

15th February'2012

**Vodafone's Response to
TRAI's Pre-consultation on "Allocation of Spectrum in 2G band in 22 Service
Areas by auction"**

We are thankful to the Authority for initiating this pre-consultation and seeking comments and suggestions on the issues involved.

A. Summary of our key comments is as follows:

- i. The communications industry is universally acknowledged as a critical driver of long-term economic development. The prevalence of mobile communications in India means that policy decisions which affect the industry have profound implications for India's growth trajectory. Spectrum is the critical life-blood of the industry. The combination of comparatively small amounts of spectrum being made available to the telecom industry and scarce spectrum being fragmented across more operators than have proved sustainable in any other market, regardless of how scale is measured, have resulted in capacity constraints, increased network costs, reduced rural coverage, and an unnecessarily high number of towers, leading to the inefficient use of critical resources like diesel and electricity.
- ii. Decisions which affect the allocation and use of spectrum in the telecom industry are therefore amongst the most important economic policy decisions. The recommendation and decision on allocation of spectrum for telecom industry through auction must meet the principles as observed by Supreme Court and the same principles must be applied in case of all future spectrum allocations. Care must be taken to ensure that the auction is genuine and fair and does not reach pre-determined outcomes as a result of poor auction design.
- iii. In the first instance, all available spectrum in the band, both returned spectrum and currently un-allocated spectrum, should be made available in the forthcoming auction. Unused spectrum brings no benefit to society or consumers. Spectrum available to the mobile industry will bring cheaper voice and data services to more people, increase productivity and support other industries, and reduce the need for additional base stations. All operators and potential new entrants should be allowed to enter the auction. This will ensure the most efficient allocation of the spectrum and is necessary to derive a fair market price. It would not be logical to restrict the auction only to the spectrum which was allocated in 2008, and only to the parties which acquired the spectrum in 2008. In that case, virtually by definition, the supply of spectrum would be equal to or less than the demand for the spectrum. Such artificial restriction would lead to an

- outcome no different from an administered price regime.
- iv. We accept the principle that spectrum caps can help to ensure that spectrum does not become too concentrated in a few operators. However, excessive fragmentation reduces the value of spectrum. An appropriate cap at this time would be around 25% of the total spectrum assigned in GSM/CDMA bands
 - v. Paired spectrum should be available in 1MHz lots, with a maximum of 5MHz in this auction.
 - vi. Spectrum usage charges should be reviewed before the auction design is finalized. The current regime of escalating charges based on the total quantity of spectrum held means that new entrants pay significantly less per unit of spectrum acquired than existing operators. This is likely to lead to lower bids from existing operators, which will negatively influence the final prices and the efficiency of the auction.
 - vii. The reserve prices should not be set based on the prices paid in the other auctions. This risks deterring potential new entrants. Rather, the reserve prices should be set only to deter frivolous bidders. The reserve prices applied in the 3G/BWA auctions were high, but not unreasonable.
 - viii. The spectrum auction should be held simultaneously for all the service areas.

B. Background – Supreme Court Judgment

The Authority has relied upon the recent judgment of Hon'ble Supreme Court dated 02.02.12 in writ petitions no. 423/10 and 10/2010 where it has directed TRAI as under:

“Keeping in view the decision taken by the Central Government in 2011, TRAI shall make fresh recommendations for grant of licence and allocation of spectrum in 2G band in 22 Service Areas by auction, as was done for allocation of spectrum in 3G band.”

