NGA Progress Report

Study for ECTA

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Scope of study

- Issues addressed
  - How has the NGA Recommendation been applied?
  - How has the application of the NGA Recommendation affected competition, NGA roll-out, and NGA take-up?
  - How could NGA regulation be improved?
- 17 European countries assessed
- Information gathered from questionnaires sent to NRAs and ECTA members as well as published data sources (mid/end 2011)

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How has the NGA Recommendation been applied?

Access to FTTH networks – large variety of approaches

Access to FTTH networks (as imposed in Oct. 2011)

	SMP in Market 4	Duct access across full access network	FTTH unbundling: Term. segm. or concentration point	FTTH unbundling: MPoP	SMP in Market 5	Local WBA to FTTH connections	Regional WBA to FTTH connections	
Countries with currently no FTTH unbundling[1]								
BE	*Yes* [2]				*Yes* [4]			BE
IE	*Yes* [1]				*Yes* [3]			IE
TR	*Yes* [2]			*regulatory holiday*	*Yes* [4]		*voluntary*	TR
AT	*Yes* [1]			*voluntary vULL*	*No (res.)* [3] *Yes (non-res.)* [3]			AT
RO	*Yes* [1]				*No* [3]			RO
CH	*Yes* [2]	Yes			*Yes* [4]			CH
DK	*Yes* [2]	*Only between MDF and Street Cabinet*			*Yes* [3]		Yes	DK
Countries with symmetrical fibre terminating access								
FR	*Yes* [1]	Yes	Yes (symmetrical)		*Yes* [3]			FR
PT	*Yes* [1]	Yes	Yes (symmetrical)		*No ("C" area)* [3] *Yes ("NC" area)* [3]			PT
ES	*Yes* [1]	Yes	Yes (symmetrical)		*Yes* [3]		Yes (up to 30 Mbps)	ES
Countries with asymmetrical fibre terminating access								
DE	*Yes* [1]	*Only between MDF and Street Cabinet* [6]	Yes	*WDM once technically feasible*	*Yes* [3]	Yes	Yes	DE
HU	*Yes* [1]	Yes	Yes	*WDM once technically feasible*	*Yes* [3]	Yes	Yes[5]	HU
PL	*Yes* [1]	Yes	Yes	*Conditional to duct access & dark fibre not being available*	*Yes* [3]	Yes	Yes	PL
Countries with FTTH unbundling at MPoP (physical or other)								
IT	*Yes* [1]	Yes	Yes (1/2012)	Yes (e2e) (1/2012)	*Yes* [3]	Yes (1/2012)	Yes (1/2012)	IT
UK	*Yes* [1]	Yes		Yes (VULA)	*No (high density)* [3] *Yes (lower density)* [3]	VULA available	Yes	UK
NL	*Yes* [1]			Yes (P2P)	*Yes* [3]			NL
SE	*Yes* [1]			Yes (P2P)	*Yes* [3]		Yes	SE

Source:NRAs, BEREC, WIK

Access to FTTN networks – More uniformity

	Access to FTTN/VDSL networks (as imposed in Oct. 2011)					
	SMP in Market 4	Sub-loop unbundling	SMP in Market 5	Local WBA to FTTN connections	Regional WBA to FTTN connections	
Countries with currently no subloop unbundling						
IE	*Yes*		*Yes*			IE
BE	*Yes*		*Yes*	Yes	Yes	BE
Countries with subloop unbundling						
CH	*Yes*	Yes	*Yes*			CH
PT	*Yes*	Yes	*No ("C" area)* *Yes ("NC" area)*			PT
AT	*Yes*	Yes (physical + vULL)	*No (residential)* *Yes (non-residential)*	vULL available	Yes	AT
DE	*Yes*	Yes	*Yes*	Yes	Yes	DE
DK	*Yes*	Yes	*Yes*		Yes	DK
ES	*Yes*	Yes	*Yes*		Yes (up to 30 Mbps)	ES
FR	*Yes*	Yes	*Yes*		Yes	FR
HU	*Yes*	Yes	*Yes*	Yes	Yes	HU
IT	*Yes*	Yes	*Yes*	Yes (1/2012)	Yes (1/2012)	IT
NL	*Yes*	Yes	*Yes*		Yes	NL
PL	*Yes*	Yes	*Yes*	Yes	Yes	PL
RO	*Yes*	Yes	*No*			RO
SE	*Yes*	Yes	*Yes*		Yes	SE
TR	*Yes*	Yes	*Yes*		Yes	TR
UK	*Yes*	Yes (physical + VULA)	*No (high density)* *Yes (lower density)*	NGA not relevant	Yes (NGA not relevant)	UK

Source:NRAs, BEREC, WIK

Transparency, non-discrimination and pricing of access to NGA networks – Additional issues

- Transparency and non-discrimination
  - Lack of a reference offer
  - Ordering and provisioning procedures strictly equivalent?
  - External <u>and</u> internal KPIs?
- Price control
  - Lack of cost orientation
  - Currrent VULA & „end-to-end“ products a viable substitute in terms of price?
  - Risk sharing rarely used
  - Lack of ex ante margin squeeze tests

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Transparency and non-discrimination of access to FTTH networks – Additional issues

