Copper switch-off
A European benchmark

Analysis

WIK-Consult

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Towards switch-off
Highlights from Europe

- Of the 10 countries studied, Estonia remains the leader in migration to FTTH

- Further progress has been made in Sweden

- New initiatives have been announced in France and the Netherlands

- Switch-off progress in Spain and Portugal remains slow despite extensive FTTH roll-out in those countries

- No concrete plans as yet for copper switch-off in Germany, Poland and the UK; but

- The completion of PSTN switch-off in Germany should facilitate migration, when fibre is widespread

- Migration to FTTH in Italy has stalled amidst debates on future of fibre network ownership

- Those which have made progress towards switch-off have benefited from operational savings, increased reliability

- Studies suggest environmental benefits could be significant

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Towards switch-off
Global overview

- In **the US:**
  - Verizon started the migration process in 2017 and is retiring copper in a number of States in favour of FiOS
  - AT&T has confirmed that it stopped marketing legacy DSL services from 1 October 2020, but AT&T maintains a significant proportion of FTTC/VDSL
  - T-mobile has stepped into the gap with a wireless offer
- In **New Zealand**, the Commerce Commission is finalising the Copper Withdrawal Code – due in December 2020
- **Australia,** copper switch-off began in 2014 in conjunction with the deployment of the NBN, and acquisition by the NBN Co of Telstra's copper and cable network.
  - Customers in "NBN ready" areas, have 18 months notice to switch to the NBN, before the legacy infrastructure is switched off.
  - The switch-off will not however be to full fibre. Planned technology mix of 17% FTTH, 48% FTTN/B, 27% HFC, 8% fixed wireless and satellite

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Switch-off progress
Copper

% copper exchanges switched off

|	start	2018	2020	2025	2030	Replacement technology
Estonia	2015	70%	80%			FTTH (50% subs), fixed wireless (10%) FTTC (40%)
Sweden	2009	42%	54%	98%	no target	FTTH/wireless
Spain		2%	8%	18%		FTTH
France	2023	0%	0%		100%	
Netherland	2023	0%	0%			

Figures in red are extrapolated.

Source: WIK-Consult based on interviews

- Estonia and Sweden are clear leaders in progress towards switch-off

- More gradual process Spain in Portugal

- Intention to start switch-off in France and Netherlands in 2023

- Focus on migration to FTTC in Italy (partial switch-off)

- Process under discussion in UK (per exchange: stop sell 1 year after FTTP announced, switch-off 5 years after)

- No concrete plans in Germany

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Switch-off progress
PSTN

% incumbent voice lines via VoIP 2018/2020
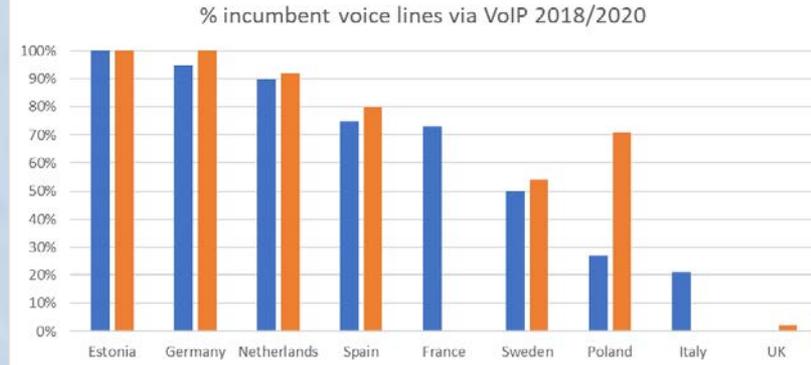
Source: WIK-Consult based on interviews

- Transition to all-IP is a pre-condition for copper switch-off, but can occur independently
- PSTN switch-off has been linked to copper switch-off in IT, ES, SE,
- PSTN switch-off pursued independently of copper switch-off in UK, DE, NL, FR
- As of Q3 2020, full transition to VoIP with PSTN switch-off has occurred in Germany and Estonia, with near full transition in the Netherlands. Significant progress in Poland
- In contrast, limited VoIP in the UK except for new build/business. Italy also starts from low base
- Tendency in Sweden for fixed analogue lines to be replaced with mobile

	start	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Estonia				100%								
Germany	2013		50%		95%		100%					
NL	2006		85%			92%		100%				
Spain	2009		20%		75%		80%		100%			
France					73%					>97%		
Poland					27%		71%					100%
UK					0%		2%	20%		60%	80%	100%
Sweden					50%		54%					98%
Italy	2012				21%					>65%		

Source: WIK-Consult based on BEREC 2016 study and 2018, 2020 interviews

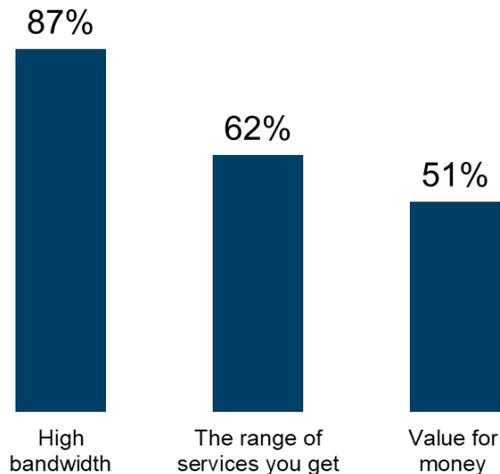Chloroplyille – fotolia.com

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Copper switch-off
Benefits to operators

