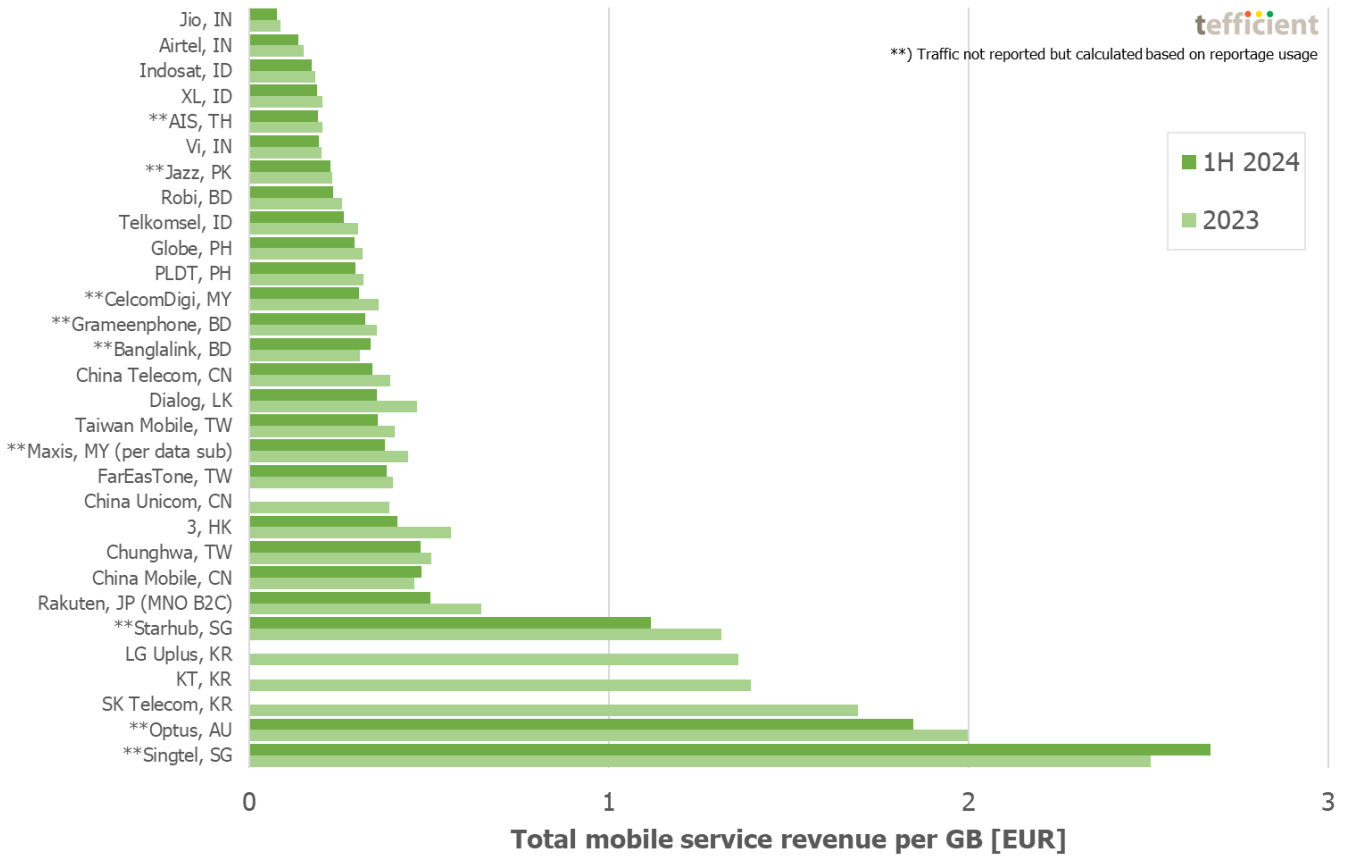


Figure 14. Total mobile service revenue per gigabyte – Asian and Chinese operators.

The erosion in revenue per gigabyte in Asia/China is not as quick as it was in previous editions of this report. Unlike our last edition, several operators in Asia and China could this time show growth in the revenue per GB from 2023 to 1H 2024: **Bangalink** from Bangladesh, **China Mobile**, and **Singtel**.

**RoW: Erosion in the revenue per GB - except for Turkcell and Vodafone Turkey**

We are ending this section with Figure 15 - showing the operators in the rest of the world alongside a few groups that separate out mobile service revenue in their reporting.

