



Commentary on the EC Draft Recommendation for NGA Non- Discrimination and Costing

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This Telzed paper examines a few aspects of the EC draft Recommendation “*Commission Recommendation of XXX on consistent non-discrimination obligations and costing methodologies to promote competition and enhance the broadband investment environment*” released December 2012

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1 Introduction and background

1.1 Background history of the Recommendation

Next Generation Networks (NGNs) have been the subject of intense regulatory scrutiny for many years as new regulatory thinking has had to develop to match the changing technology and to cope with the new services. Next Generation Access (NGA) networks have particular regulatory and investment issues because it is unlikely that there will be competitive supply of NGA technologies in more than a few areas. Without competitive supply, regulation is usually required. The investment required to build a NGA is large, plus the NGA will typically combine new technology (fibre in the loop) with legacy investments (duct/digging and infrastructure plus copper cables). These create a complex set of economic and competition issues that regulators must address. These include the need to attract investment but also to ensure fair prices and reasonable access is given to bottleneck NGA services so that there can be downstream competition at the higher network and retail service layers of the supply chain.

The large investments needed for NGA fibre create a real risk for the business, if the prices are set wrong and the investment is not recovered. A business failure with this investment has a much more profound impact than other smaller services that also might have prices which do not recover the full costs. Regulation of NGA therefore must be carefully defined.

The NGA regulation issues have been examined over many years and many regulators have had to develop approaches. Inevitably the approaches will have varied slightly by country, and perhaps even within a country (rural versus urban) to meet the needs of emerging NGA technologies. The European Commission has also been looking at the issue and has carried out some investigations. A key input to the draft Recommendation is the Commission Recommendation of September 2010 on regulated access to Next Generation Access Networks (NGA) (2010/572/EU) OJ L 251, 25.9.2010 (the "NGA Recommendation"). A Questionnaire was then issued¹, then in July 2012 a Policy Statement² was issued and in December 2012, the draft Recommendation (the subject of this Telzed paper). The Recommendation was issued with a note that BEREC was asked to review the Recommendation. At the end of January 2012 the EC published a speech³ which included a statement that, after the BEREC review, there would be inputs from member states before the expected final Recommendation is issued in July 2013.

This Recommendation (when finalised) will form a key input to all EU regulation, and will probably be followed or studied in other countries. National regulators must take utmost account of a Recommendation: it will generally have to be followed.

¹ http://ec.europa.eu/information_society/policy/ecommlibrary/public_consult/cost_accounting/index_en.htm
Questionnaire for the public consultation on costing methodologies for key wholesale access prices in electronic communications

² http://europa.eu/rapid/press-release_MEMO-12-554_en.htm?locale=en "Enhancing the broadband investment environment – policy statement by Vice President Kroes"

³ http://europa.eu/rapid/press-release_SPEECH-13-80_en.htm Neelie Kroes speech "Building our Digital Single Market: 10 steps to deliver broadband"

Given that NGAs are already planned and in many places already exist, a clear approach for regulation is vital. “Next” generation is something of a misnomer. More profound than terminology is the fact that NGA regulation is heavily influenced by legacy investment analysis, as this has a major impact on the outcomes, as discussed in the Recommendation and in this paper.

The draft Recommendation sets out the proposed approaches. These give clarifications and provide a useful platform for moving forward.

1.2 The purpose of this commentary and important notes

This Telzed paper provides some comments on the Recommendation. This can assist regulators, telecoms operators and investors develop their own plans for NGA investment and regulation.

It is important to note that this paper is not intended to be a comprehensive/thorough analysis of the Recommendation and it does not attempt to provide a better approach. The interpretations of the Recommendation may not be all correct. However the points may help others to develop a better approach⁴. The comments are, in places, critical but this should not be taken as negative to the draft Recommendation, and some comments are designed to provoke more thoughts or actions in order to ensure the final Recommendation is optimised. The Recommendation has had to tackle a number of complex issues and this is unlikely to be correct first time – even if only because what is *correct*, is something that will never be universally agreed on. For reasons of brevity, the many good aspects of the Recommendation are not dwelt upon.

