

Response to Consultation RSPG15-619

Comments on Draft RSPG Report on Efficient Awards
and Efficient Use of Spectrum - RSPG15-619

prepared for RSPG

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Content

1.	About Coleago Consulting Ltd	1
2.	General comment.....	1
3.	The meaning of efficiency	1
4.	Digital Agenda and the Europe 2020 strategy.....	2
5.	Reserve prices	2
6.	Using benchmarking to set reserve prices	2
7.	Section 5.5 Assessment of formats, CCA	4
8.	Spectrum sharing / pooling	5

Exhibits

Exhibit 1:	800MHz spectrum auction prices paid in 17 European countries...	3
Exhibit 2:	Sources of value 800MHz and 700MHz spectrum auction Germany.....	4

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1. About Coleago Consulting Ltd

Coleago Consulting Ltd is an independent telecoms management consulting firm. Coleago has prepared this response independently, i.e. this response is not sponsored by any mobile operator or other interested party.

Coleago Consulting and its Directors have worked on over 70 spectrum award processes world-wide. The spectrum award work included beauty contest awards, first price sealed bid auctions, second price sealed bid auctions, SMRA auctions, and CCAs. In scope of work encompassed spectrum strategy, spectrum consultation, spectrum valuation, auction bid strategy, and life spectrum auction support.

Coleago has delivered “Best Practice in Spectrum Awards” courses and workshops for the European Commission as well as for the GSMA, operators and telecoms regulators in Indonesia, India, South Africa, Tanzania, Gabon, Brazil, Belgium, the USA, and China.

In 2013, Coleago provided the model for the GSMA to estimate future spectrum demand for mobile broadband as an input to the WRC-15, taking account of site-build constraints.

For further information please visit <http://www.coleago.com/spectrum-valuations-auctions-licence-applications/>.

2. General comment

The RSPG Draft Report on Efficient Awards and Efficient Use of Spectrum covers all aspects very well. It is an excellent document to inform policy makers and regulatory authorities. Coleago broadly supports the findings and conclusions. However, below we present some observations on the report and suggestions.

3. The meaning of efficiency

The title of the report RSPG Report on *Efficient Awards* and *Efficient Use* of Spectrum refers to two different types of efficiency. It may be helpful to the reader to define what “efficiency” means in each case.

Efficient use of spectrum is addressed very well under heading 6. Promoting efficient use of spectrum. It should also be made clear that the meaning of “efficiency” relating to spectrum use is not the same as “efficiency” relating to a spectrum auction.

As regards the meaning of “efficiency” in the context of a spectrum auction, the report does not provide a definition of what efficiency means in an auction context.

- In pure auction theoretical terms, an auction is said to be efficient if the lots on offer are sold to the bidder who value the lots the most. This presupposes that bidders are free to express their valuations. However, in most spectrum auctions this is not the case because there are limitation to bidding such as spectrum caps. Because there are very few unrestricted auctions, there are very few auctions that could be deemed to be efficient in the auction theoretical sense.
- A second meaning of an efficient award or auction is that the award is efficient in delivering policy objectives. This is a very different meaning, not least because it is policy objectives, for example with regards to competition, which render an auction inefficient in the auction theoretical sense.

The second meaning of efficient is perhaps the more important one when analysing whether an award process is efficient or not. Therefore a discussion on the link between spectrum awards and delivering policy objectives from the European Union perspective in the context of the *Digital Agenda* and the *Europe 2020 strategy* may be appropriate.

4. Digital Agenda and the Europe 2020 strategy

The report does not mention the *Digital Agenda* and the *Europe 2020 strategy*.

In the Executive summary, the report states: *“The RSPG thinks that consistency in terms of approach across Member States, without being overly prescriptive and coupled with national prerogative to determine methodology given policy objectives and priorities at Member State level, is the optimum way forward.”*

Coleago recognises that the RSPG wishes to tread lightly, but nevertheless it would be useful to contextualise the messages in the report in the light of these EU policies. After all, policy objectives drive spectrum award procedures including aspects such as reserve prices. Therefore some consideration might have been given to what constitutes best practice in the context of achieving the objectives of the Europe 2020 strategy. After all, the member states support the objectives of the Europe 2020 strategy, so in theory *“policy objectives and priorities at Member state level”* should not be entirely misaligned with the objectives of the Europe 2020 strategy.

5. Reserve prices

The report addresses the issue of reserve prices in various sections. In Coleago’s view the report does not sufficiently highlight the negative aspects of setting high reserve prices.

