



Middle East & Africa Market Perspective

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WiMAX in the Middle East: fixed WiMAX finds a home

ANALYSIS SUMMARY

- Last week's awarding of fixed WiMAX licenses to Batelco and PCCW in Saudi Arabia is only the most recent of the current spate of expensive fixed WiMAX licenses in the Middle East.
- The current surge in demand for WiMAX in the Middle East is linked to the two main drivers of the region's soaring demand for broadband in general: the inadequacy of existing broadband infrastructure, and government policies promoting rapid broadband adoption as a tool for economic development.
- The cost structure and ease of deployment of WiMAX as a broadband solution has made it the solution of choice in the Middle East, although we expect it to be a long-term solution only in the region's poorer countries.

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EVENT SPOTLIGHT

In Western Europe and the US, most of the excitement around WiMAX centers on the mobile standard, 802.16e (due to be launched in the second half of 2007), rather than on the currently available fixed standard, 802.16d. In the Middle East, on the other hand, fixed WiMAX is booming: even countries with ample 3G facilities are well on their way to launching fixed WiMAX networks. Is the region truly an anomaly, or will this surge in adoption fade as quickly as it appeared? During the next five years, the Middle East's inadequate broadband infrastructure will create a high demand for fixed WiMAX in almost all countries in the region. However, in the longer term, the wealthy Gulf states will transition to DSL and fiber as their primary broadband technologies, whereas the region's poorer countries will rely on fixed WiMAX for some time to come.

BEHIND THE HEADLINE

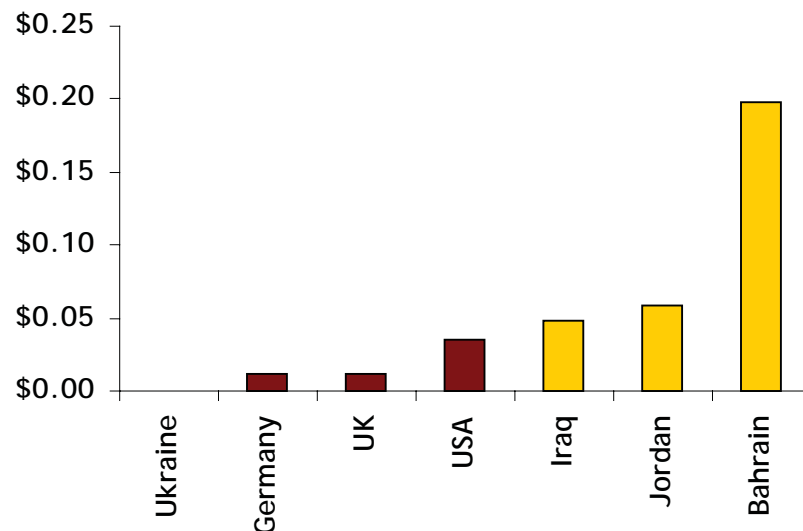
- Last week's awarding of fixed WiMAX licenses to Batelco and PCCW in Saudi Arabia is only the most recent of the current spate of expensive fixed WiMAX licenses in the Middle East. In Saudi Arabia, Lebanon, and Qatar, WiMAX is already in operation. In the second half of 2006, Jordan, Bahrain and Iraq issued their first fixed WiMAX licenses, and Saudi Arabia has just awarded additional fixed WiMAX spectrum to two new fixed service operators, Batelco and PCCW. Several other countries plan to follow suit shortly (see Exhibit 1).

Exhibit 1: WiMAX licenses in the Middle East

Country	Operator(s)	Price (\$)	Type	Status
Qatar	Q-Tel	N/A*	Fixed	WiMAX-based public hotspots launched in 4Q2006
UAE	etisalat, du	N/A*	Both	Trials in progress; launch scheduled for 2007
Saudi Arabia	STC, ITC, Mobily, Batelco, PCCW	N/A	Fixed	Existing operators have completed nationwide rollout and begun their launch; new entrants expected to launch in 2008
Jordan	Umniah, ATCO Clear-wire	11.8m, 7.7m	Fixed	First license awarded 4Q2006; second in 1Q2007; two more to be auctioned during 2007
Bahrain	MTC-Vodafone Bahrain, Mena Telecom	14.2m, 12m	Fixed	Licenses awarded 4Q2006
Iraq	Kalimaat Iraq, a Jordanian-Canadian-US joint venture, ITPC, and three provincial operators	20m each	Fixed	Licenses awarded 3Q2006
Egypt	New entrants	N/A	Fixed	Three licenses to be auctioned in the first half of 2007
Lebanon	CedarCom, three other wireless data operators	N/A**	Mobile	Launched in 4Q2006 (CedarCom)