This paper does not revisit the earlier NGA Recommendation of 2010, the new draft one is related to this. There are some potential areas where the two are possibly not totally aligned, but these are not investigated and if there are any differences of approach then these should be clarified in the final version.

This Telzed paper has been drafted (February 2013) while the BEREC review for the EC ought to be close to completion, but Telzed has had no insight to that work. The author has also not had any benefit from discussions with EC experts behind the Recommendation to explain what was meant within the details of the Recommendation – the comments below are based purely on an interpretation of the text.

The contents of this paper are structured to generally follow the order of the Recommendation and it assumes the reader has some familiarity with the Recommendation. Each section of the Recommendation is given a very short resume of the key points, these are then discussed.

⁴ Telzed can be contacted for assistance with this work

2 Overview of the Recommendation

2.1 General notes

The Recommendation covers a lot of key issues in just 14 pages. One aspect of the comprehensive nature of the Recommendation is the resulting fact that, to fulfil all aspects, it will require lot of work - both for the regulator and the incumbent with SMP in the relevant markets.

The Recommendation can be divided into four main areas:

- Non-discrimination
- Compliance monitoring of non-discrimination
- Costing methods (this could also have been titled pricing methods)
- Where and how to allow non-cost orientation.

2.2 Aim and scope of the Recommendation

The focus is on regulation of NGA to foster competition and investment. This correctly keeps the issue of where the investment comes from, out of the Recommendation. Some past discussions have mixed the “political” issues of the sources of public or private investment with the regulation. The purpose of regulation is surely to regulate what exists or will exist, not with creating the funding. Later in the Recommendation issues are raised that relate to cost analysis and price setting, and this *will* need to consider how investment was funded, to ensure fair price setting no matter the funding source used to build the NGA. Also regulation should encourage investment, so regulation is not totally divorced from funding issues.

The start point is the earlier recommendation on NGA – the 2010 NGA Recommendation. This did not define all of the details of costing or the resulting price setting and how this relates to non-discrimination – so this has left a period of uncertainty while NGAs have been deployed but operators were not sure how these might be opened up and how the wholesale prices would be set.

The scope is centred on infrastructure, unbundled access to fibre and copper, copper sub-loop, virtual (non-physical) network access, and bit stream type services over fibre or copper. Radio access is not in scope. Arguably this requires a specific (but related) analysis, especially given the new LTE (4G) spectrum which can provide broadband competition and so it *could* have been included on the basis of technological neutrality. Spectrum is not discussed further in this paper.

The significant focus on legacy services reflects a real problem with NGA – it is often not the cost of fibre that is the biggest issue (this *can* be defined, given appropriate analysis), but how the costs of legacy investments are included, excluded or sold as separate parallel-service-bearers to the NGA fibre services. Many regulatory arguments have been on the legacy issues, not on fibre – an interesting piece of irony in the NGA debate.

The Recommendation title has specific aims of enhancing the broadband investment environment. This is not discussed in the body of the recommendation. It is reasonable to

suppose that this aim is met if there is clarity on the regulation (investors know what will happen) and if there is a reasonable certainty both for both recovery of the investment and for making a fair return.

2.3 Definitions

The section provides a vital foundation for discussions. Most of these are non-controversial or if there are different possible interpretations, these can now be put aside and the EC definitions considered in all related discussions.

The Equivalence of Inputs and the Equivalence of Outputs (EoI and EoO) are important. Although an output from one operator is an input to another, the Recommendation has very specific definitions. EoI means giving the same service and interfaces to other operators and to the downstream (retail) business. EoO means giving the same type of net effect, but the physical reality may be different and so the downstream internal services and external services may be based on differing processes. Most operators might struggle to completely split the business and give real separation and full EoI. EoI may be too expensive.