Some significant observations have been made by the Hon'ble Supreme Court in the said judgment in regard to principles to be followed in telecom industry for spectrum and auction. **The recommendation and decision on allocation of spectrum through auction must therefore meet the principles as observed by Supreme Court**, which are as follows:

- i. A natural resource's value rests in the amount of the material available and the demand for it (Para 63),
- ii. The demand of a natural resource is determined by its usefulness to production (Para 63),

- iii. The doctrine of equality, which emerges from the concepts of justice and fairness, must guide the State in determining the actual mechanism for distribution of natural resources (Para 69),
- iv. A transparent and fair method for making selections so that all eligible persons get a fair opportunity of competition (Para 76),
- v. No attempt should be made to scuttle the claim of worthy applicants (Para 76),
- vi. the State to ensure that a non-discriminatory method is adopted for distribution and alienation (Para 76),
- vii. A duly publicized auction conducted fairly and impartially is perhaps the best method (Para 76),
- viii. The procedure adopted for distribution is just, non-arbitrary and transparent (Para 69),
- ix. People be granted equitable access to natural resources and/or its products (Para 69),
- x. The process of distribution must be guided by the constitutional principles including the doctrine of equality and larger public good (Para 72),
- xi. Spectrum has been internationally accepted as a scarce, finite and renewable natural resource which is susceptible to degradation in case of inefficient utilization (Para 65) and
- xii. One of the main objectives of NTP 1999 was that spectrum should be utilized efficiently, economically, rationally and optimally and there should be a transparent process of allocation of frequency spectrum, which cannot be overlooked (Para 73).

C. Disclosure of Availability of Spectrum and Road Map for Future Allocations

A complete disclosure of spectrum available with the government (including spectrum available now and spectrum that will be available once the 2008 new licenses are cancelled) is a precursor to a fair and transparent auction. Otherwise, the supply of spectrum would be artificially constrained. In addition, a clear road map should be publicized of spectrum availability in all relevant bands for telecom.

This will ensure that the process of distribution is guided by the constitutional principles including the doctrine of equality and larger public good. The Supreme Court has observed that the procedure adopted for distribution must be just, non-arbitrary and transparent. Complete disclosure will also ensure that there is complete transparency with all stakeholders and there are no surprises later, which could have impacted the decisions of some stakeholders during the auction.

Such disclosure will also be in line with the objective of NTP 99 to achieve efficiency and transparency in spectrum management.

D. No spectrum should be withheld from the market

The mobile telecommunication's contribution to national economy is very significant. The preamble to NTP-99 stated:

“The Government of India recognizes that provision of world class telecommunications infrastructure and information is the key to rapid economic and social development of the country. It is critical not only for the development of the Information Technology industry, but also has widespread ramifications on the entire economy of the country. It is also anticipated that going forward, a major part of the GDP of the country would be contributed by this sector.”

The growth in the telecom sector is mainly driven by the number of mobile subscribers growing from 1 million in 1999 to 900 million in 2012. This increase in mobile subscribers is leading to new applications and content which create additional benefits for society.

Mobile and internet convergence has transformed the way society and the economy functions. Ubiquitous connectivity is rapidly becoming a basic requirement for individuals and businesses, driving efficiency and development. Spectrum is the key input in this development.

In all countries, the challenges of managing scarce spectrum resources are formidable. For example, the March 2010 National Broadband Plan for the U.S. claims a severe bandwidth shortfall awaits the mobile market in the immediate future. Although around 500MHz of paired spectrum is already available for commercial mobile use, the National Broadband Plan warns that unless an additional 500MHz is made available, many advanced services will not happen.

Yet in India, much less spectrum is typically allocated for mobile services than in the US. Although mobile services have become extremely popular in India, spurring entrepreneurship and efficiency, network expansion has been hindered by the lack of spectrum. The spectrum that is available is also fragmented between nearly 3 times as many operators as have proved sustainable in any other market, regardless of scale whether measured by geography, population, revenue or profit.

There is potential for a substantial boost to economic activity if un-allocated spectrum can be used efficiently.

Un-used spectrum creates no value for society. The Supreme Court has observed that Spectrum has been internationally accepted as a scarce, finite and renewable natural resource which is susceptible to degradation in case of inefficient utilization. The opportunity not used is gone forever. Spectrum is a valuable input which should not be

kept as inventory and making spectrum unavailable is a waste of this valuable resource. This ultimately results in increased network costs (deploying more towers), lower innovation, reduced capacity and lower rural coverage.