Equivalence, non-discrimination, transparency - access to FTTH networks (as imposed in Oct. 2011)

Country	SMP in Market 4	Duct access across full access network	FTTH unbundling: Term. segm. or con-centration point	FTTH unbundling: MPoP	SMP in Market 5	Local WBA to FTTH connections	Regional WBA to FTTH connections
Countries with currently no FTTH unbundling							
BE	Yes				Yes		
IE	Yes				Yes		
TR	Yes				Yes		
AT	Yes				No (res.) Yes (non-res.)		
RO	Yes				No		
CH	Yes	O&P, KPI, RO			Yes		
DK[1]	Yes				Yes		
Countries with symmetrical fibre terminating access							
FR	Yes	O&P, KPI & SLA, RO	O&P, KPI & SLA, RO		Yes		
PT	Yes	KPI & SLA, RO	no equivalence principles enforced		No ("C" area) Yes ("NC" area)		
ES	Yes	O&P, KPI & SLA, RO	KPI & SLA		Yes		O&P, KPI & SLA, RO
Countries with asymmetrical fibre terminating access							
DE	Yes	Between MDF & Street Cabinet: O&P, SLA	O&P		Yes	./.	O&P, SLA
HU	Yes	O&P, KPI, RO	O&P, KPI & SLA, RO (process not finished)		Yes	O&P, KPI & SLA, RO (process not finished)	O&P, KPI & SLA
PL	Yes	O&P, KPI & SLA, RO	O&P, KPI & SLA		Yes	O&P, KPI & SLA	O&P, KPI & SLA
Countries with FTTH unbundling at MPoP (physical or other)							
IT	Yes	O&P, KPI & SLA, RO (1/2012)	O&P, KPI & SLA, RO (1/2012)	O&P, KPI & SLA, RO (1/2012)	Yes	O&P, KPI & SLA, RO (1/2012)	O&P, KPI & SLA, RO (1/2012)
UK	Yes	RO		O&P, KPI & SLA, RO	No (high density) Yes (lower density)		O&P, KPI & SLA, RO
NL	Yes			O&P, KPI & SLA, RO	Yes		
SE	Yes			KPI & SLA, RO	Yes		KPI & SLA, RO

O&P: Equivalent ordering & provision; KPI: External and internal key performance indicators; SLA: Service level agreement; RO: Reference offer.

Source:NRAs, BEREC, WIK

Transparency and non-discrimination of access to FTTN networks – Additional issues

Equivalence, non-discrimination, transparency - access to FTTN/VDSL networks (as imposed in Oct. 2011)

	SMP in Market 4	Sub-loop unbundling	SMP in Market 5	Local WBA to FTTN connections	Regional WBA to FTTN connections	
Countries with currently no subloop unbundling						
IE	*Yes*		*Yes*			IE
BE	*Yes*		*Yes*	O&P, KPI & SLA, RO	O&P, KPI & SLA, RO	BE
Countries with subloop unbundling						
CH	*Yes*	O&P, KPI, RO	*Yes*			CH
PT	*Yes*	KPI & SLA, RO	*No ("C" area)* *Yes ("NC" area)*			PT
AT	*Yes*	(physical and vULL) O&P, KPI[1] & SLA, RO	*No (residential)* *Yes (non-residential)*		O&P, KPI[1] & SLA, RO	AT
DE	*Yes*	O&P, SLA, RO[2]	*Yes*	./.	O&P, SLA, RO	DE
DK[3]	*Yes*		*Yes*			DK
ES	*Yes*	*no specific procedures due to lack of demand*	*Yes*		O&P, KPI & SLA, RO	ES
FR	*Yes*	O&P, KPI & SLA, RO	*Yes*		O&P, KPI & SLA, RO	FR
HU	*Yes*	O&P, KPI, RO (process not finished)	*Yes*	O&P, KPI & SLA, RO (process not finished)	O&P, KPI & SLA	HU
IT	*Yes*	O&P, KPI & SLA, RO (1/2012)	*Yes*	O&P, KPI & SLA, RO (1/2012)	O&P, KPI & SLA, RO (1/2012)	IT
NL	*Yes*	O&P, KPI & SLA, RO	*Yes*		O&P, KPI & SLA, RO	NL
PL	*Yes*	O&P, KPI & SLA, RO	*Yes*	O&P, KPI & SLA	O&P, KPI & SLA	PL
RO	*Yes*	O&P, KPI & SLA, RO	*No*			RO
SE	*Yes*	KPI & SLA, RO	*Yes*		KPI & SLA, RO	SE
TR	*Yes*	O&P, SLA, RO	*Yes*		O&P, SLA, RO	TR
UK	*Yes*	KPI & SLA, RO	*No (high density)* *Yes (lower density)*		O&P, KPI & SLA, RO	UK

O&P: Equivalent ordering & provision; KPI: External and internal key performance indicators; SLA: Service level agreement; RO: Reference offer.