Clearly this definition relates to how an operator should treat other operators compared to itself – this non-discrimination requirement is a key theme in the Recommendation and is returned to later.

3 Non-Discrimination

3.1 Delivering the same services

EoI is considered the preferred basis (“best achieved by”) when non-discrimination obligations are to be met. But the cost of this is noted, especially with legacy services but new services should have lower incremental cost to implement EoI.

EoO is a second best option.

EoI is seen as particularly important when price control obligations (cost based prices) are *not* imposed. This is discussed later in the Recommendation.

A principle idea behind the non-discrimination and equivalence is that, if the service to the downstream business and to other operators is the same, then the access-service prices (and quality) are the same and so the access network provider can then set a price. This has a logic as only the access business really knows its own costs and risks and so it can set the price. If it is set too high then it damages its own downstream business as much as other operators and if priced too low then it makes a loss (its own fault). If prices are too low then this would harm other access network builders, but these are often rather few in number – hence the existence of SMP in the first place⁵. A low price benefits the other operators and the downstream business equally. This self-control of equivalence has been well known and discussed for many years. The UK (BT Openreach) approach is based round this thinking, and this was possibly an inspiration for the Recommendation’s thinking.

It is worth noting at this point that the UK approach was a solution for a UK problem and the costs of implementing equivalence (and monitoring it) were/are significant.

The Recommendation opens up the potential for SMP operators to voluntarily offer equivalence. In this case it cannot be considered a disproportionate burden (as the regulator did not impose it). This could be a useful strategic approach for operators, but they would have to be sure that the regulator would still not impose other obligations (perhaps at a later date) and so undermine the inherent pricing freedoms implied by providing the equivalence.

EoI is not seen functional separation (article 12), however the net effect is likely to be similar. This could be a source of dispute – can EoI be imposed or created without actually having functional separation? Functional separation will require the issues discussed in the BEREC report to be considered⁶. There are some benefits for the regulators if EoI is done voluntarily and regulation is not enforced (and disputed). The statement that EoI is easier with new services, implies that the operators might be expected to build in EoI at the outset, but this is not totally clear. Much NGA probably has been built already without EoI inherent in the structure. The

⁵ Since most other operators tend to buy in the wholesale access services from the SMP incumbent and do not build competing access infrastructure, it is likely that if access prices are too low they will give a muted response

⁶ BEREC Guidance on functional separation under Articles 13a and 13b of the revised Access Directive and national experiences February 2011

relative additional costs of providing EoI versus EoO (and how this is recovered) could be areas for dispute.

Although not discussed, strict accounting separation would surely be vital in any equivalence control and monitoring.

3.2 Technical replicability

This is more critical where full EoI is not possible. It must be technically possible for the other operators to replicate the same services as the downstream business. This includes access to information and plans for new services – they should be provided on the same basis.

New retail services should have a technical replicability test done by the SMP operator, before launch (all information must still be supplied to the regulator). Alternatively the regulator may do it – and so the operator must supply information in advance of a new retail offer.

A wholesale service is required to ensure the retail service can be replicated. If replication is not possible then the retail offer should be blocked.

A number of interesting points arise from this:

- The scheme has similarities to retail service approvals seen elsewhere. Pricing is not part of the technical replicability, but clearly there are new demands placed on the retail service businesses (which have not been regulated much in recent years)
- The retail service's details must be supplied in advance
- There is an assumption that the retail service should be blocked if it cannot be replicated. This assumes there is a demand for alternative-supply of the same service and other operators want to replicate it. Arguably blocking is only relevant if there is significant need/desire for alternative supply of the same retail service. Otherwise it might force a wholesale service to be created, possibly at significant cost, where there is no demand.

The technical replicability test will require some effort on behalf of the regulator, but probably less than some other tasks. Effort is required even if the operator does it, as the implication is that the regulator will still need to review the test.