More towers result in increased use of diesel /power to run the sites, which leads to higher energy consumption. Due to the sub-optimal spectrum allocations, the diesel consumption has gone up by millions of tonnes per year. This waste of energy is avoidable and government's objective of green telecom can be met in a substantial manner if optimal spectrum allocations are ensured.

One of the key objective of NTP 1999 was that spectrum should be utilized efficiently, economically, rationally and optimally. From the information publicly available there is, in aggregate, 211 MHz spectrum (average 9.5 MHz per service area) already available with the DoT for more than a year. This is lying unutilized, which is against the objectives of NTP 1999.

We therefore submit that spectrum should not be restricted and should not be kept idle. The entire spectrum available for mobile telecommunications should be auctioned and such auction should be conducted at the earliest.

E. Auction cannot be restricted only to the 2008 new entrants and the 2008 spectrum – in this case demand would equal supply or is less than supply, and the auction would close at the reserve price – effectively an administratively determined price not an auction as required by the Supreme Court:

The Supreme Court has observed that there should be a transparent and fair method for making selections so that all eligible persons get a fair opportunity of competition. It has also observed that the State and its agencies/instrumentalities must always adopt a rational method for disposal of public property and no attempt should be made to scuttle the claim of worthy applicants. Needless to say, a fair market price cannot be determined if the opportunity is denied to the needful and worthy. Given that long-standing operators have extended network and now support massive customer bases, it is difficult to see how existing operators could be considered less worthy than new entrants, most of whom have not signed up any significant customer base. Further, the Government should ensure that a non-discriminatory method is adopted for distribution and alienation. The procedure adopted for distribution should be just, non-arbitrary and transparent.

A well-designed auction discovers the most efficient users of the spectrum, those which

expect to generate the highest returns from operations and awarding licenses to high bidders tends to increase social efficiency. Thus, **the auction should be open to existing operators**, who have been deprived of further spectrum since 2006 while adding hundreds of millions of new mobile users. If auction is not open to all eligible players, then such auction may deprive more worthy or more efficient player or players who give more value to spectrum to even participate leading to inefficiencies in its utilization which will be against the overall public good. Any discriminatory restrictions on participation will lead to rigidities and any such rules will block the deployment of advanced mobile data networks and deter the coverage of mobile networks.

In case only new entrants are allowed to participate, then it will make the auction irrelevant. The number of licenses cancelled, respective players and amount of spectrum released cannot be same as number of participants in the auction, respective players and amount of spectrum put for auction. Such artificial restriction will be no different from an administered price regime and will further reduce competition.

F. Spectrum Cap and Spectrum Slots

We request that the government should consider factors such as the market structure, the level of existing competition, availability of spectrum, spectrum requirements, international comparison of spectrum allocations and investments required in the sector for capacity when setting spectrum caps. However, it must also consider that in today's dynamic environment where new mobile devices and applications are being introduced every day and where ubiquitous connectivity is being demanded by all citizens. This requires equitable access to and benefit from this key resource, so coverage and innovation become very important factors when determining spectrum caps.