Source:NRAs, BEREC, WIK

Pricing of access to FTTH networks – Additional issues

Cost orientation - access to FTTH networks (as imposed in Oct. 2011)

	SMP in Market 4	Duct access across full access network	FTTH unbundling		SMP in Market 5	Local WBA to FTTH connections	Regional WBA to FTTH connections	
			Term. segm. or con-centration point	MPoP				
Countries with currently no FTTH unbundling								
BE	*Yes*				*Yes*			BE
IE	*Yes*				*Yes*			IE
TR	*Yes*				*Yes*			TR
AT	*Yes*				*No (res.)* *Yes (non-res.)*			AT
RO	*Yes*				*No*			RO
CH	*Yes*	co			*Yes*			CH
DK[5]	*Yes*				*Yes*			DK
Countries with symmetrical fibre terminating access								
FR	*Yes*	co (TD-FDC)	reasonable, risk premium[1]		*Yes*			FR
PT	*Yes*	co	reasonable		*No ("C" area)* *Yes ("NC" area)*			PT
ES	*Yes*	co	reasonable		*Yes*		co, ms	ES
Countries with asymmetrical fibre terminating access								
DE	*Yes*	Between MDF & Street Cabinet: co	co, ms		*Yes*	ms	ms	DE
HU	*Yes*	co (TD-LRIC)	co (TD-LRIC)		*Yes*	co (TD-LRIC)	RM[6]	HU
PL	*Yes*	co	co		*Yes*	co	co	PL
Countries with FTTH unbundling at MPoP (physical or other)								
IT	*Yes*	co (BU-LRIC)[2], ms (1/2012)	co (BU-LRIC)[2], ms (1/2012)	co (BU-LRIC)[2], ms (1/2012)	*Yes*	co (LRIC[3]), ms (1/2012)	co (LRIC[3]), ms (1/2012)	IT
UK	*Yes*	co		fair & reasonable[4]	*No (high density)* *Yes (lower density)*		no cost orientation	UK
NL	*Yes*			co (DCF), risk premium, ms	*Yes*			NL
SE	*Yes*			co (LRIC)	*Yes*		co (hybrid LRIC)	SE

Co: Cost orientation; RM: Retail-minus; ms: ex ante margin squeeze test.

Source:NRAs, BEREC, WIK

Pricing of access to FTTN networks – Additional issues

Cost orientation - access to FTTN/VDSL networks (as imposed in Oct. 2011)

Country	SMP in Market 4	Sub-loop unbundling	SMP in Market 5	Local WBA to FTTN connections	Regional WBA to FTTN connections	Country
Countries with no subloop unbundling						
IE	*Yes*		*Yes*			IE
BE	*Yes*		*Yes*	co (BU-LRIC), ms	co (BU-LRIC), ms	BE
Countries with subloop unbundling						
CH	*Yes*	co	*Yes*			CH
PT	*Yes*	co	*No ("C" area)* *Yes ("NC" area)*			PT
AT	*Yes*	(physical & vULL) co/RM[1], ms	*No (residential)* *Yes (non-residential)*		RM, ms	AT
DE	*Yes*	co (BU-LRIC), ms[2]	*Yes*	co, ms	co, ms	DE
DK[8]	*Yes*		*Yes*			DK
ES	*Yes*	co[4], ms	*Yes*		co (BU-LRIC planned), ms	ES
FR	*Yes*	co (TD-FDC)	*Yes*		co (TD-FDC)[3]	FR
HU	*Yes*	co (TD-LRIC)	*Yes*	co (TD-LRIC)	RM[7]	HU
IT	*Yes*	co (BU-LRIC), ms	*Yes*	co (LRIC[6]), ms (1/2012)	co (LRIC[6]), ms (1/2012)	IT
NL	*Yes*	co (TD-FDC), ms	*Yes*		co (TD-EDC/FDC), ms	NL
PL	*Yes*	co	*Yes*	co	co	PL
RO	*Yes*	co	*No*			RO
SE	*Yes*	co (FL-LRAIC)	*Yes*		co (LRIC+)	SE
TR	*Yes*	co	*Yes*		no obligation[5]	TR
UK	*Yes*	co	*No (high density)* *Yes (lower density)*		no co	UK

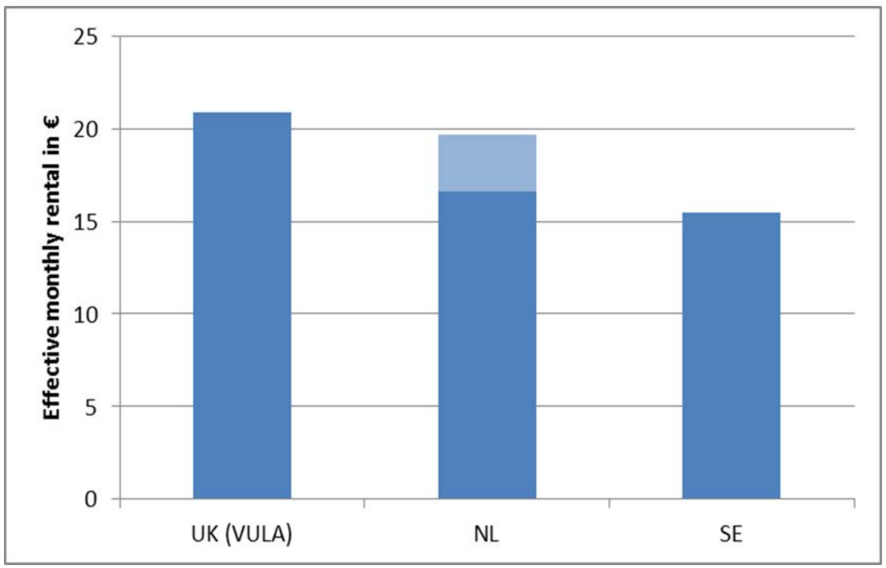
Co: Cost orientation; RM: Retail-minus; ms: ex ante margin squeeze test.