4 Compliance monitoring

4.1 Key performance indicators

The non-discrimination requirements (EoI or EoO) need to be monitored using KPIs. These cover a range of business functions: ordering, service quality etc. The regulator, the SMP operator and access seekers must agree the KPIs. These must be audited by the regulator or independent experts – the costs for this could be borne by any of the service providers (no direction is given for this).

The services for the downstream and the other service providers should be compared.

Although not mentioned, this relates to governance: how are the access and downstream business units managed and overseen. This is an important part of the equivalence and the effective business separation that is required to meet the obligations to give truly non-discriminatory service supply.

The costs for all of the business's equivalence changes and the governance of it, may be significant. But how these costs are recovered and how, or if, they are compared to the benefits are not defined.

4.2 Service level agreement and guarantees

SLAs and guarantees are a contractual requirement for the services to the other service providers. This includes penalties and these should be large enough to discourage non-compliance.

This introduces regulatory-required features into the contract between operators. In effect financial penalties are part of a wholesale reference offer.

These requirements are not as significant as some others in the Recommendation. These changes still require careful definitions in the contractual SLAs to achieve the desired aims. It is unlikely that every country will develop similar SLAs and KPIs without standardised guidance or copying other countries' approaches. Lack of harmonisation in these areas is probably not a major problem.

5 Costing methodology

5.1 The main methodology

Costing of NGA should be based on bottom up LRIC, with some inclusion of common costs (BU LRIC +). This is based on a hypothetical efficient operator capable of delivering the Digital Agenda for Europe (DAE targets).

Much of an NGA will use existing assets, and completely new civil works for the entire network are not required in the BU model⁷. Where new assets are required then these are considered at replacement cost. Where the legacy assets are re-used then these should be considered at current cost, using price indexation for the current cost accounting (CCA) method. This is then “rolled forward” to future years.

The regulator should examine the asset accounts to see if they are suitable. If not, benchmarking of EU practices is required.

Duct (and by implication the digging investment) should be assumed to have at least a 40 year lifetime.

Copper-only based wholesale services should be based on the NGA's costs but adjusted to reflect the lower features of copper compared to fibre. Therefore the NGA is the modern equivalent asset (article 42).

This method has many aspects that are non-controversial. For new fibre, there is no real alternative (for a cost-based price) but to use a model such as BU LRIC or a discount cash flow model to estimate the average costs over time, and then to set a price. Both should deliver similar economic outcomes. The method description lacks detail, but it includes some common costs, which is reasonable and is in line with many past regulatory costing schemes. An alternative approach as used for call termination (pure LRIC, i.e. marginal costing) is surely inappropriate for access services and it is not proposed.

We note only a few countries already have extensive NGA investment in place, and some of these could have enough investment and stable accounts data to allow a top-down cost model to provide a basis for the cost-calculations. This has been done with legacy networks for many years. Top down accounts data is also used in hybrid models. This top-down defined data could provide inputs to the BU model. This seems to be a dis-allowed approach, but if this is the case, then what happens if the BU model and the actual costs in the SMP operator's accounts are very different once NGAs are actually deployed?

The new assets are based on replacement costs. This is normal LRIC modelling practice. Behind this there are a lot of details in BU models and there are some variations in the

⁷ Some BU LRIC models are based on the notion of re-building the entire network, and the replacement costs are annualised to get an effective average cost per year for each service. The required NGA model does *not* have to have all assets annualised as if they were new items, unless they are new assets that did not exist before. A model that is BU and also includes some CCA based legacy costs is less common than some other approaches but it does not create major difficulties (the author has created such models)

different implementations of BU models. However the product-cost outcomes of good BU LRIC models should be similar, even if there are differences within the “Excel spread sheet approach.” There are inevitably some risks with this approach as BU models have a number of ways they can be used to give different results: the outcomes are subject to some opinions and depend critically on key assumptions. This level of detail has not been addressed in the Recommendation – it is probably too detailed for a recommendation but regulators and operators should be aware of the potential for modelling-based variations in the results. These factors include:

- Assumed take up rate and ultimate penetration levels of NGA
- Operational cost levels (notoriously a weak aspect of BU models)
- How can common duct/digging costs be assigned to the NGA fibre when it shares the legacy duct with legacy copper. There are many ways this cost can be assigned to each of copper and fibre. This is an area for possible dispute
- The mark-up costs (common business and other fixed overhead costs)
- Technology choice – that actually used by the SMP operator or a hypothetical operator’s technology
- The network provisioning – how much NGA is deployed before the final full implementation of a connection to a customer.

The last point above is significant as the costing is to be based on the DAE targets where there should be *availability* of 30Mbit/s or 100Mbit/s services. Clearly this probably will not mean connecting every premise to such services but only to allow the service to be provided, if requested. The use of the DAE target is a very profound requirement:

- What if the telco does not plan to build this DAE level of coverage (it might be planning to build much less or just-possibly higher levels)?
- The DAE sets *national targets* (which are essentially political policy aims) and are probably not part of most individual telco’s actual business plans
- What if the actual demand for DAE based services, even if available, is much different to the DAE targets?

This approach opens up a major area for disputes and controversy. As the BU model is hypothetical, it could be far removed from reality, yet the services to be delivered and the volumes to be sold are real. The prices and actual costs therefore might not be closely related.

Using CCA and indexation is not a major issue – most access network assets can be re-valued this way and the use of CCA is well established. Proper CCA using this index method should not cause any over-recover or under-recovery of investment costs. The main CCA alternative (absolute valuation) could create more errors and this re-valuation is more like a bottom up model (asset value = number of items times current price). Indexation uses what is already in the asset register and should not cause any major risks. It is worth noting here that indexing thousands of individual assets to today’s value is not usually a major problem – an indexation based asset register can be created relatively easily. The calculations should not need manual intervention on each asset.

A common problem (recognised in the Recommendation) is the fact than many telco’s accounts and historic asset registers may be poorly structured or information is not recorded

or was wrongly recorded. This can make any CCA implementation a problem. The alternative of benchmarking opens up a number of other dangers (but the benchmarking method is not defined).

Changing asset lives is also possible in a new CCA asset register. Some clarification is required on the net effect of this as this can cause over-recovery of costs, depending on how the calculations are carried out. The exclusion of fully depreciated assets seems reasonable and it may be assumed that this remains a requirement, even if the lifetime is increased⁸.

It should be noted that new assets, once bought, will form new inputs to the asset register and, if also part of the future CCA cost base. They should not cause any over-recovery of costs so long as the asset is not both in the CCA asset register and in the BU LRIC model when the BU model and CCA legacy costs are re-used in the future, after the new assets are bought. An anomalous outcome could happen if a telco currently has most of its existing assets fully depreciated. As new NGA assets and replacement civil works are required, then the cost-base could rise in the near future. The problem is not from having the higher costs in the future, as this can be equally seen as unusually low costs in the recent past.

The costing of legacy copper based on fibre technology, is certainly a controversial approach. This has some logic, but opens up a huge area for disagreement. A simple example might be the relative effective cost-performance impairment of a 5Mbit/s copper service compared to a fibre based 100Mbit/s service. It is not 20, but a value has to be defined, and agreed upon.

Another complexity of this is the mixing of copper legacy with fibre in FTTC solutions. The new fibre elements can be costed, but article 42 also implies the sub-loop copper is also based on fibre costs, with technical-cost impairments. The result is linked to article 44 (discussed below).

There are many details of the costing method that need to be developed and the potential for diverse outcomes is clear. Wherever there are alternative methods to deal with a calculation, then disputes are likely. This also creates uncertainty and wherever this exists, it is a barrier to investment.