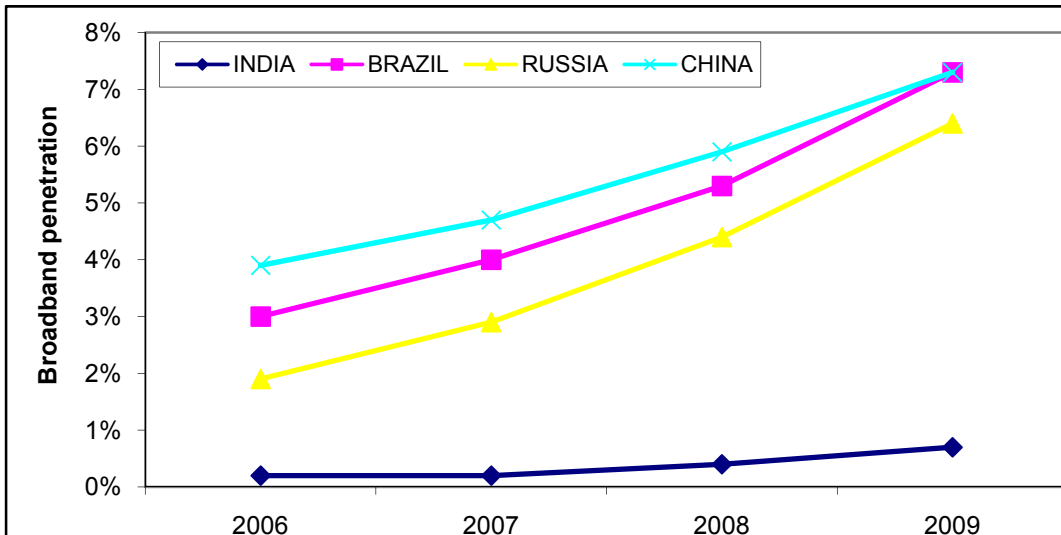
Some of the implications are elaborated below:

- **Sub-optimal spectrum destroys its capacity.** The Authority is well aware of the phenomenon of GSM trunking efficiency where an incremental block of spectrum will give a more than proportional increase in capacity. It has been estimated that **in 60MHz, 15MHz per operator will deliver twice as much capacity as 5MHz per operator**, i.e. total capacity goes down by as much as 50%.
- **Sub-optimal spectrum allocation inhibits rural penetration of services.** It may also be appreciated that given a certain budget that is available as capex with a service provider, every additional site deployed in an urban area to meet capacity due to spectrum constraints is one site less that could have been deployed in a rural area. This, in turn impacts the penetration and rollout of

service in rural areas as vital capex is diverted to urban areas to meet capacity constraints rather than in rural areas to develop and grow the rural market. This deprives a section of population that is yet to receive the benefits of mobile connectivity.

- **Sub optimal spectrum allocation deters growth of data services.** Data services, which are the foundation of a broadband economy, are spectrum hungry services. **Sub-optimal spectrum allocations are also unable to support data services**, as a result of which India falling behind in broadband penetration and growth.

Broadband Penetration in BRIC Countries



Source: Ovum 2009, Broadband Forecast Pack 2009-14

Source: TRAI Performance Indicators Report, June 2009

- **Sub-optimal and fragmented spectrum leads to wastage in energy and will hinder the efforts of the Government for Green telecommunications.** Spectrum and infrastructure (towers) are substitutable to some extent. Yet installing more towers is costly, requiring the construction and operation of additional base stations and associated networking (“backhaul”). And increasing number of towers will never change the reality that, for any given level of infrastructure investment, more spectrum would enable more traffic to be transported over the network. Further, more towers also result in increased use of diesel /power to run the sites, which leads to higher energy consumption. Due to the rigid spectrum caps and fragmented spectrum the diesel consumption has gone up by millions of tonnes per year. This waste of energy is avoidable and government’s objective of green telecom can be met in a substantial manner if

such rigidities in spectrum cap are removed.

Thus in our view, it is reasonable to have a cap on the cumulative holding across all bands in which 2G is possible (800/900/1800 MHz) of 25% of the total spectrum in all these bands. However, this should be subject to review in future auctions. It may be appropriate to have similar percentage caps of 25% for sub-1GHz spectrum when 700 MHz or 450MHz spectrum is auctioned. It is common, and may be appropriate in this case, to also have a maximum cap in a specific auction to ensure a few operators are not able to dominate the auction. We suggest that around 5MHz would fulfill this objective.

The spectrum should be divided into 1MHz blocks of paired spectrum. Block of spectrum lesser than 1MHz would result in a less efficient allocation. All participants should be able to bid for these blocks, up to a maximum of five blocks (5MHz), provided that this would not increase their total holdings across all bands in which 2G is possible (800/900/1800 MHz) to 25% of the total spectrum available in these bands, as described above.