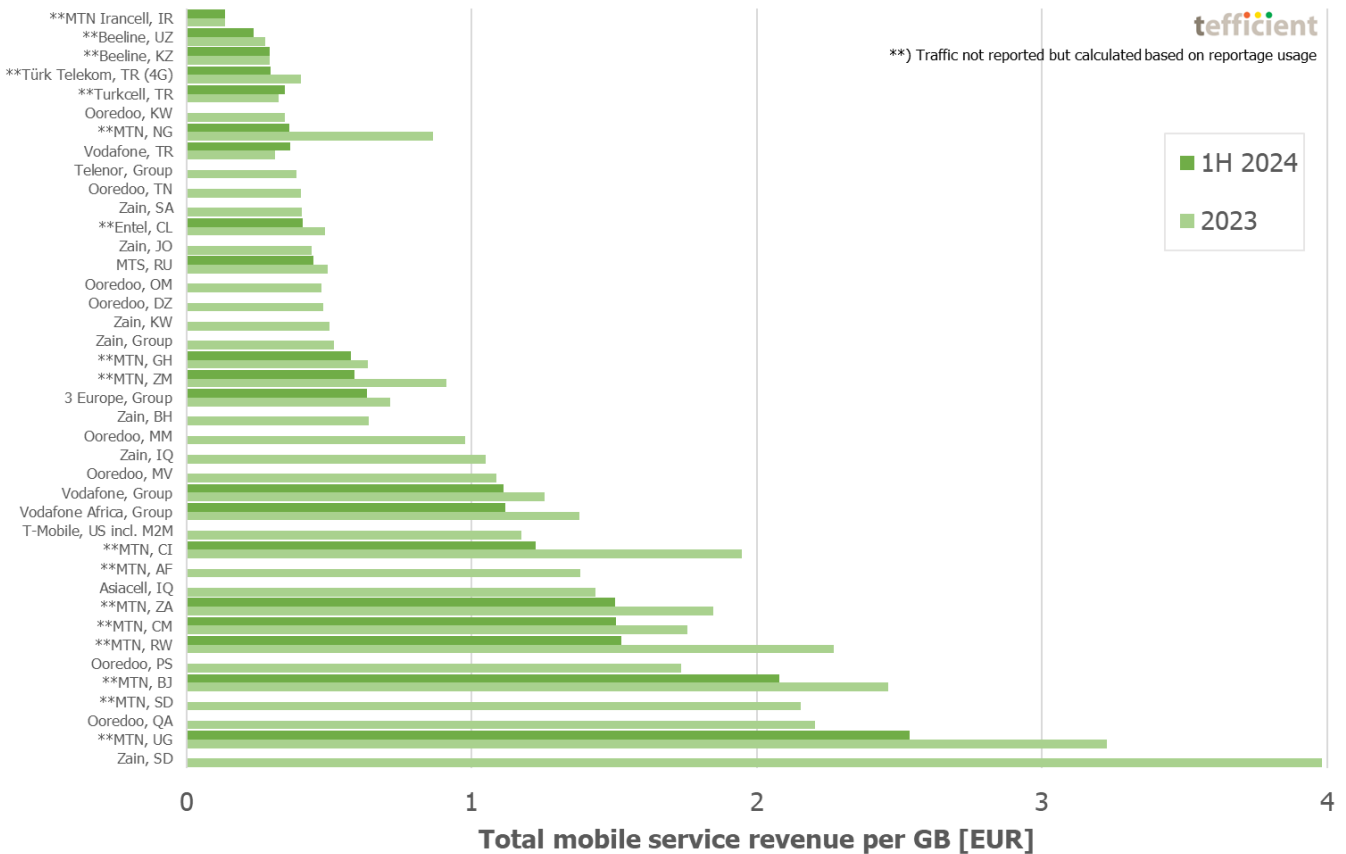


Figure 15. Total mobile service revenue per gigabyte - rest of world operators.

MTN Irancell, Beeline Uzbekistan and Kazakhstan, Turkish operators, Ooredoo Kuwait, and MTN Nigeria form the top of the chart where revenues are lowest per gigabyte. **Sub-Saharan operators** populate the bottom of the graph - alongside Ooredoo Qatar and Palestine.