Source:NRAs, BEREC, WIK

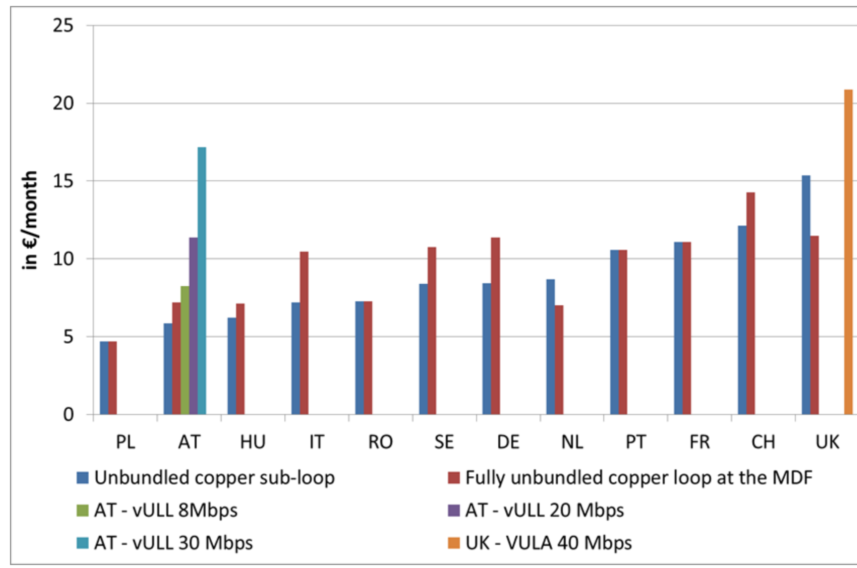
VULA - a viable substitute for unbundled access?

- Pricing: Should be cost oriented, not depend on bandwidth
- Quality: Should offer sufficient discretion regarding qos parameters

Effective monthly prices for
fibre LLU at the MPoP
(in € per month), 2011



Effective monthly prices for
copper SLU / LLU and VULA
(in € per month), 2011



Note: the connection charge is distributed over 24 months and added to the monthly rental charge.

Source: NRAs

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How has the application of the NGA Recommendation affected competition, NGA roll-out, and NGA take-up?

No effective wholesale NGA access; stark contrast to access in legacy broadband

	Fibre LLU and fibre WBA in % of SMP operator's FTTH lines	Copper SLU and VDSL WBA in % of SMP operator's FTTN lines	Copper LLU and ADSL WBA in % of SMP operator's copper lines
AT	0,0%	0,0%	20,0%
BE	0,0%	1,0% [4]	4,9%
CH	0,0%	0,0%	no data
DE	0,0%	<5%	42,9%
DK	no data	no data	24,8%
ES	0,0%	0,0%	37,8%
FR	0,0%	No FTTN/VDSL roll-out	54,6%
HU	0,0%	no data	17,1%
IE	0,0%	0,0%	33,5%
IT	0,0%	No FTTN/VDSL roll-out	45,7%
NL	5-10%	0-5%	26,8%
PL	0,0%	no data	22,0%
PT	0,0%	no data	21,4%
RO	0,0%	0,0%	0,1%
SE	no data	no data	33,6%
TR	0,0%	no data	no data
UK	<1%	no data	47,4%

Wholesale NGA access:

FR: 30% of all FTTH lines are based on TS access

NL: 5-10% of SMP operator's FTTH lines are unbundled at MPoP

DE: <5% of SMP operator's FTTN lines are provided as VDSL WBA lines

Source: NRAs, COCOM (2011)

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Lack of access-based competition in NGA; high risk of decreasing future competition in the overall broadband market

	SMP operator's share of all (retail) FTTH/B lines	SMP operator's share of all (retail) VDSL lines	SMP operator's share of all (retail) broadband lines
AT	2,3%	close to 100%	55,2%
BE	0,0%	99% [1]	45,9%
CH	no data	close to 100%	53,8%
DE	0,0%	91,9% [1]	45,6%
DK	5,0%	close to 100%	60,7%
ES	91,4%	55,3% [1]	50,3%
FR	43,9%	no VDSL	42,4%
HU	85,6%	100,0%	41,0%
IE	0,0%	no VDSL	46,7%
IT	2,1%	no VDSL	53,1%
NL	35,5%	close to 100%	41,9%
PL	3,3%	close to 100%	31,8%
PT	83,2%	close to 100%	47,0%
RO	4,9%	99,4%	30,0%
SE	18,8%	close to 100%	37,3%
TR	no data	99,5%	93,0%
UK	0,0%	100,0%	28,9%

1 ANOs using unbundled local loops to provide VDSL from the MDF are included in this figure.

Source: NRA responses to WIK questionnaire, COCOM (2011)