G. Annual Spectrum Usage Charges:

Spectrum usage charges should be reviewed before the auction design is finalized. The current regime of escalating charges based on the total quantity of spectrum held means that new entrants pay significantly less per unit of spectrum acquired than existing operators.

At present, additional fee for incremental spectrum is collected by way of an escalating revenue share for higher slabs of spectrum. However once the spectrum is to be allocated through an auction and an upfront fee is being collected by way of auction proceeds, continuing with the current approach of applying a higher spectrum usage charge on additional allocations would lead to anomalies and would in fact compromise the integrity of the auction process.

To illustrate,

Consider two operators, one holding 4.4MHz spectrum and paying a spectrum usage charge of 2% of its AGR and the other holding 6.2MHz and paying 3% of AGR as a spectrum usage charge. The former bids Rs. 105 crores/MHz for a block of spectrum and the latter bids Rs. 100 crores /MHz.

Escalating spectrum usage charge mechanism also punishes operator efficiently utilizing spectrum. The current method of charging the spectrum distributed in auction

is detrimental to the operators and consumers as it works as an inverted duty structure which increases the input cost of the spectrum leading to excessive burden on operating margins and revenues, for the spectrum holders, leading to imposition of stringent barriers for the operators to invest in superior quality of services to the consumers.

An auction with escalating spectrum usage charges would skew the auction in favour of precisely those companies which bring the least economic benefit – reproducing the problem which the Supreme Court decision is intended to remedy. In this regard we wish to refer to the observations made by the Hon'ble Supreme Court which provides for a roadmap for distribution of natural resources and holds the government as the trustee of natural resources. The Supreme Court observed that:

“State is bound to act in consonance with the principles of equality and public interest and ensure that no action is taken which may be detrimental to public interest”

We believe that spectrum usage charges on revenue share basis should be uniform for all players to ensure an efficient auction which is fair and non-discriminatory. The Supreme Court has observed that the doctrine of equality, which emerges from the concepts of justice and fairness, must guide the State in determining the actual mechanism for distribution of natural resources. It has also observed that the procedure adopted for distribution is just, non-arbitrary and transparent and that it does not discriminate between similarly placed private parties.

Alternatively, we suggest that the TRAI should look again at the option of a uniform fixed price per MHz as a substitute for the spectrum usage charge. This, if agreed, could address the present issue of discriminatory annual spectrum charges and will also set equal rules at the time of auction for all eligible players. Importantly it will also incentivise efficient players and will force others to use the spectrum more efficiently.

H. Reserve price:

It is important that the government and TRAI are clear about the objectives of the auction. We reiterate that all spectrum should be allocated to be put to productive use, and in increasing benefits for the public while maintaining effective competition in the marketplace and allowing for innovations and continued investments in the sector. Designing auctions to inflate government revenues rather than consumer and overall economic welfare may not be prudent. When spectrum is available to the marketplace, efficiencies are obtained, prices fall, services expand, and new networks will be built. A successful regulatory focus that creates the right incentives for mobile broadband

services can generate exceptionally high social returns.

Thus, in our view the auction must be designed based on these objectives and reserve price should be fixed accordingly. The reserve prices should be set only to deter frivolous bidders. The reserve prices applied in the 3G/BWA auctions were high, but not unreasonable.

In any case the Reserve Price should not be linked to TRAI expert price / 3G discovered price as:

- a. reserve prices are generally significantly lower than final prices, otherwise there is a risk that spectrum remains un-sold, and
 - b. there are serious flaws in the assumptions and computation of administered prices discovered by TRAI.
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- I. The spectrum auction should be held simultaneously for all the service areas.**
 - J. Independent Advisors should be appointed for the auction design and conducting the auction:** The best way to provide assurances of transparency and fairness would be to appoint independent advisers.
 - K. The choice of the technology should be left to the operators as they will decide which is best suited to meet customer demands.**
 - L. The auction winners should be allowed to swap slots to get continuous blocks of spectrum.**