Two of the RoW operators had higher revenue per GB in 1H 2024 compared to 2023 when measured in EUR: **Turkcell** and **Vodafone Turkey**. This is not surprising given the hyperinflation in Turkey. We come back to this in the ARPU trend section.

## 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. Figure 16 shows it for all operators where we have values for both axes for 2023.

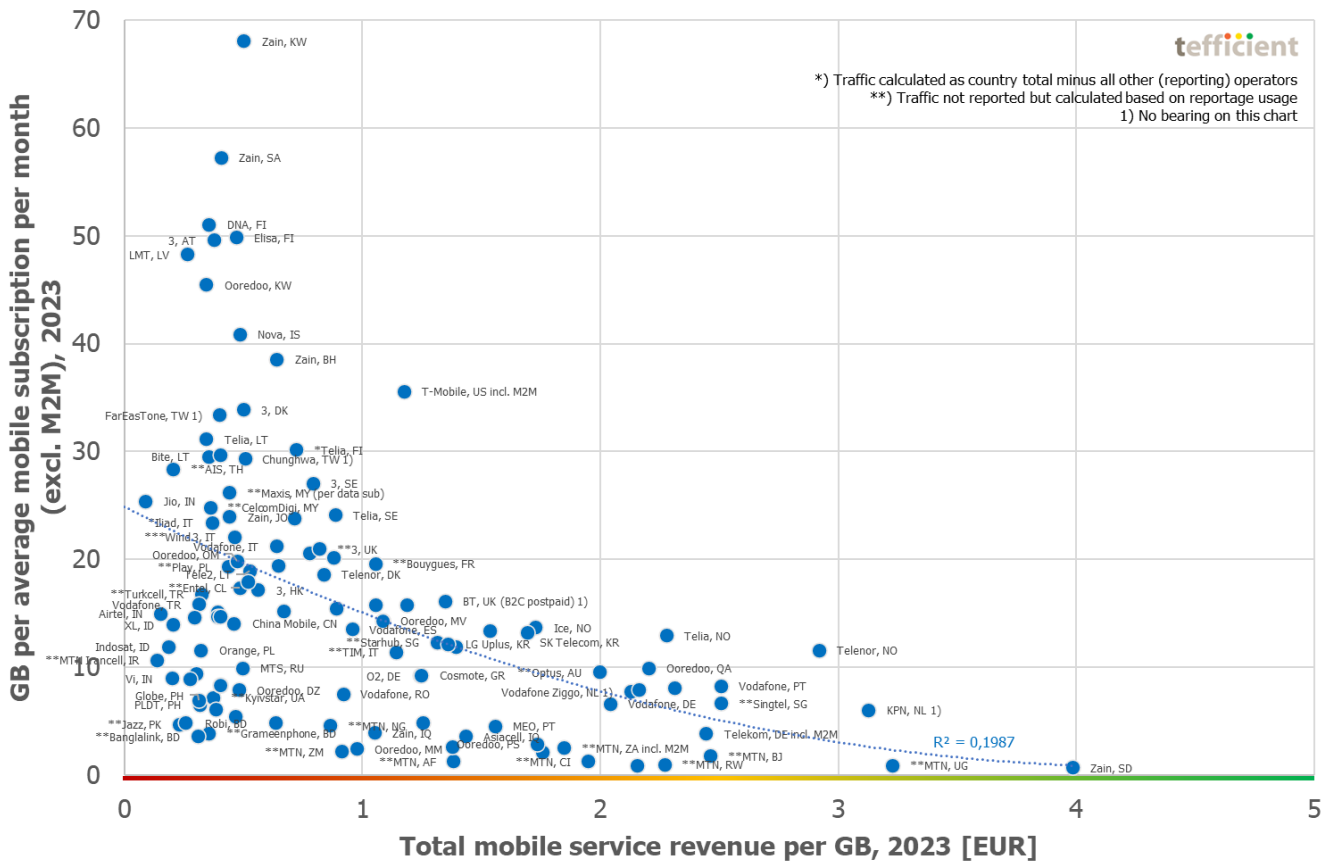


Figure 16. Mobile data usage vs. total mobile service revenue per gigabyte – 2023.

With all those labels, readability is so-so. Let’s therefore highlight some of the outliers.

- The operators with the highest revenue per GB in 2023 are - from right - **Zain Sudan, MTN Uganda, KPN** and **Telenor Norway**.
- The operators with the lowest revenue per GB are - from left - **Jio, MTN Irancell, Airtel India, Indosat, Vi, AIS** and **XL**.
- The operator with the highest usage is - from the top - **Zain Kuwait**.
- The operator with the lowest usage is - from the bottom - **Zain Sudan**.