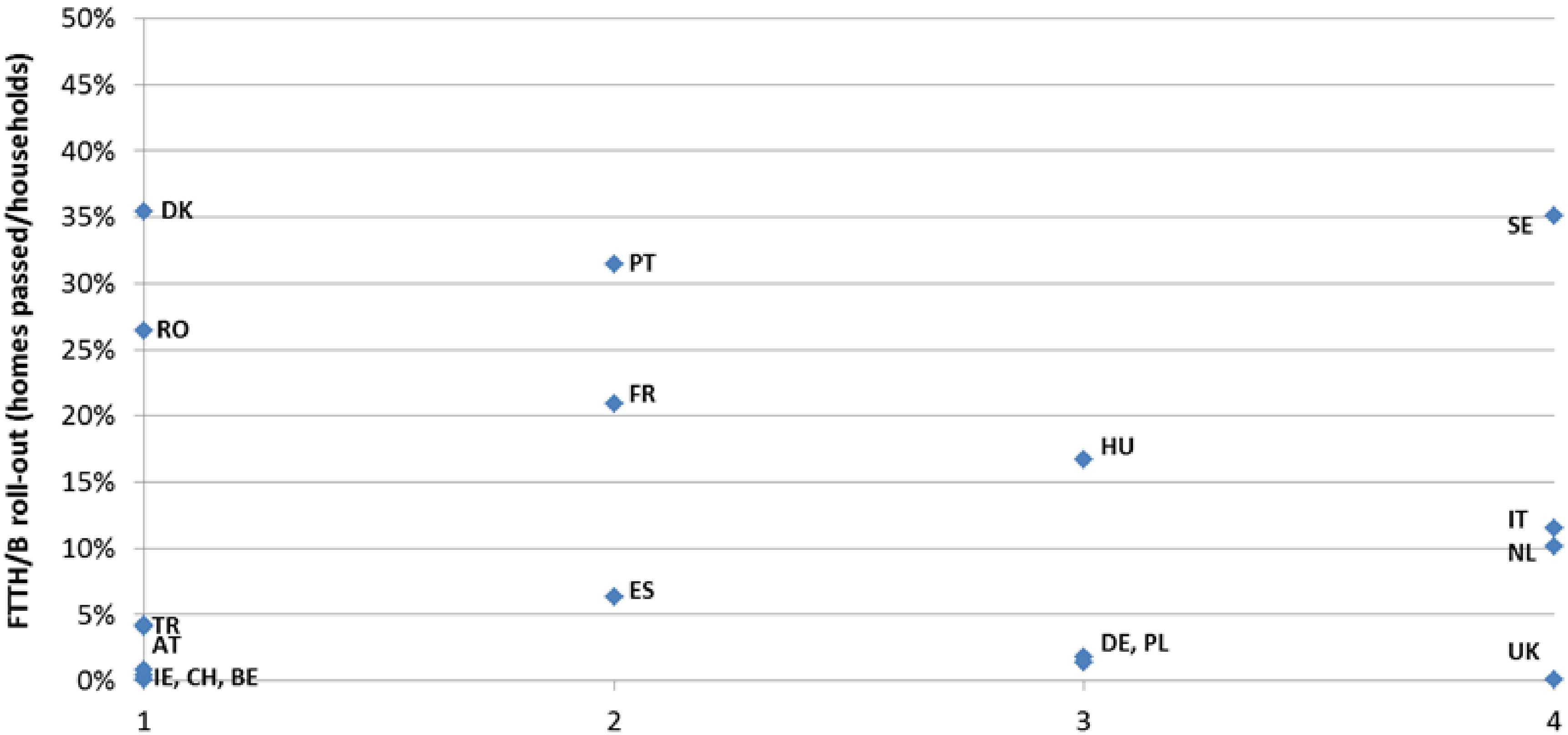
NGA competition is currently basically platform competition

FTTN/VDSL: usually only SMP operator

FTTH/B: ANO and SMP operator, but no direct competition (except partially in FR)

