

Unlimited goes viral, Europe's mobile data divide widens

The state of 4G pricing, mobile data usage, spectrum usage, network capacity utilization and fixed-to-mobile broadband substitution

Rewheel / Digital Fuel Monitor-PRO research study (DFMonitor 7th release 1H2017), 15th May 2017, **Updated 22nd May 2017:**

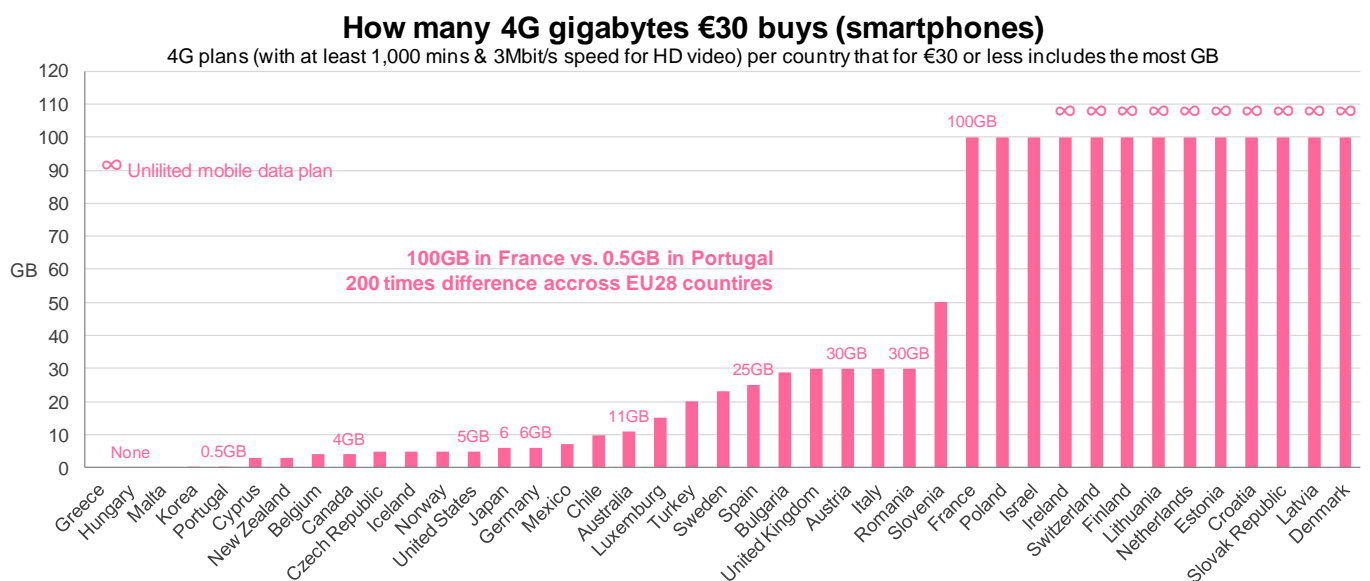
- On May 15th Tele2 launched in the Netherlands a smartphone plan with unlimited data, mins & SMS for €25
- On May 15th Telenor launched in Hungary a smartphone plan with unlimited data (& 50 minutes) for €20

Unlimited mobile data

- After a comeback in 2016 unlimited mobile data has spread further during the first half of 2017
- Unlimited mobile data plans are now available in 22 EU28 & OECD countries (up from 15 in September 2016)

How many 4G gigabytes €30 buys?