## The ARPU vs. usage chart

One could criticise the previous chart for comparing the number of gigabyte with something that relates to it - the revenue per gigabyte. Our next chart, Figure 17, is therefore comparing the number of gigabyte with the revenue per subscription, i.e. the **ARPU**. And that is perhaps even more interesting.

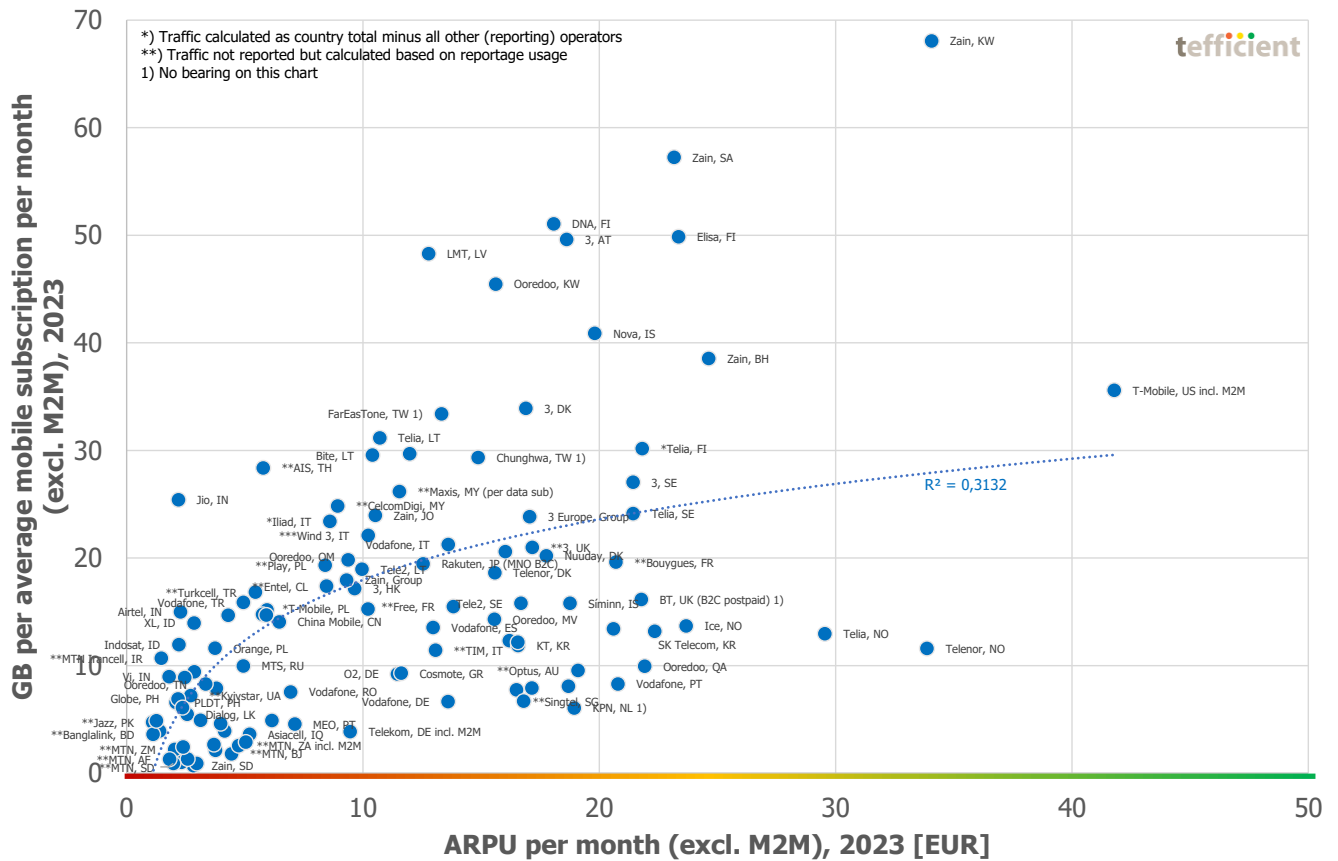


Figure 17. Mobile data usage vs. ARPU<sup>14</sup> - 2023.

