

## Spectrum Management: Unleashing the potential of mobile technologies for the Bottom of the Pyramid (BOP)

POLICY BRIEF

### KEY RECOMMENDATIONS

#### Reducing Artificial Scarcity

A shortage of liberally licensed spectrum rights reduces the potential of mobile technologies to expand services beyond voice. Freeing up spectrum from other uses would allow greater expansion; increasing consumer welfare and raise funds for the public exchequer.

#### Auctions and Trading

Auctions resulting in exclusive property rights represent market solutions for assignment of spectrum usage rights. Trading is a complement to this approach for secondary markets. These assignment mechanisms optimise the use of spectrum, but should not result in permanent rights. Additionally, auctions for urban and rural regions should be separate.

#### Spectrum Sharing

Regulators could incentivise efficiency and innovation by mandating spectrum sharing. This is likely to also reduce the demand for spectrum and subsequently the price offered.

#### Encouraging new Technologies

With new technologies emerging flexibility in assignment may be introduced which will include policy mix such as non-exclusive property rights and collective use, but that may be after these technologies have proven themselves.

### INTRODUCTION

The utilisable range of radio frequency (spectrum) for the provision of mobile services is finite. Therefore, it is critical that the spectrum allocation mechanisms of the governments' ensure its optimal utilisation. This is even more important in the context where wireless mobile technologies have largely overcome barriers to their adoption for data services. On the other hand artificial scarcity is created by usage of commercial spectrum for non commercial purposes. Thus, it follows that mismanagement of spectrum can handicap the growth of the mobile and stunt the potential of these technologies to bridge the quintessential digital divide. As a result, the overall management of spectrum is pivotal.

### THE POSSIBLE ROLES OF THE REGULATOR

Regulators ensure effective use of spectrum by pre determining the market structure through their role as a licensor; thereby determining the number of players for a particular wireless service. In addition, they can work with

existing allottees to vacate spectrum that is no longer needed or persuade them to move to alternate technologies by providing incentives for the productive use of frequencies. All these measures help in the matching of the demand and supply.

The demand for spectrum, the value placed on it and its efficient usage will depend on how competitive the markets are. The onus of creating competition is in the regulator's domain. A weak competition regime or fewer curbs on abuse of the market will inevitably hurt the optimal use of spectrum and restrict the growth of the innumerable applications. This is likely to have a cascading impact on growth and equity.

Regulators could incentivise efficiency and innovation by mandating spectrum sharing. This is likely to also reduce the demand for spectrum and subsequently the price offered. Further, selecting and authorising the use of one or more standards (technologies) can significantly affect spectrum use. This will help bridge the gap between short-term and long-term efficiency and encourage policy mix strategies.

## MODELS OF ISSUING LICENSES FOR FREQUENCY

In order for the end user to benefit from communication services in a cost effective manner, it is imperative that an appropriate approach is selected. Global scenarios showcase the trend from administrative to the market-based auction approach. This however, can be a double-edged sword. With appropriate precautions, these approaches can help BOP consumers enjoy the fruits of market competition without the many risks that accompany unfettered or unregulated markets. This will require regulators to take steps to prevent artificial scarcity, unhealthy speculation, the so-called “winners curse” as well as proactive measures to promote interests of BOP consumers.

|                     | <b>Administrative approach</b>   | <b>Market based approach</b>  | <b>Commons approach</b>  |
|---------------------|--|---|--|
| Controlled by       | The regulator  | The market  | Technology & users   |
| Spectrum allocation | Based on beauty contests or on a first come – first served basis.  | Based on market players, demand & supply (via auctions)   | Frequency bands & usage, most often determined by regulators   |
| Pros                | <ul style="list-style-type: none"> <li>- Allows discretion for spectrum reservation (e.g. for defence)</li> <li>- Helps control the price for specific services</li> </ul> | <ul style="list-style-type: none"> <li>- Paying the market price, players have an incentive to put the spectrum to best use</li> </ul>                                    | <ul style="list-style-type: none"> <li>- Fosters innovation</li> <li>- Easy to implement for services based on new technologies</li> </ul>                         |
| Cons                | <ul style="list-style-type: none"> <li>- Deters innovators</li> <li>- Prone to setting self-serving criteria for selecting allottees</li> </ul>                            | <ul style="list-style-type: none"> <li>- No clear ‘rules’ on how rights are assigned</li> <li>- No consensus on how regulators will determine the market price</li> </ul> | <ul style="list-style-type: none"> <li>- Low entry costs may degrade transmission quality (e.g. over use)</li> <li>- No penalty for wastage of spectrum</li> </ul> |

TABLE 1: APPROACHES FOR ISSUING LICENCES

## CONCLUSION

The three approaches to spectrum allocation present new possibilities and challenges when seen from the perspective of BOP users. In particular, administrative approaches, which can protect BOP users, are likely to be most difficult to implement in the absence of quality governance and technical expertise that developing countries often lack. The commons approach may result in cheaper spectrum and encourage innovative new services. However, it is relatively weak in dealing with legacy issues that the massive commercial investments in mobile networks already in use by many if not all BOP users.

In today’s market environment for wireless services like mobile voice and data, market based processes for allocation of spectrum such as auctions represent, on balance, the most promising ways to protect interests of BOP consumers. It is therefore important that adequate attention is paid when designing auctions with the BOP in mind. This will, however, involve tough choices and tradeoffs.

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