- In almost all EU28 & OECD countries gigabyte allowances increased substantially since September 2016
- In 15 EU28 & OECD countries (up from 10) €30 bought in April-May 2017 4G plans with 100 or unlimited GB

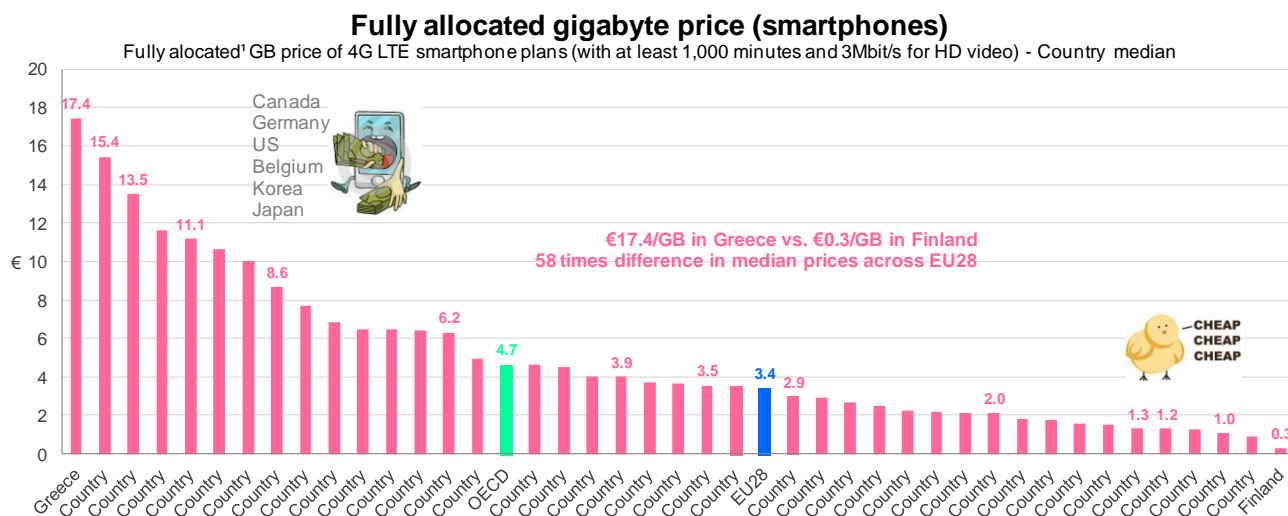


Highlights from EU28 & OECD markets with unlimited mobile plans

- **Netherlands:** After T-Mobile turned up the heat by launching a €35 unlimited data smartphone plan (€30 if you bring a friend) Tele 2, the no.4 MNO, stroke back by launching unlimited smartphone data for €25
- **Finland:** Basically unlimited everything! Every Finn consumed in average more than 21 GB per month during the first quarter of 2017 and by the end of 2017 the mobile data usage per capita in Finland is expected to reach 30 GB per month
- **France:** After the launch of unlimited mobile data by Free Mobile for Iliad's fixed broadband customers and the increase of the data cap from 50 to 100 GB (€19.99) for everyone else French gigabyte prices fell further and are now the second cheapest in EU28 behind Finnish prices
- **Switzerland:** Salt the no.3 mobile-only operator owned by Iliad's Xavier Niel sells unlimited 4G smartphone and mobile broadband plans for as little as €28
- **Sweden:** Tele2 and Telenor launched unlimited mobile data in Sweden
- **US:** Unlimited mobile data plans were first available for \$90 then \$80, \$70, \$60 and now for \$50. Anyone \$40? However, the unlimited mobile data price war has so far failed to push the historically high US GB prices lower
- **Austria:** Austrian operators have fully embraced fixed-to-mobile broadband substitution with €20 to €30 unlimited 4G broadband plans
- **UK:** Three UK ventures into fixed-to-mobile broadband substitution with the acquisition of 3.6 GHz spectrum
- **Croatia & Estonia:** Tele2, the no.3 mobile-only operator launched unlimited mobile data for €22
- **Slovakia:** The no.4 mobile network operator entrant launched unlimited mobile data for €20
- **Poland, Latvia Lithuania:** Unlimited mobile data for €20 or less a month
- **Hungary:** Unlimited mobile data in smartphone plans starting at €20