The report makes some arguments in favour of higher reserve prices. In section 5.6 Other considerations for Member States when designing auctions, subheading Reserve Prices, the report states: *“Optimising reserve prices also plays an important role in the auction. Where they are set too low they may invite frivolous bidding which may cause an inefficient outcome, the participation of speculative bidders and undermine the overall policy objectives of the award.”*

It is not clear what is meant by a *“frivolous bidder”*. The first objective in any auction is to encourage participation. High reserve prices may discourage innovative companies with a different approach compared to established MNOs.

An auction outcome is not driven by low reserve prices. If one accepts that the rationale for an auction is to direct scarce resources to those who value them the most, then bidders who cannot create value will not acquire any spectrum.

However there may be an issue with speculative bidding which would result in spectrum being unused for some time and increasing the cost to bidders who would put the spectrum to good use. The measures to put in place to discourage speculative bidding are “use it or lose it” rules or possibly some light prequalification process. Setting high reserve prices is an inappropriate measure to discourage speculative bidders.

6. Using benchmarking to set reserve prices

Benchmarking is mentioned in the context of reserve prices. In ANNEX 1 - Spectrum Awards – Analytical Framework, point 4 in the table, the report rightly flags up potential issues with benchmarking *“For instance the amount paid in one country reflects the value of the spectrum under a particular set of circumstances”* but concludes *“Consider combining benchmarking with other methods”*.

Benchmarking reserve prices on past auction outcomes is never appropriate because prices paid in one auction reflect the particular circumstances of a country:

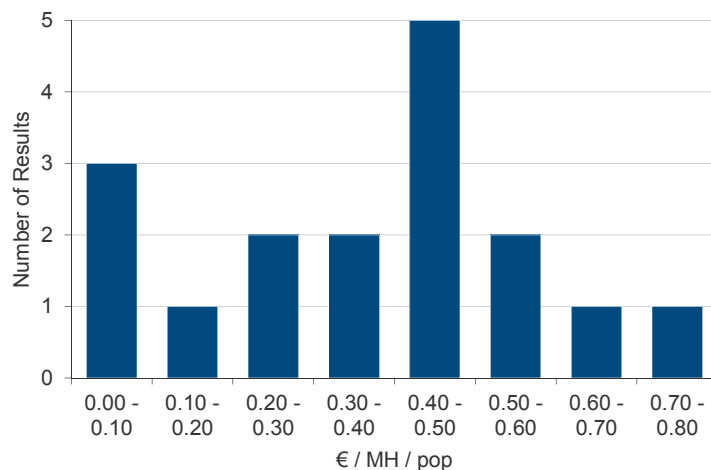
- the auction format and rules, including the reserve prices themselves,
- the supply of spectrum in that auction and the demand,

- the licence terms,
- timing of the auction and availability of technology,
- and the net present value of spectrum to bidders driven by revenue, opex and capex differential that may result for the acquisition of a particular spectrum asset.

These aspects vary hugely from country to country and year to year. It might just about be plausible to conclude that benchmarking is an appropriate measure if prices paid for the same spectrum are clustered around the mean in form of a normal distribution. However, clearly this is not the case as can be seen from the result from 17 European countries for prices paid for 800MHz, see Exhibit 1 below.

Taking the prices paid in 17 countries in Europe for 800MHz spectrum, the lowest price paid was €0.01 / MHz / pop and the highest €0.73 / MHz / pop. There is a very wide range, i.e. a factor difference of 73 between the lowest and the highest price paid. Hence calculating an average (arithmetic mean) is not at all representative of the data set. In fact calculating an average is highly misleading because it suggests some meaningful central value.

Exhibit 1: 800MHz spectrum auction prices paid in 17 European countries



Source: Coleago Consulting

Implicit in the using benchmarking is the notion that spectrum has some intrinsic value. The report would do well by stating that spectrum has no intrinsic value and emphasising that value is created from investments being made in spectrum which then allows for telecommunications traffic to pass through the spectrum. It is the benefit of the communication that consumers and businesses are prepared to pay for. The value that can be extracted from the use of spectrum is shared between investors and users.

In an auction, the price paid is driven by the value to mobile operators, i.e. the investors. As mentioned above, this value depends on the circumstances of each auction. A comparison of the 800MHz (2010) and 700MHz (2015) spectrum auctions in Germany provides a good example. 800 and 700MHz spectrum have similar propagation characteristics, so from a technical perspective there is little difference between the two bands.