Although some WiMAX spectrum was awarded as part of unified or data service licenses rather than on its own, making it difficult to pin down an exact price for the WiMAX component, the price being paid per MHz per capita in the Middle East seems to be significantly higher than elsewhere in the developing world, even higher than some prices in Western Europe and the US (see Exhibit 2). Bahrain's licenses, at an astonishing \$0.19/MHz/population, is one of the highest prices paid thus far worldwide. It is not yet possible to calculate the price/MHz/pop for the two new Saudi fixed operators, since final spectrum allocations have not yet been decided. However, initial reports of the prices paid by the new entrants—which say that Batelco has bid \$133m for a combined wireline and wireless fixed license, in contrast to the mere \$1.3m bid by Verizon for a wireline-only fixed license—imply that a large premium for WiMAX was in evidence in Saudi Arabia too.

Exhibit 2: WiMAX spectrum price per MHz per capita by country (\$)



Notes: US auction occurred in 1997 and data used is from 1997.

Iraq awarded licenses which included spectrum in the 450MHz and 1900MHz range as well as in the 3.5GHz range.

Jordan awarded 28 MHz in the capital city and 14MHz in the rest of the country. Exhibit shows Price/MHz/Pop calculated using 28MHz.

Source: Pyramid Research.

- The current surge in demand for WiMAX in the Middle East is linked to the two main drivers of the region's soaring demand for broadband in general: the inadequacy of existing broadband infrastructure, and government policies promoting rapid broadband adoption as a tool for economic development. Our research has shown that WiMAX will be a better fit in less developed broadband markets¹, and many of the telecommunications markets in the Middle East, even those which have very sophisticated mobile telephony, still have a severe shortage of broadband lines. In Saudi Arabia, for example, both of the mobile operators offer extensive 3G mobile services, but broadband household penetration was less than 1 percent in 2006, largely due to insufficient infrastructure. The size of the gap between broadband penetration and PC household penetration, which reached 43 percent in 2006, further highlights the extent of the unmet demand for broadband. In Bahrain, which also has

two 3G mobile operators, only 6 percent of the population were Internet subscribers in 2006, and the majority of those were dial-up.

Government promotion of broadband adoption is an equally important factor, on both ends of the economic spectrum. Wealthy Gulf nations such as the UAE and Qatar hope to become worldwide or region-wide hubs for IT and financial services. Their poorer neighbors see broadband as a way to improve government services—education in particular—and also believe that plentiful broadband is essential for encouraging both local businesses and foreign investment. In both cases, governments are keen to improve access to broadband as quickly as possible.

- **The cost structure and ease of deployment of WiMAX as a broadband solution has made it the solution of choice in the Middle East, although we expect it to be a long-term solution only in the region's poorer countries.** For poorer countries, such as Egypt, Lebanon, Jordan, and Iraq, fixed WiMAX technology makes it possible to roll out a nationwide broadband network at much lower cost than is possible using wireline solutions. Operators report that where a network must be built from scratch, a WiMAX line costs about \$500 less per line than copper, and WiMAX has the additional advantage that base stations can easily be added incrementally as demand grows. Mass adoption of fixed WiMAX is unlikely, however, since the high prices of fixed WiMAX Customer Premises Equipment (CPEs) will present an even bigger obstacle to adoption in these developing nations than it does in the West. WiMAX CPEs currently cost about \$300, and we expect only about a 10-20 percent decline in CPE prices. However, government institutions (including schools), large and small businesses, and high-income residential users will all be able to afford the CPEs, thus taking a significant step towards the governments' economic development goals. Basic connectivity, rather than cutting-edge, high-bandwidth applications, is the most urgent priority of the regulators in these countries, so they are willing to trade the long-term speed limitations of WiMAX for its short-term value for money.