- **Improved FTTH business case (KPN, PT)**

- **Significant cost savings and efficiencies: TF**
  - A fibre PoP covers the equivalent of 4 copper switches
  - Access technology equipment for fibre occupies 15% of the space occupied by copper; and
  - Copper switch-off saves 60% energy cost

- **Verizon, US: "fibre is overall 60% cheaper compared to copper"**
  - Real estate 60-80% savings
  - Energy 40-60% savings
  - Reliability; fibre is 70-80% more reliable than copper. 60% fewer costly truckrolls and savings of 40-60% on maintenance

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Copper switch-off
Benefits to customers

Swedish consumers: perceived benefits of fibre

87% High bandwidth
62% The range of services you get
51% Value for money

- In a 2017 representative survey of consumers in the fibre-rich Swedish market, WIK found that 82% of FTTH customers were happy with their service compared with only around 50% of DSL customers

- 87% of FTTH users highlighted high bandwidth as a benefit of FTTH

- The range of services and value for money were also cited

- FTTH users in Sweden were more likely to be online daily, and were more active on the Internet than users in Germany

- More than 30% of Swedes surveyed streamed all their music and video content online

Source: WIK-Consult 2018 socio-economic impact of FTTH

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Copper switch-off
Environmental benefits

- Target: >50% of (1990 level) greenhouse gas emissions in 2030 and climate neutral in 2050

- Corning (2010): replacing an old copper network with fibre with the equivalent length produces less than 0,01% of the emissions associated with (new) copper.

- Baliga et al. (2011): FttC consumes 50% more energy compared to PON networks due to the active equipment in the cabinet. If significant bandwidth demand, P2P fibre consumes less energy per Gigabit than PON / DOCSIS.

- Aleksix and Lovric (2014): 88% reduction of greenhouse gas emissions per MBit in Europe by fibre compared to combination of copper and coax

- Fibre enables roll out 5 G networks, which are more energy efficient than previous networks. According to Ericsson at least 15%

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Copper switch-off
Enablers & barriers

- Copper switch-off requires the ability and incentive to switch by the incumbent, challenger operators and customers
    - Installation of FTTH incumbent and/or willingness by incumbent to use competing FTTH infrastructure
    - Availability of FTTH access for access seekers and a willingness to migrate, or own FTTH (co-)investment
    - Understanding of benefits of FTTH, willingness, and ability of customers to migrate
- Incentives for operators and consumers to migrate can in turn be influenced by regulatory approaches to access regulation and pricing, migration and advertising standards
- Even with willing operators and customers, regulatory barriers to exchange closure and/or PSTN switch-off can delay migration

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Copper switch-off
Example cases

Estonia

- – PSTN switch-off completed in 2017
- – 6 month period for exchange closure
- – Incumbent engaged in FTTH deployment
- – Limited reliance on copper wholesale access (LLU)
- – New routers support legacy equipment (POTS port)

Sweden

- – Switch-off thus far mainly in rural areas
- – Migration to wireless, limited copper wholesale access
- – Customers accept mobile in place of fixed telephony

More challenges to switch-off where

- – Alternative investors deploy FTTH (IT, parts of UK, SE)
- – Long notice periods for exchange closure (ES, PT, FR)
- – Reduced performance gap due to VDSL (UK, DE)

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Conclusions

- Copper switch-off benefits both operators and consumers
- Progress towards copper switch-off in Europe is mixed
- Positive examples benefit from
  - Incumbent engagement in switch-off
  - Strategies to handle legacy equipment (or progress with PSTN switch-off)
  - Short notice periods for exchange closure and
  - Limited take-up of copper unbundling
- Challenges arise where
  - Fibre is deployed by non-incumbent
  - Barriers to exchange closure or PSTN switch-off
  - Customers reluctant e.g. due to VDSL upgrades, or reliance on legacy equipment

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Strategies to support switch-off & migration

- Member states and regulators could usefully act to enable copper and PSTN switch-off, and support consumer migration to FTTH
- Key steps are:
  1. **Where FTTH is limited:** incentivise deployment by altnets through duct and pole access and consider light touch wholesale access/pricing conditions for FTTH
  2. **When FTTH is deployed:** send appropriate pricing signals to encourage consumers and altnets to migrate e.g. allow copper/FTTC pricing to rise
  3. **Where only one FTTH network is viable:** encourage all service providers to coalesce around the single network. Where the network is not deployed by the incumbent, may involve the incumbent buying wholesale access (e.g. where wholesale only) or co-investment / long term access arrangements involving all players

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Strategies to support switch-off & migration (2)

4. **Where strict conditions impede exchange closure:** Consider reducing notice periods. Consider whether existing regulated access (on FTTH) and/or commercial opportunities (for FTTH or wireless deployment) are sufficient to support continued competition

5. **Where customers are confused or unconvinced of the benefits:** Consider labelling or rules on advertising standards to signal benefits of FTTH vs cable and FTTC

6. **Where there is reliance on legacy equipment:** Consider solutions which support POTS, address PSTN migration in advance of FTTH deployment and switch-off

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