Further clarification on the details of the methodology are vital – this might not be relevant to a high level recommendation but the details of the practical implementation must be made available and these need to be fully thought through. Areas like indexation are clear enough but the calculation of copper based on fibre, is not.

The methodology does not explain issues such as:

- Alternative costs of capital for NGA⁹. This was mentioned in the NGA Recommendation of 2010

⁸ If lifetimes are increased then a fully depreciated asset (or one at near to end-of-life) could be re-calculated to have a net value (or increased value), but this could cause over-recovery as a fully depreciated asset should have been paid for by now

⁹ As not mentioned, this suggests that alternative WACCs for NGA are not required, but this is only speculation. In any case, high risks and uncertainty in NGA deployment can be analysed in various ways in a cost model. For example the author of this paper has proposed a method that considers variances in the possible costs, and so regulators could price based on a confidence level: there is then a low percentage chance of pricing below cost. This is possibly better than simply pricing based on a single predicted/average outcome

- Modelling the uncertain (risk) factors of NGA
- Calibrating a model to recent/existing NGA costs. Most SMP operators will have some NGA costs already incurred, so how or should these be used¹⁰?
- Translating the hypothetical costs to real business prices (and the attendant risks in this process)
- Regional costing/pricing (rural and urban NGA costs are very different)
- Dealing with the funding of NGA.

The last point is highly relevant as there will be areas where there can be public-private finding, local or national government funding, or community-based funds to help with NGA investment. These can include subsidies, grants and low interest loans. How should funding be included in the analysis? A wide range of possible funding methods exist – these can be used to bridge the “digital divide” and help fund NGA to communities that otherwise would be neglected. This is another area that still needs to be addressed – possibly in additional “practical guides” that may be needed in order to supplement the main Recommendation, to avoid the Recommendation becoming a detailed guide to cost and price modelling techniques.

The key question is: how should the different funding sources and funding method be included in the costing/pricing model?

5.2 The timetable to implement the methodology

The above methodology should be implemented by December 2016.

The outcome of this method should be a monthly rental for unbundled copper between €8 and €10 per month (article 44). If a pre-existing method gives this result then the above method used for copper costing is not required. From this, sub-loop copper costs could be derived and used in the FTTC analysis.

If the new method is used then this should be adjusted to give the same (€8-10) outcome for copper by the end of 2016.

Benchmarks can be used to set the costs, using countries that have used the methodology¹¹. BEREC can assist where the regulator does not have enough resources.

The methodology should be continued for at least six years.

A number of major issues are raised in this section:

- The copper costing must come out with a pre-defined result. This is a strange requirement. Copper lengths vary by ~2:1 across Europe and operational costs vary significantly. Network designs vary: some have significant overhead line

¹⁰ This ought to provide a good foundation for costing as the data is recent and a telco *ought* to have kept good financial records of any new fibre investment for its own evaluations. There will inevitably be claim and counter claim over whether the SMP was efficient in its initial fibre deployment and how the costs should vary over times

¹¹ And as defined in the Recommendation, these ought to give the same €8-10 price per month

deployments, some have almost none. These all have major influences on the real cost

- Whatever method is used (new method, benchmarks or old costing method), then the same outcome is required.

It is understood that a remedy cannot be arbitrary and a price-control remedy is commonly based on cost-oriented prices. This approach stretches the definition of cost-based calculations quite a lot. Making a calculation when the answer is pre-defined creates clear concerns.

The approach acknowledges the major workload brought in by the Recommendation. Benchmarks can reduce the work. There may be a major demand for BEREC assistance, which is offered.

Some dangers are inherent:

- Over-loaded regulatory resources increase the risk of adverse (wrong) outcomes
- Benchmarks can tend to start to be circularity as benchmarks can be on prices that are also set by benchmarks. It is worth noting that even cost-based calculations (or prices claimed to be cost-based) are possibly also *influenced* by benchmarks.

