



Communications for all in East Africa

HARMONIZED SPECTRUM PRICING FRAMEWORK IN THE EAST AFRICAN REGION

CONCEPT PAPER FOR THE EAC

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1 INTRODUCTION

This paper presents the concept of developing Harmonized Spectrum pricing framework for East Africa Region. Development of Harmonized Spectrum pricing Framework is one of studies which have been earmarked to be carried by EACO working group 8 which deals with studies regarding Communications services pricing and industry analysis.

Spectrum pricing concept, spectrum pricing objectives, methods for valuing spectrum and methodology for the task of carrying the study have been explored to give an overview on the development of Harmonized spectrum pricing framework in the Region. Spectrum pricing concept, objectives and methods for valuation is explaining the importance of spectrum pricing with a view of global practice touching on the common pricing methods used.

This paper is further explaining the importance of Spectrum pricing harmonization in the East Africa region and the milestones of the pricing studies to be carried, inputs or indicators which will be collected/used from each country to prepare East Africa Region Spectrum Harmonization framework by looking at the available Spectrum policy, Regulation, Guidelines and any studies which were carried.

2 SPECTRUM PRICING CONCEPT

2.1 Spectrum pricing/valuation

Radio spectrum is a scarce resource which makes a major contribution to the economic and social development. Maximizing and ensuring an efficient distribution of the net benefits generated by spectrum are important goals promoted by spectrum values and spectrum price mechanisms, which help to ensure that spectrum is used efficiently by users.

Spectrum values reflected in spectrum prices help to promote both economic and technical efficiency in the use of radio resources. Spectrum values can also be

significant and help raise significant revenues for the government and recover the costs of managing spectrum.

2.2 Spectrum Pricing Objectives

Policies are needed to govern spectrum revenues and spectrum prices which serve to ensure the efficient use of spectrum and to enable financial sustainability of the spectrum regulator. Revenue objectives and strategies relate directly back to the primary objectives; spectrum users pay for spectrum use, covering management costs, spectrum efficiency, and achieving economic and social development goals.

The total amount of revenue to be raised from some or all spectrum uses falls into three categories:

- Partial cost recovery – not all of the costs of regulation are obtained;
- Full cost recovery – all costs are covered;
- Greater than full cost recovery – a surplus is generated which may be related to several other objectives.

Given that the amount of revenue generated is determined and from whom, the next question to be resolved is – how should the revenue be applied:

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- Cost recovery – if the amount of revenue obtained is less than or equal to the cost of spectrum management, the decision on application has already been determined. Where surplus revenues exist and are approaching revenue maximization they may be related to spectrum usage or to other benefits.
- Spectrum Usage – revenues associated with mechanisms to promote efficient
- Economic benefits for the public – revenues associated with other regulatory or government objectives: employment, technology innovation and diffusion.

Spectrum pricing refers to a range of spectrum management activities and mechanisms including administrative fees, spectrum usage, and spectrum prices determined by way of market mechanisms. Developing spectrum-pricing strategies invariably involves alignment with the government's and regulator's revenue goals and objectives, setting targets, and discussion with key stakeholders, such as the Ministry of Finance and key sector groups – i.e. telecommunications service providers.

In general, for any resource, including radio spectrum, the primary economic objective is to maximize the net benefits generated from the resource initiating efficient distribution that will maximize benefits to society. Spectrum prices are used as an important mechanism to ensure that spectrum resources are used efficiently by users.

- The pre-eminent policy objective for spectrum pricing is that it should be done to promote spectrum efficiency. Spectrum is a vital natural resource and the price of spectrum is sufficient enough to ensure it is valued and used wisely.
- Use of the spectrum provides considerable benefit to the economy and the benefit derived from spectrum should be maximized.
- Managing radio frequency spectrum costs money and these costs should be recovered from those who benefit from spectrum management activities.
- In general, a user pay principle should apply which extends to all users of spectrum: public and private.

Finally, important social and cultural objectives can be realized by use of the spectrum and spectrum pricing should facilitate the achievement of government social and cultural objective.

3 METHODS FOR SPECTRUM PRICING

Spectrum is either valued using prices in market transactions (auctions, spectrum trading or leasing) or by administrative means. Market based methods allow users to estimate the commercial value of spectrum based on their own and the market's expectations around what benefits that can be derived from its use. Administrative

methods are also used in the assignment of spectrum and the determination its prices. In some cases, the method employed simply results in a recovery of spectrum management costs plus targeted revenue. In other cases, analytical and modeling techniques are used develop prices which reflect the underlying spectrum value.