In wealthier countries like Saudi Arabia and Bahrain, it is not the low price of WiMAX network infrastructure which is the main attraction, but rather the speed with which it can be deployed. Saudi Arabia, for example, hopes to overtake the UAE as the region's data-services hub, and plans to build five new "digital cities" from scratch in hopes of attracting firms with high data service needs. It therefore wants to rectify its broadband deficit as quickly as is physically possible, and expensive CPEs are not an obstacle. Qatar, Bahrain, and Kuwait are all keen to capture a share of this market too, while the UAE is equally determined to maintain its current leadership in the sector. In such markets, WiMAX and fiber rollouts are likely to take place side-by-side, a trend which is already in evidence in Saudi Arabia and Qatar.

In the long term, however, we expect the wealthy Gulf states to turn to fiber and DSL as their primary broadband technologies, once better wireline networks have been rolled out. In terms of performance, Pyramid Research believes that 20Mbps is a more realistic benchmark for fixed WiMAX sector throughput than the widely publicized theoretical throughput of 75Mbps, and that, in the long run, it will not be able to keep up with ADSL's evolution². Therefore, in their race for technological supremacy, Gulf states will tend to prefer faster, wireline broadband technologies.

CLIENT RECOMMENDATIONS

- **Fixed/Broadband Operators**—Anticipate having to pay approximately \$0.05-\$0.08/MHz/pop in Egypt's upcoming fixed WiMAX auction.
 - **WiMAX and Broadband CPE vendors**—Expect booming Middle Eastern demand for broadband equipment to continue during the next five years, with particularly strong demand for cheap WiMAX and other CPEs in the region's poorer countries.
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Additional Resources

Below is a list of recent reports and additional products that are available from Pyramid Research.

Report Details
<p><i>Fixed-Mobile Convergence: What Works, What Doesn't, and the MNO's Path to Substitution</i> Published: April 2007</p> <p>In March 2007, Deutsche Telekom cancelled T-One, which raises a number of questions for service providers looking to launch fixed-mobile convergence (FMC) offerings. Why did T-One fail? Was it merely a DT marketing failure, or are FMC services not quite ready yet? Has FMC worked for any of the providers that have introduced it commercially? Is it necessary for MNOs to rush FMC, especially for the benefit of providers that have an eye on mobile and fixed Internet services as the next opportunity for revenue growth? This report seeks to answer these and other key questions pertaining to both the present and future of MNO-driven FMC.</p>
<p><i>Can WiMAX Challenge 3G? Performance, Economics, and Opportunities</i> Published: November 2006</p> <p>In this report, we move beyond the hype and theoretical discussion; we look at real-world examples of pre-WiMAX deployments and review practical issues such as time-to-market, business models and pricing, device availability, economics of scale and spectrum availability, with an emphasis on a number of key questions, most notably, can WiMAX challenge 3G?</p>
<p><i>Low-Cost Mobile Business Models</i> Published: October 2006</p> <p>This report examines the methods already in use by innovators in the marketplace, and analyzes the long-term implications of each model for operators. Given the anticipation of ARPUs below \$2-\$3 a month, reaching the next billionth customer will require a tremendous mix of technology and business model innovation.</p>
<p><i>The Future of Mobile Voice: How Mobile VOIP will Challenge the Mobile Carrier Business Model</i> Published: September 2006</p> <p>In this report, we analyze the value of the multi-play proposition, with an emphasis on a number of key questions, most notably, is triple play indispensable? Through analytical case studies of existing triple play bundles, we examine the key ingredients in creating successful triple play models. We focus on pricing, discounting, content, the strategic approach to triple play, as well as key performance indicators and bottom line impact.</p>

Additional Products	
<p>Forecasts</p> <p>Updated on a quarterly basis, our Forecast products provide a complete picture of demand trends affecting each geographical market covered. The Excel output includes five years of historical data and five years of market projections, providing complete macroeconomic and market-sizing information. Available for: Mobile Communications, Fixed Communications, Mobile Data, Mobile Enterprise, Mobile Handsets, Mobile CAPEX, Internet and Media, Network OPEX</p>	<p>Country Outlooks</p> <p>Country Outlooks offer insightful analysis of a country's communications, media and technology industries, including regulatory pressures and overall competitive landscapes.</p> <p>These data-intensive reports are published annually for 68 countries worldwide, and illustrate key trends within given markets, making them an excellent complement to our Forecast products.</p>

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