It is worth noting (again) how the NGA discussions are centred on legacy pricing/costing not new fibre prices. It is also important to note that the Recommendation is clear on the point that copper legacy costs should be “full costs” and not some much-lower cost-base such as short run marginal cost. This statement assumes that €8-10 is a full cost – something that some operators will dispute. These alternatives for pricing copper have been debated over several years and the outcome follows the policy statement of July 2012, which rejected the low copper prices (see footnote 2 above). This has a logic, as very low copper wholesale prices lead to very low copper based broadband prices that could undermine the value perceived by consumers from higher-speed fibre broadband. Customers will pay more for higher speed, but if the price difference of 5Mbit/s copper and 100Mbits/s fibre is huge, then migration to fibre would be held back.

6 Non-imposition of cost orientation on NGA

This section (article 49 on and Annex II) relates back to the initial section that required equivalent, non-discriminatory services, ideally based on EoI. If this is done then it is possible that the cost-analysis for price control, as described above, can be avoided.

In addition to the EoI, there should be technical replicability (discussed earlier) and also an economic replicability test. There are slight differences between the obligations of articles 49 and 50¹² and also there are some additional requirements of article 50 which includes: legacy services (at cost-oriented prices) which should give a competitive constraint or there are competitive suppliers using alternative infrastructure not controlled by the SMP operator. This may be taken to mean cable TV operators for example. If these additional requirements are met then price control obligations may be lifted

The Recommendation recognises that equivalence and the replicability demands, might be met only in some geographic areas. This means the regulator should have price controls remedies in the areas where the requirements are not met, but the outcome must not be affected by the differentiated remedies in the particular market (article 51).

The equivalence approach and non-imposition of price controls must be consulted on, there must be a roadmap and a number of controls such as the service level guarantees and KPIs mentioned earlier. This seems to relate to governance of the non-discrimination with a threat that, if not met, then price control obligations may be imposed.

The economic replicability test to be carried out by the regulator is an *ex-ante* margin test that considers downstream costs, and the wholesale input *prices* (we note here that these are not necessarily at a calculated/regulated cost since they are set by the operator, if all the requirements are met). This test is to be done within 3 months of the launch of the retail product. This is stated not to prejudice the potential for *ex-post* competition law investigations.

The downstream (retail costs) should be based on the SMP operator's own costs – so this implies a top down cost model of the retail business. This is specified to use LRIC, and to use the directly avoidable cost. The method has to consider relevant retail products and may need to consider different relevant wholesale products (passive or active services). The retail products are suggested to focus on flagship products that are based on NGA wholesale services. The recommendation acknowledges that these may be part of price bundles (broadband plus phone line or TV services).

The economic test must consider costs and prices over time and the net present value – a typical discount cash flow analysis.

This test opens up a number of new regulatory and costing analysis issues. Retail cost analysis and retail price controls have been limited in most of Europe. A retail cost analysis is now required. Although the Recommendation is not directed at retail price controls, the

¹² It seems that article 49 relates to the supply of the preferred EoI and the additional demands are added to article 50 if only EoO is achieved. This is not totally clear however

wholesale price and retail prices are related by the margin defined in the economic replicability test. The analysis is similar to analysis that is used in some countries that do use retail price controls. It also raises some cost analysis problems: retail costs are often not directly driven by any one product – they are common to several. This can make the incremental retail cost relatively low, as the truly-variable cost caused by the single product in question is low. There may certainly be reasonable proxy cost-drivers for some such retail costs, but it is conceivable that retail LRIC costs could be low. Furthermore the Recommendation states it should be the avoidable cost, so this certainly implies marginal retail costs (the directly avoidable incremental cost is similar to the pure LRIC approach used for call termination – it is the cost avoided if the product is removed).