Of all the operators there are four (from right) - **T-Mobile USA**, **Zain Kuwait**, **Telenor Norway**, and **Telia Norway** - that enjoy much higher ARPU than other operators. But in the case of Zain, the data consumption is also the highest in the world. T-Mobile's customers use relatively much data, but neither Telenor nor Telia Norway's customers are keen data users<sup>15</sup> - yet the ARPU is high.

<sup>14</sup> ARPU is calculated as the reported total mobile service (non-equipment) revenue incl. interconnect & roaming divided with the average number of reported subscriptions excl. M2M. It can differ from the definition of operator reported ARPU.

<sup>15</sup> The FWA traffic is not included in the reported mobile data traffic by the Norwegian regulator, Nkom (and fixed data traffic isn't reported). If it was included, the average usage would have been higher. Having said that, FWA revenues are also excluded so usage and revenues match.

In the middle upper part of the graph is a cluster of operators with very high average data usage but moderate ARPU between 13 and 25 EUR. Here we find **DNA** and **Elisa** from Finland together with **Drei** (3) Austria, **Zain Saudi Arabia**, **Nova** from Iceland, **LMT** from Latvia, **Ooredoo Kuwait**, and **Zain Bahrain**.

India's **Jio** continues to be an outlier. Its ARPU isn't the lowest - and it's growing - but considering an average data usage of more than 25 GB per month, Jio is still the affordability leader of the world.

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

To moderate this, one must 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?

All this is shown by our Christmas tree graph. Figure 18 shows the trends from 2022 to 2023. At first glance, the Christmas tree graph looks as great [as last year](#). But whereas we last time had data usage growth for 97% of the operators based on which 75% of operators could grow ARPU (with branches growing to the right), both figures have deteriorated a bit: In 2023, **data usage grew for 93% of operators and 71% of them could turn that into ARPU growth.**