3.1 Spectrum Valuation

Radio spectrum is an extremely valuable and often scarce resource which makes a major contribution to economic and social development, and is necessary to ensuring national and civil security. Maximizing and ensuring an efficient distribution of the net benefits generated by spectrum are important goals promoted by spectrum values and spectrum price mechanisms, which help to ensure that spectrum is used efficiently by users

Spectrum values reflected in spectrum prices help to promote both economic and technical efficiency in the use of radio resources. Spectrum values can also be significant and help raise significant revenues for the government and recover the costs of managing spectrum.

3.2 Methods for Valuing Spectrum

Spectrum is either valued using prices in market transactions (auctions, spectrum trading or leasing) or by administrative means. Market based methods allow users to estimate the commercial value of spectrum based on their own and the market's expectations around what benefits that can be derived from its use. Administrative methods are also used in the assignment of spectrum and the determination its prices. In some cases, the method employed simply results in a recovery of spectrum management costs plus targeted revenue. In other cases, analytical and modeling techniques are used develop prices which reflect the underlying spectrum value.

3.2.1 Administrative fees and prices

The administrative assignment of spectrum is often supplemented by imposing charges for spectrum use. These charges usually take the form of simply setting fees sufficient to recover the costs of spectrum management. Prices can also be used to guide users in making decisions to use spectrum more efficiently. One example, applicable within the framework of administrative assignment of spectrum, is to set a charge for spectrum equal to an estimate of what the spectrum might be worth in a market context. This is sometimes called 'administered incentive pricing.

3.2.2 Market-based prices

Alternatively, prices can emerge through an authentic market transaction such as an auction or secondary trading. The general theory of prices involves assumptions regarding the economic behaviour of consumers when using resources while being concerned with rational preferences for certain outcomes, utility (maximizing efficiency and profit) and information availability and access. From these assumptions, economists developed a structure to help understand how the allocation of scarce resources among alternative ends occurs in markets. We employ these basic principles to begin our understanding of how market prices for spectrum are set.

3.2.3 Administered incentive prices

This is when the regulator attempts to approximate the prices (often flat rate charges) that might emerge in a market context. This method is referred to as administered incentive pricing because prices are set by the regulator reflecting the opportunity cost of spectrum while incorporating potential 'incentive' properties: prices are thereby set at a level to encourage efficient use reflecting spectrum scarcity.

3.2.4 Cost Recovery and Spectrum Usage Fees

Cost Recovery and Spectrum Usage Fees, are necessary recovery of spectrum regulatory agency operations costs.

3.2.5 Spectrum Auctions

Auctions are a well-known means of using market-generated prices to assign spectrum by the spectrum regulator. In markets where subsequent or secondary trading of licences is allowed, procedures will emerge that set the prices for such trades, and these may also include auctions.Pricing

3.8 Beauty contest (Comperative tender)

In a Beauty Contest number of criterion are set with different weightings. Suitable Candidate are then selected (shotlisted) and are evaluated by the committe which sets highest weighting.

4 Harmonized spectrum pricing framework for the East Africa Region

Studies and deployment of the Harmonized Spectrum pricing framework for the East African region is very important since it will allow spectrum users of the region to estimate the commercial value of spectrum based on their own market's expectations around and benefits that can be derived from its use, it will also help the East African countries in a recovery of spectrum management costs plus targeted revenue.

5 Methodologies for studies and development of Harmonized spectrum pricing framework for the East Africa Region

Studies of the Harmonized Spectrum pricing framework for the East African region will require inputs from the entire region to ensure that spectrum pricing derivation are

based on the current situation and challenges facing spectrum pricing in the region. Benchmarking of these inputs and any pricing framework from developed countries are also recommended to be utilized while analyzing the inputs.

Recommended inputs to the study which will be in the form of questionnaires collected from the region will include:

1. Existence of spectrum policies
2. Available Laws, Regulation, rules, guidelines governing spectrum issues in the Country
3. Spectrum allocation and assignment methods applicable
4. Spectrum pricing methods in use
5. Spectrum Prices/fees schedules
6. Spectrum license validity
7. Amount Unallocated spectrum (Digital Dividend) and plans for pricing
8. Challenges