Gigabyte prices continue to fall off a cliff

- In most countries fully allocated GB prices (monthly price incl. VAT divided by GB allowance) fell considerably
- The EU28 median fully allocated GB price (smartphones) fell 32%: €5/GB in September 2016 to 3.4€/GB in April-May 2017
- The EU28 median fully allocated GB price (mobile broadband) fell 32%: €1.5/GB in Sept 2016 to 1€/GB in April-May 2017
- Notable exception was the consolidated German tight oligopoly market where the country median GB price edged higher



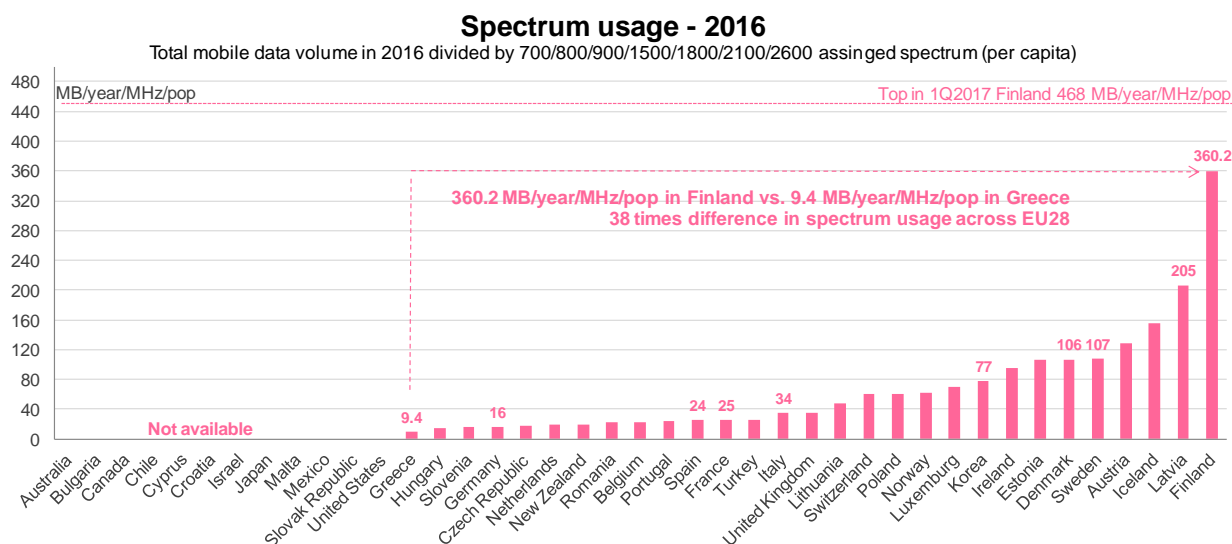
¹ Fully allocated GB price = tariff retail monthly price (incl. VAT) divided by included gigabyte allowance
Unlimited tplans were assigned a finite volume of 100GB. 100GB was the highest finite allowance that €30 could buy

Prices: April-May 2017
Source: DFMonitor.eu ©

Mobile data usage in 2016 was up sharply compared to 2015

- Mobile data usage per capita reached 16.1 GB in Finland during 2016 (up from 9.5 GB in 2015) and climbed to 21 GB during the first quarter of 2017
- The top six countries with the highest mobile data usage per capita in 2016 were EU28 countries where consumers could buy unlimited mobile data (Finland, Latvia, Austria, Denmark, Sweden and Estonia)

The spectrum usage gap between competitive markets and tight mobile oligopolies grew in 2016



Source: regulator websites, Rewheel analysis/estimates

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European mobile operators utilized in 2016 a tiny fraction of their available network capacity

- The practically unlimited wireless capacity (massive MIMO on 2.6 & 3.6 GHz TDD bands) and near zero marginal mobile data cost is disrupting the broadband access business models of fixed-line incumbents
- There are significant fixed-to-mobile broadband substitution¹ gains that can be realized if operators unleash the abundant capacity in their networks by offering unlimited data plans
- Mobile operators could carry today 100 GB per person per month and will soon have enough capacity (TDD/massive MIMO) for 200 GB per person per month or ≈500 GB per household