2023: Data usage grew for 93% of operators  
ARPU grew for 71% of operators

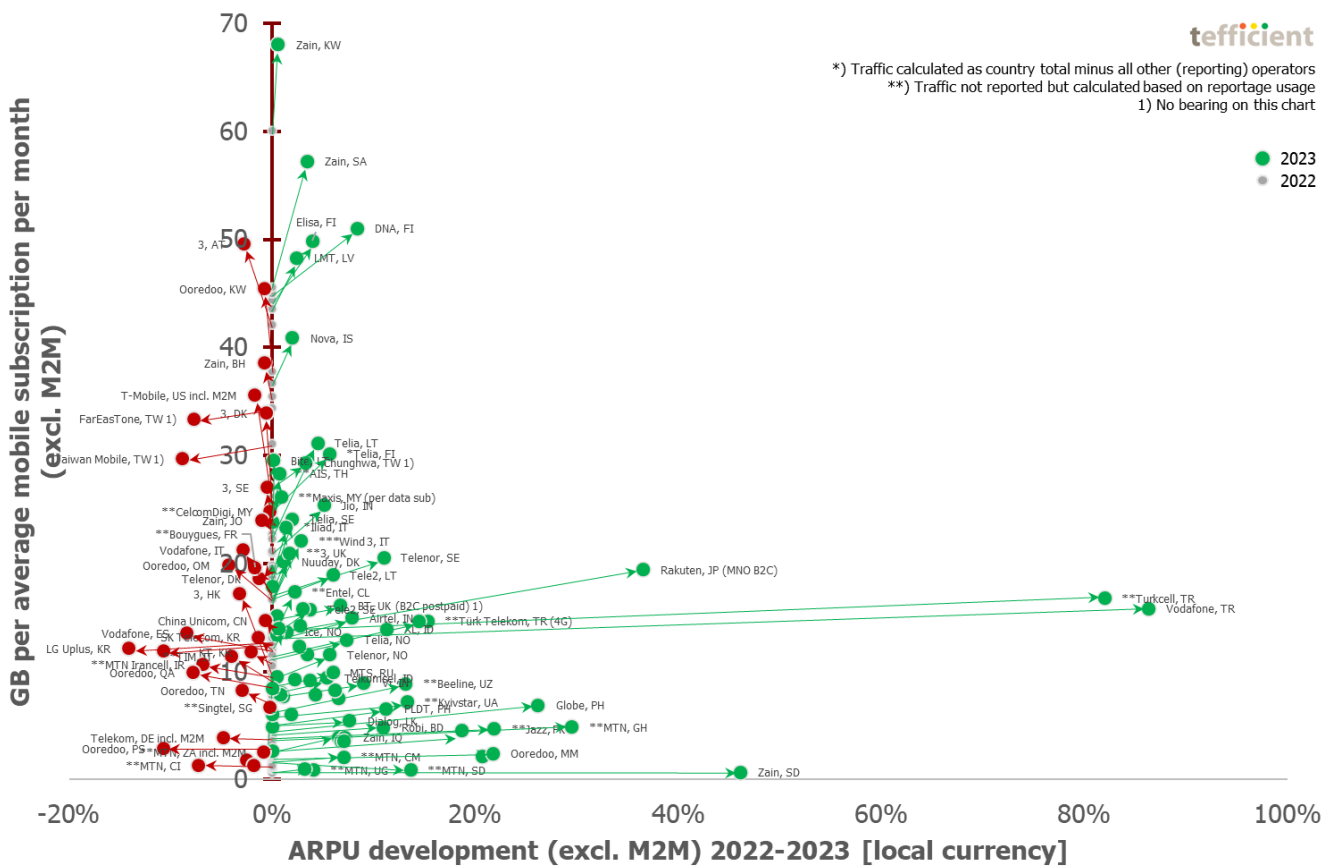


Figure 18. Mobile data usage development vs. ARPU<sup>16</sup> development – 2022 to 2023.

<sup>16</sup> ARPU is calculated as the reported total mobile service (non-equipment) revenue incl. interconnect & roaming divided with the average number of reported subscriptions excl. M2M. It can differ from the definition of operator reported ARPU.

If calculating the same for the smaller set of operators for which we can compare 1H 2024 with 1H 2023, **data usage grew for 95% of operators and 69% of them could turn that into ARPU growth**. In other words, very similar numbers as for 2023.

Let's highlight a few best practices of successful "more for more" operators in 2023:

- Our global usage runner-up, **Zain** Saudi Arabia, could grow ARPU following an explosion in data usage likely following onto increased take-up of 5G and 5G home routers.
- The Finnish operators **DNA** and **Elisa** have been able to grow ARPU thanks to more customers upgrading to faster (and more expensive) speed tiers on their unlimited plans. **Telia** too had a similar development albeit based on much lower calculated usage.
- **Telia, Tele2 and Bite Lithuania** all had good growth in both ARPU and data usage.
- **Jio, Airtel** and **Vi**<sup>17</sup> continued to improve its ARPU in 2023 when data usage grew.
- **Rakuten** from Japan could increase its ARPU strongly as it turned free subscriptions into paid subscriptions under significant usage growth.
- This time, **Turkcell** and **Vodafone Turkey** could increase its ARPU faster than the Turkish inflation (54%) whereas Türk Telekom could not.

We do not highlight the development in Sudan as a best practice although ARPU grew quickly in local currency. The war-ravaged country had an inflation of 147% in 2023.

Amongst the 29% unfortunate operators who could not grow ARPU, a few operators stand out particularly negative with branches stretching far to the left:

The Taiwanese operators **FarEasTone** and **Taiwan Mobile** seem to have had a much worse development than Chunghwa. Both the average mobile data usage and the ARPU declined. The reason for this is however the acquisitions of APT (Gt) by FarEasTone and of T Star by Taiwan Mobile. The two challenger operators had customers with lower data usage and lower ARPU.

**LG Uplus** of South Korea has had a very negative ARPU development in 2023, -14%, as Uplus quickly expands its base with MVNO subscriptions. The two competitors **SK Telecom** and **KT** are too on the wrong (left) side of the Christmas tree. There has been much political pressure on South Korea's operators to reduce the price of 5G subscriptions and the operators have therefore introduced cheaper alternatives (with less data). At the same time, MVNOs selling cheaper 4G subscriptions have taken market share from the MNO brands.

**Ooredoo Palestine** (PS) had a very negative ARPU development, -11%, in 2023, but the lack of a national currency means that its revenue is in USD. The Gaza war between has likely had an impact from October 2023.

The ARPU development of **Vodafone Spain** was also quite negative, -8%. The Spanish mobile market has been one of Europe's most competitive. In October 2023, Vodafone Group consequently communicated that it would sell its Spanish business to Zegona, a transaction that completed in 2024.