DOCSIS 3.0: no cable overlap

No apparent impact of approach to NGA regulation on FTTH roll-out

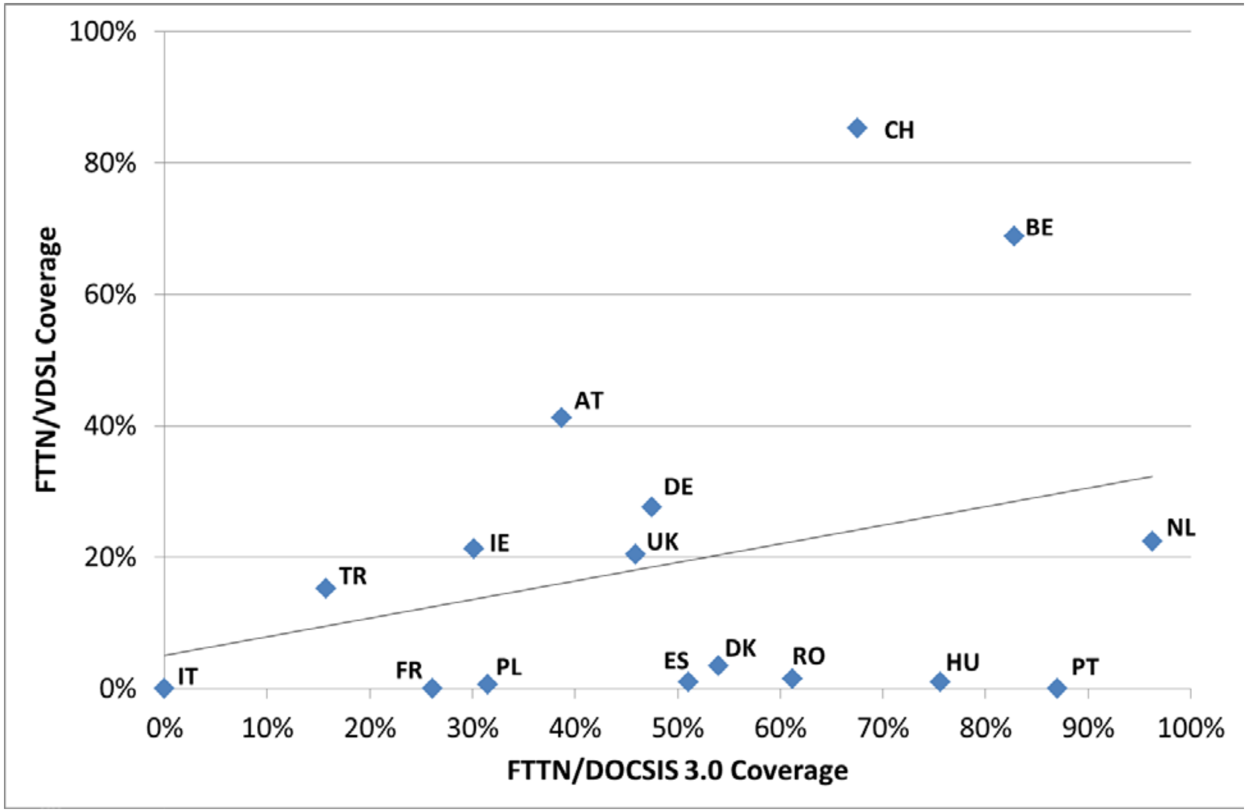


Category 1: Countries with currently no FTTH unbundling
Category 2: Countries with symmetrical fibre terminating access
Category 3: Countries with asymmetric fibre terminating segment access
Category 4: Countries with FTTH unbundling at MPoP (physical or other)

Source: NRAs, FTTH Council/IDATE (2011)

Impact of cable presence and copper loop charges on FTTH and FTTN/VDSL roll-out

- Where there is cable presence, SMP operators tend to roll-out FTTN/VDSL rather than FTTH



Source: Source: NRAs, COCOM (2011), ETNO (2012)

- Current charges for unbundled copper loops tend to provide a negative incentive for FTTH investment of SMP operators (WIK 2011 study)

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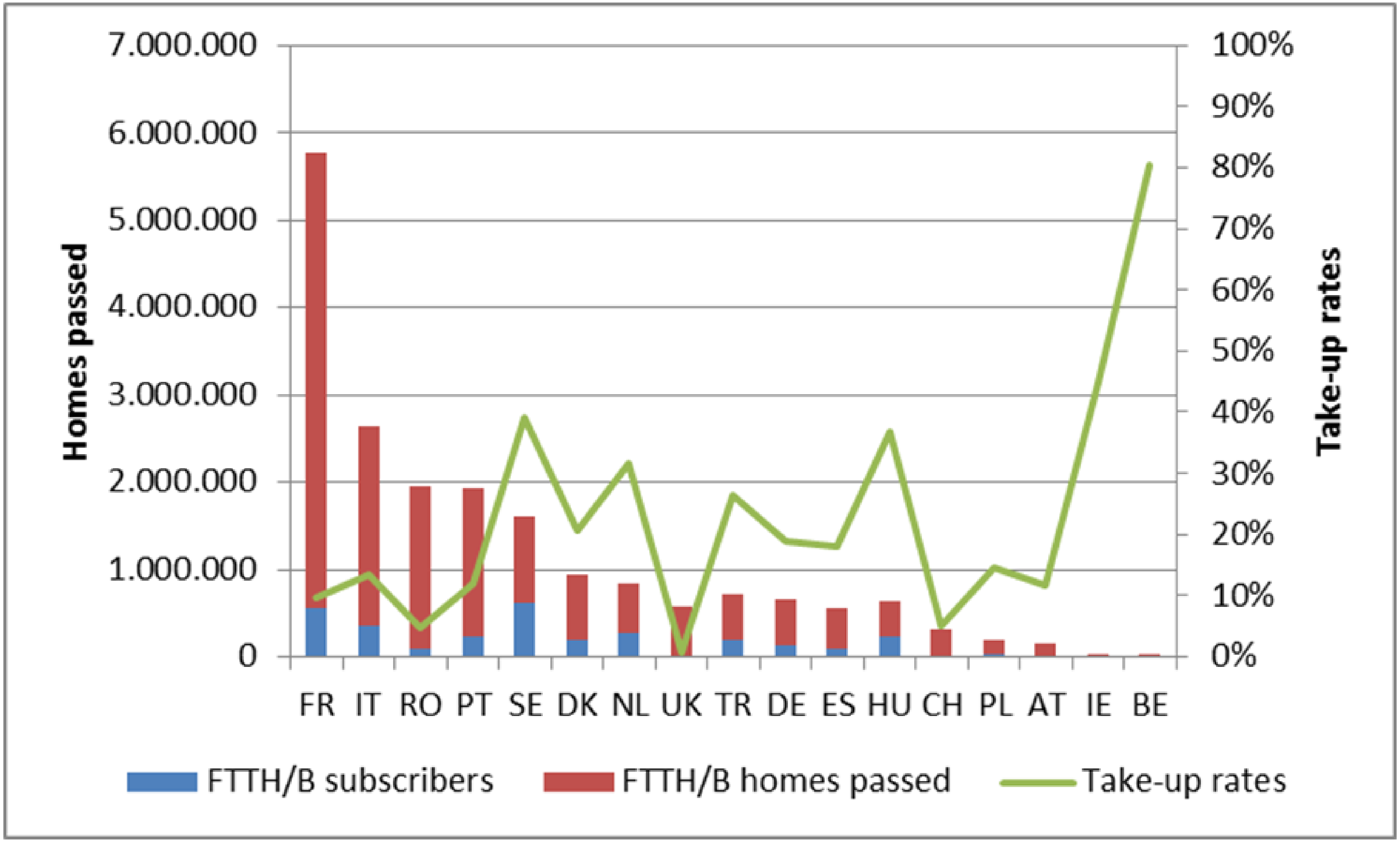
Insufficient take-up a major problem in FTTH and …