In any event, LRIC analysis of the retail business is required. This has to be done by the operator (as it should be based on the audited downstream retail costs) or else the operator must provide the data to enable LRIC to be one part of the regulator's economic replicability test. This assumes that the costs are adequately disaggregated. No alternative is given if this is not the case.

There is a chicken and egg issue. Are retail prices to be tested and approved based on the wholesale prices or: are the wholesale prices to be allowed to be set by the operator if they pass the economic replicability test, *after* the retail prices are launched. Wholesale-plus for retail pricing or retail-minus for wholesale pricing? There is likely to be some debate over whether this is really going to control retail prices or help set wholesale prices (or a combination of both).

The possibility of different remedies within one market, perhaps caused by geographic variations raises a number of problems as a wholesale outcome in one area will impact another, as there will inevitably be impacts on the final retail prices.

7 Conclusions

The draft Recommendation provides a long awaited clarification of the approach to be used for NGA regulation. It will provide a key direction for the future regulation of the industry. The time taken to develop it, the BEREC review and the planned for member-states' review all illustrate both the importance and the difficulties faced to get this Recommendation correct.

Much of the Recommendation provides clear and sensible ways forward, but there could be conflicts with the approaches that have already been implemented in many countries. NGAs are not new and so national regulators already have had to implement solutions. Potentially some regulators may remain with those approaches and could try to avoid following some or all of the Recommendation.

The Recommendation creates a large number of tasks that will be a burden on some operators and on the regulators. Even the approach of allowing equivalence and non-discrimination does not eliminate the need for many tasks. Although a cost model of NGA could be avoided¹³, technical and economic equivalence tests must be carried out, there are major governance and controls needed on the SMP operator, and a new retail LRIC model is needed.

All of the steps in the processes defined in the Recommendation need to be mapped out. It is instructive to consider drawing up all the steps in a "decision tree" to see the tasks required and how all of the criteria need to be met. This also shows how some of the work is similar to retail price control processes (used in some non EU countries).

The costing methods are not defined in full detail and there are a number of aspects of the Recommendation that need to be clarified. These may be included in the next version, following the BEREC and member states' review.

The cost analysis of NGA (BU LRIC+) still needs more details on how it is to be carried out. Also, clarification is needed on how legacy costs are to be used in the analysis – e.g. sharing of duct costs between fibre and copper.

The cost orientation of legacy copper prices, so long as the answer meets a pre-defined price, is a debateable requirement, however the net outcome of "a reasonable copper legacy price that does not mess up NGA retail pricing and NGA investment¹⁴" is probably not a bad outcome, even if it is not really a cost-based price. Given the past precedence of a loose interpretation of "cost-orientation," it can be used to cover a very wide price range and so the method could be justified.

The *ex-ante* use of margin analysis (which is normally part of *ex-post* investigations) could create a wide-ranging debate as the details of the analysis can be disputed. The retail costs are based on the SMP operator's own costs (which have economies of scope and scale) and

¹³ The regulator does not have to make a BU cost model, of course the operator will need to develop its own internal costing systems and pricing methods to help it make a price decision. The pricing could be market (value) based. These methods need not be released if there is full equivalence and cost orientation obligations can be lifted

¹⁴ Telzed description, not used in the Recommendation

the avoidable costs are considered. So, this could result in a low margin – and so the economic test might be relatively easy for a SMP operator to pass.

Much of the Recommendation is good and clear. There are inevitably areas that need to be developed further. Regulators and operators must prepare for a lot of work, and probably for a lot of argument over the detailed implementations of the main requirements.

There are a number of issues and uncertainties outstanding. These may be enough to hold back SMP operators own funding of NGA, at least in the more marginal areas. Once the Recommendation is final and the practical details are defined, then investment decisions can be made on a more solid basis. Whether this basis encourages investment and what types of competition are encouraged (at the infrastructure level or only at the higher service levels) remains to be seen. Regulatory clarity is good but in itself, but it does not *ensure* investment.