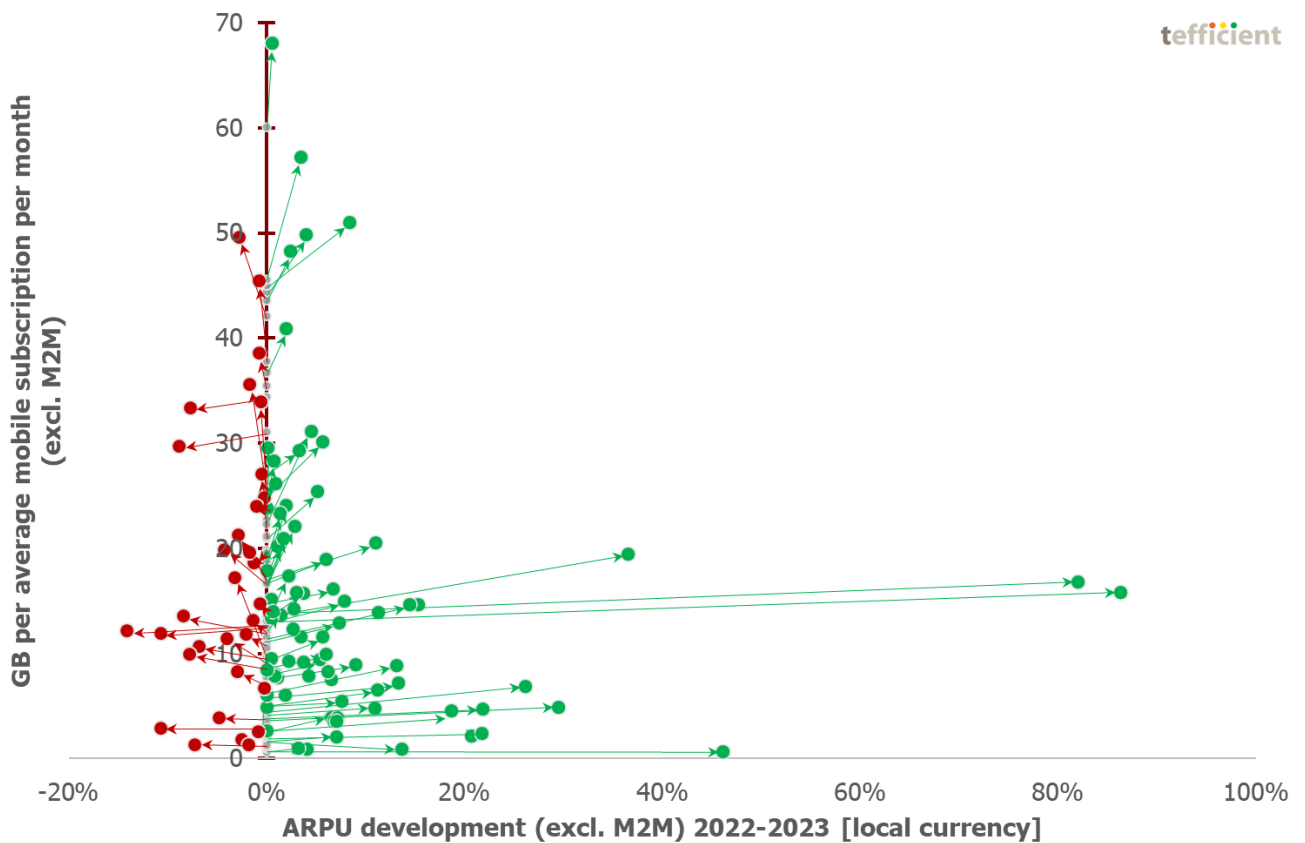
<sup>17</sup> Not labelled in the chart.



## Conclusion

In this edition, we presented fourteen updated ranking charts and three revised correlation plots, providing a clear view of the global trends in mobile data usage, traffic, and service revenues. As anticipated, data usage and traffic continue to rise, though the growth is less pronounced compared to previous years.

Notably, 71% of operators successfully translated increased data usage into higher ARPU - a slight decline from last year's 75%, but still a positive outcome. This trend appears to hold in the first half of 2024, with 69% of operators achieving ARPU growth alongside rising data usage.



This result reflects the ongoing realisation of the "more for more" strategy, though challenges remain. The slight decline from last year signals that the sector still struggles with fully leveraging pricing power. Nevertheless, 71% of operators are effectively delivering on this strategy, as demonstrated by their movement to the right in the Christmas tree graph.

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