Source: WIK based on FTTH Council/IDATE (2011)

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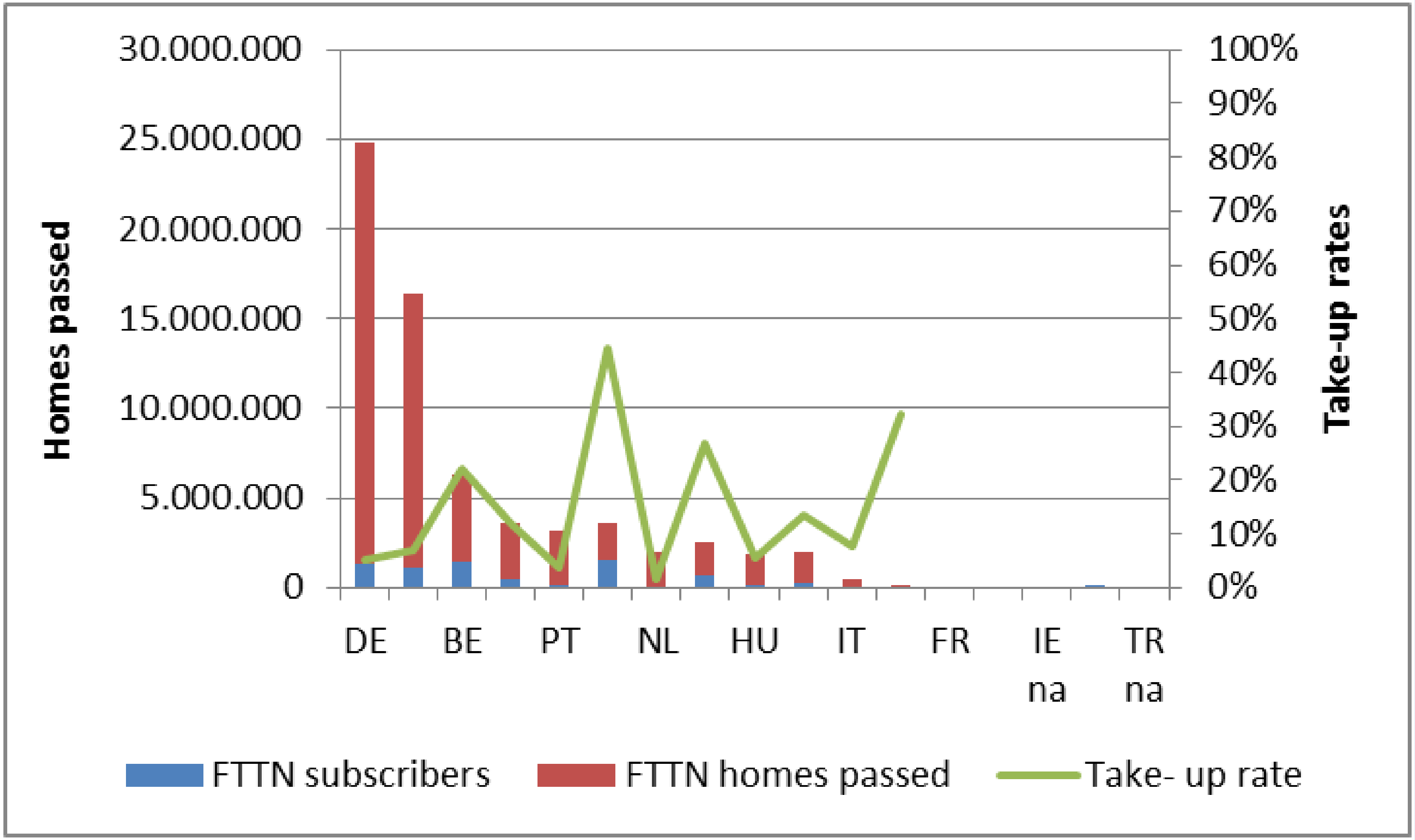
… and FTTN (VDSL and DOCSIS 3.0)