¹http://www.dfmonitor.eu/insights/2017_mar_pro_network_utilisation_mimo/

Context

DFMonitor's bi-annual releases have been tracking prices, price discrimination practices (zero-rating) and network economics metrics (data and spectrum usage) in the EU28 & OECD mobile markets since 2014. In this DFMonitor 7th release 1H2017 we tracked and analysed the state of 4G pricing, mobile data usage, spectrum usage and for the first time the state of network capacity utilisation².

We collected and analyzed thousands of eligible smartphone and mobile broadband plans from 41 markets in accordance with DFMonitor's methodology³. We introduced two significant changes in our methodology in this release.

Contrary to the previous six releases we no longer require that smartphone plans must include 1,000 SMS. Eligible smartphone plans in this 7th release were plans that included a minimum of 1,000 national minutes. While this change had an immaterial impact to most markets since operators have been including by default for many years in their monthly rolling plans unlimited minutes and SMSs it did have a significant impact in three markets (Bulgaria, Japan and Spain) where some or all operators have not been including an big allowance (i.e. 1,000) or unlimited SMSs in their smartphone plans.

Moreover, in this 7th release all smartphone and mobile broadband plans were required to have a minimum speed of 3 Mbit/s for supporting HD video streaming. In previous releases the minimum speed requirement was 1 Mbit/s for supporting SD video streaming. The 3 Mbit/s minimum speed requirement for supporting HD video streaming had a minor impact since the overwhelming majority of 4G plans have nowadays no speed limitations or minimum speeds that are significant higher than 3 Mbit/s. 4G plans with speed tiers while in the increase are still not very common (more common in mobile broadband plans) and almost all of such plans had speeds that were higher than 3 Mbit/s i.e. supported HD video streaming. This requirement did affect (disqualified) a handful of quasi-unlimited volume plans. Quasi-unlimited volume plans are plans where after the depletion of a finite high speed volume (e.g. 4 GB) the speed is throttled to a much lower speed i.e. below 3 Mbit/s so the plans no longer support HD video streaming.

The 3 Mbit/s HD video streaming requirement turned some plans (e.g. in Poland) which were classified as unlimited volume plans in previous releases to plans with finite volumes (e.g. speed is throttle to 1 Mbit/s after 100 GB volume is exceeded).

²http://www.dfmonitor.eu/insights/2017_mar_pro_network_utilisation_mimo/

³<http://www.dfmonitor.eu/downloads/Methodology%20H2016%20DFMonitor%206th%20release%2003102016.pdf>

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About Rewheel

Founded in 2009, Rewheel is a Helsinki-Finland based boutique management consultancy specialising in the appraisal of mobile data-centric business models with emphasis on network economics, spectrum, capacity, regulatory analysis and competition assessments.

Rewheel's clients are mainly *pro-competitive* mobile network operators, telco groups, MVNO groups, sector regulators, governments, global internet firms, mobile data-centric start ups, PE and VC investors.

Spectrum and network economics of unlimited data

Our clients include a number of '*unlimited data*' mobile operators, some of them carrying the heaviest mobile data traffic load in the world.

We delivered spectrum valuation, mobile data strategy and network economics management consultancy work for clients in the United Kingdom, United States, Ireland, Switzerland, Finland, Sweden, Belgium, Greece, Poland, Slovenia, Hungary, Russia, Romania. Buyers of our research reports (see: Digital Fuel Monitor) and related strategic workshops include many companies and authorities across Europe and worldwide.

Since 2010 we have been supporting many European challenger mobile operators in multiband (800, 900, 1800, 2600MHz) spectrum auctions. During 2017 we are supporting a Western European challenger operator in an upcoming 700, 1500 and 3400 to 3800 MHz multiband auction.

To learn more about our consultancy's profile visit rewheel.fi