For spectrum to be valuable to a mobile network operator, there must be a source value. Spectrum valuation involves identifying and quantifying marketing and technical sources of value. As shown in Exhibit 2 below, some sources of value which were

present in the 800MHz auction were not present in the 700MHz auction and there were some other situational differences. Consequently the price paid for 800MHz spectrum in 2010 was €0.73/MHz/pop whereas the price paid for 700MHz in 2015 was only €0.21/MHz/pop.

This example illustrates that it would be wrong to use the 800MHz prices paid to set the reserve price for 700MHz spectrum even in the same country, let alone another country. The same holds true in general: Prices paid in the past are no indication of the value of spectrum to operators in future auctions. Therefore benchmarking is not a suitable methodology to establish reserve prices.

Exhibit 2: Sources of value 800MHz and 700MHz spectrum auction Germany

Source of spectrum value	Present in 800MHz Auction in 2010?	Present in 700MHz Auction in 2015?
Blocking value	Yes (Prevented ePlus from obtaining any 800MHz spectrum)	No (No realistic prospect of preventing competitor from obtaining 700MHz spectrum)
LTE coverage value	Yes (ability to achieve wide geographic and in-building LTE coverage economically)	No (LTE coverage already provided with 800MHz)
Contiguous LTE footprint	Yes (at the time 700MHz LTE was only way to deliver this)	No (contiguous footprint already delivered with 800MHz)
Significant LTE capacity addition	Yes (the only other LTE suitable spectrum at the time was 2.6GHz, so 2x10MHz of 800MHz accounts for significant proportion of LTE capacity)	No (capacity is provided by 800, 1800, 2600MHz; the incremental 2x10MHz of 700MHz spectrum has a low capacity value)

Source: Coleago Consulting

Interestingly, in the 17 nation data set, the highest price paid of €0.73 / MHz / pop was in Germany, which also had the lowest (less than 1 € cent / MHz / pop) reserve price in the data set.

There is a further reason why benchmarking to set reserve prices is inappropriate. In the light of future spectrum requirements current spectrum price levels are not sustainable.

The amount of spectrum employed per mobile user is increasing but mobile operator revenue or ARPU is flat. Hence the cost of spectrum – capex and opex – as a proportion of revenues increases. With the 100's of additional MHz required for LTE and 5G, current prices for spectrum are not sustainable. In future, the cost of spectrum in terms of €/MHz/pop must decline. With the cost of spectrum becoming an ever larger cost component, high spectrum will simply translate into a tax on mobile broadband i.e. a tax on the digital economy which is inconsistent with the objectives of Europe 2020 strategy.

7. Section 5.5 Assessment of formats, CCA

The report states: *“The CCA provides incentives for truthful bidding, but it also requires bidders to work out their value for the spectrum in advance of the auction which may be problematic to some bidders.”*

In fact for any type of auction, bidders will go through a valuation process to value the asset they propose to acquire. No rational operator would ever commit to substantial capital expenditure without having established the business case for it, i.e. having valued the asset in terms of the NPV of incremental cash flows that arise as a consequence of acquiring the spectrum compared to not acquiring the spectrum.

Furthermore, the notion that operators value spectrum prior to bidding is an essential element in the case for using auctions as a spectrum award mechanism. Throughout the report reference is made to an efficient auction outcome. An efficient auction outcome means that the lots are acquired by those who value them the most. Hence valuation is inextricably linked with the notion of an efficient auction.

Therefore we recommend taking out the phrase *“but it also requires bidders to work out their value for the spectrum in advance of the auction which may be problematic to some bidders”*, a) because this is nothing that relates specifically to a CCA and b) spectrum valuation is problematic for all bidders because of the high levels of uncertainty.

8. Spectrum sharing / pooling

In 7.5. Final remarks on sharing, the report states *“RSPG believes that mobile network sharing could be considered as an integral part of the award process, depending on the specific policy objectives of the award.”*

Coleago believes that spectrum sharing should always be considered, i.e. the word “could” ought to be changed to “should” or similar language which emphasises given the potential benefits of spectrum sharing (which are clearly stated in the report), not considering spectrum sharing explicitly in a public consultation for a spectrum award process would be an omission. In a particular member state, there may well be specific reasons why sharing would not be allowed, but at the very least the reasons for not allowing spectrum sharing should be stated and be open to challenge in the consultation process.