Source: WIK based on FTTH Council/IDATE (2011)

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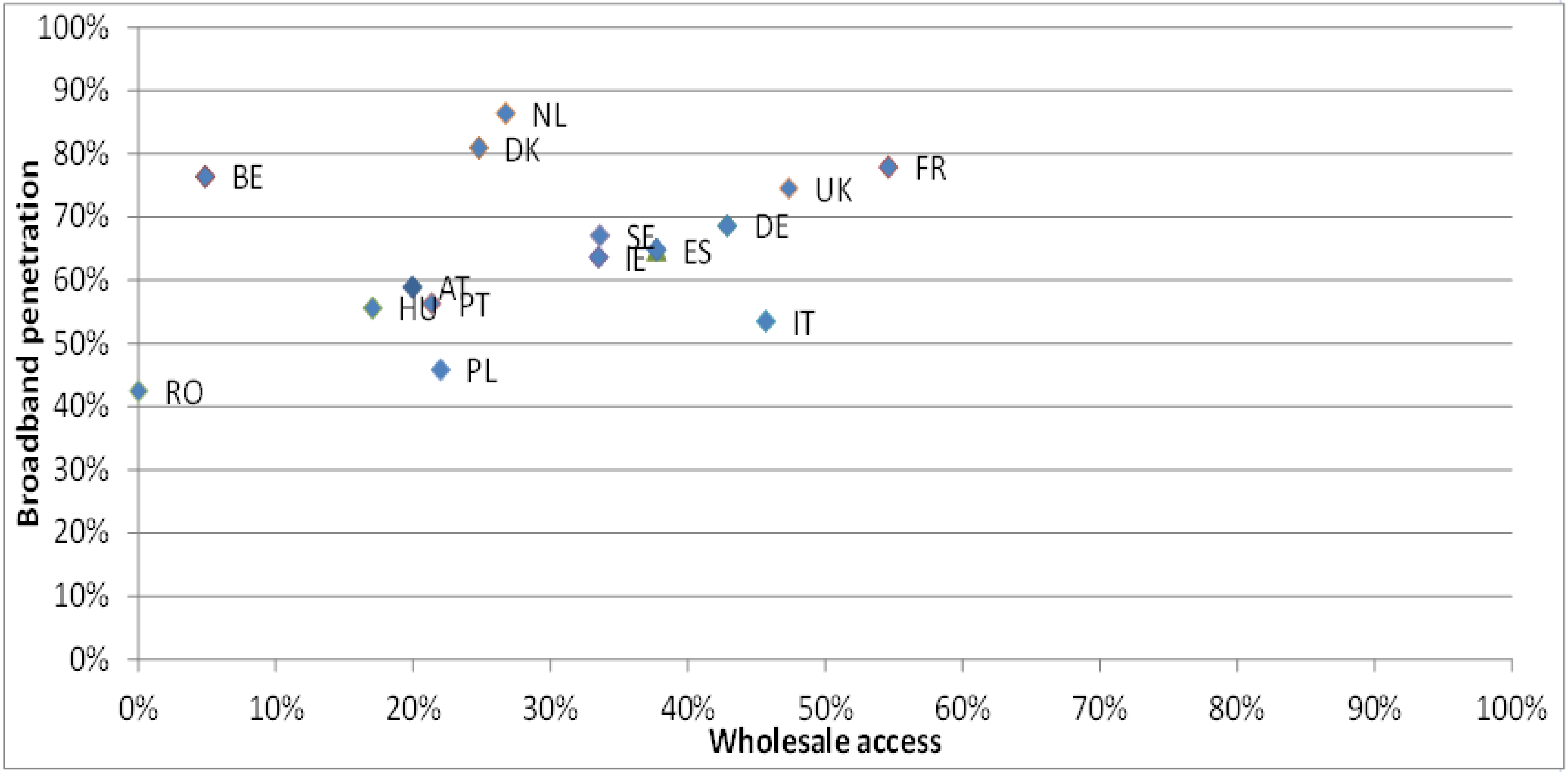
Access-based competition a major factor in promoting take-up of legacy broadband; this is missing in NGA



Source: COCOM (2011)

How could NGA regulation be improved?

Access to FTTH and FTTN networks

- Access remedies in case of FTTH
  - Clear definition of aggregation points for unbundled access
  - In case of FTTH PON networks, end-to-end solution or VULA with price and quality characteristics that make it a viable substitute
  - Wholesale broadband access
- Access remedies in case of FTTN/VDSL
  - In case of FTTN networks, VULA with price and quality characteristics that make it a viable substitute
  - Competitively neutral approach on how to deal with sub-loop unbundling, when VDSL vectoring is deployed

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Transparency, non-discrimination and price control

- Transparency and non-discrimination remedies
  - Reference offers sufficiently in advance of launch of retail products
  - Equivalent procedures and systems with internal/external KPIs
- Price control remedies
  - Cost orientation, except in the limited cases foreseen by the *NGA Recommendation*
  - *Ex ante* margin squeeze tests

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