

## INFORMATION AND COMMUNICATIONS TECHNOLOGIES

Opportunities abound in the Andean region's ICT sector. Major investments are planned by both domestic and foreign companies offering fixed-line and wireless products. The market is characterized by the growing implementation of Voice over Internet Protocol (VoIP) and wireless technologies, and is entirely dependant on imported solutions. Demand is also increasing in the areas of e-learning, IT security products, geomatics and optical technologies. The presence of Canadian mining and oil and gas companies has created the opportunity for Canadian firms to provide enterprise resource planning systems, customized managerial solutions, portal solutions and other intelligent business systems.

In 2004, **Colombia's** telecommunications sector grew at a rate of 4.9%. With three mobile phone operators and 12.1 million subscribers, Colombia has the fourth-largest cellular telephone market in Latin America, creating export possibilities in the areas of equipment, software, SMS services and technology consulting.

With a fixed-line penetration rate of 13.1%, Ecuador has one of the lowest tele-density rates in Latin America, creating immediate demand for wireless communications solutions, particularly in rural areas. **Ecuador's** wireless carriers are aggressively expanding their networks and fixed-line carriers are keen on investing in VoIP technologies. Broadband Internet technologies are a fairly recent but growing addition to the market.

The market in **Peru** is expanding at a rate of 8% annually and generated income is expected to top \$2 billion this year. Opportunities exist in the long-distance carrier sector, broadcast services, fixed telephony, wireless Internet/VoIP communications, broadband, satellite communications and value-added services. Exciting pilot projects using free Wireless Fidelity bands and other wireless technologies are being launched in rural areas.



High urban growth is driving demand for telecom and environmental technologies/services.

**Bolivia** opened up its market for competition in 2001, with a strong demand for local telephone systems, long-distance carriers, cellular telephony, radio broadcasting, cable TV and data transmission. Imports are critical to Bolivia, as there is no domestic production of high-tech equipment or materials. Best prospects are related to the leading operator's investment plan.

**Venezuela's** telecommunications sector continues to experience strong growth, primarily in mobile telephony. There are close to 9 million subscribers, demonstrating a market penetration rate of 33%—more than double that of fixed-line services. Opportunities exist in VoIP technologies, broadband, security applications, Supervisory Control and Data Acquisition and Wireless Fidelity communications.

## ENVIRONMENT

While environmental protection in the region has lagged behind other regions of the world, increasing environmental awareness is creating interesting opportunities for Canadian environmental companies in the Andean region. Particularly strong sectors include water and wastewater, soil remediation, environmental services in the energy, mining, and oil and gas sectors, and the development of CDM projects. With significant environmental projects under way across the region, the Inter-American Development Bank, the World Bank and the *Corporación Andina de Fomento* are key players and should be kept in mind by Canadian environmental firms searching for projects in the region.

For the most part, water treatment for the larger municipalities has been addressed in **Colombia**, but small-scale water treatment for outlying towns and villages is an area of opportunity for Canadian firms with economical solutions.

Another area with potential in the region is with mining-related initiatives, particularly in relation to the remediation of environmental liabilities and development of environmental impact assessments. These highlight **Peru's** environmental opportunities, and present good possibilities in **Bolivia** as well. Environmental impact assessments are required by law in **Ecuador** for all extractive-sector related projects and Canadian firms have shown they can compete for these service contracts locally.

As South America's major oil and gas producer and exporter, **Venezuela** presents the largest opportunities for related clean-up

projects in the region. Canadian companies with expertise in water and wastewater treatment, underground water contamination by hydrocarbons, oil tank cleaning, water efficiency in the oil sector, and environmental technologies related to heavy oil and natural gas are particularly well-placed for this market. Soil remediation and associated technology is another area Canadians should pay particular attention to in Ecuador, Peru and Venezuela.

Bolivia, Colombia, Peru and Ecuador have all signed memorandums of understanding with Canada on climate change and Clean Development Mechanism projects. Development of projects involving clean technologies, particularly renewable energy initiatives, and the resulting carbon credits generated, offer significant opportunities for Canadian companies in those countries.



## OIL AND GAS

Activity in the oil and gas sector is growing as Andean countries seek to increase their production to meet both domestic and export demand. In general, all five countries offer potential business for exploration and development companies.

**Venezuela** is the heavy hitter in the region, with conventional oil reserves of 77.8 billion barrels, non-conventional reserves of 235 billion barrels and gas reserves of 148 trillion cubic feet (tcf). This presents short-term opportunities for goods and services providers—especially those with expertise in extra-heavy crude, refinery upgrading and onshore/offshore gas operations. Licensing rounds and projects for gas have been accelerated due to critical shortages in the country.

In **Colombia**, crude oil and gas have typically accounted for over 25% of exports. Economic and security concerns around private investment, however, have resulted in little exploration over the past few years, threatening to make the country a net oil importer by 2007. Thanks to a 2003 reform of oil and gas legislation that established attractive terms and is beginning to

attract significant new foreign investment, the time is ripe for further exploration and production.

With close to 6 billion barrels of oil reserves, **Ecuador** expects to upgrade the state-owned Esmeraldas oil refinery, creating opportunities for firms with downstream technologies and expertise. In the short term Ecuador offers opportunities in downstream activities while in the mid-to-long term, good opportunities will develop for upstream activities as a result of international tenders for marginal and other oil field concessions.

**Bolivia** is an important natural gas producer. Its reserves are second only to those of Venezuela and it has an enormous potential to become a leading exporter.

In **Peru**, the most significant opportunities relate to development of the Camisea gas project (reserves of 13.0 tcf) that started operations last year in the country's southeastern region. The export of liquefied natural gas to Mexico and the replacement of diesel fuel/gasoline in the automotive and energy generation sectors offer the best niche markets for Canadian exporters.



Courtesy of the Ministerio de Energía y Minas, PLUSPETROL, TGP and CALIDDA of Peru

## MINING

With one of the richest mining belts in the world, the Andean region holds significant potential for Canadian companies in the mining sector. Local authorities welcome new investments and exploitation activities and have put in place modern and appropriate mining legislation. As mining activities continue to increase in the Andean region, there will be a corresponding increase in the demand for mining equipment and services, including engineering services, security equipment and related environmental services. Canadian companies in the region are generally considered as models of corporate social responsibility and environmental consciousness.

**Peru** is Latin America's leading gold producer and the world's sixth-largest producer of the precious metal. Peru's Ministry of Energy and Mines has estimated that a total of \$24 billion will be invested in exploration and development, mine expansion and new projects within the next 10 years. At present, Canada is leading the exploration market and investments in both the Peruvian and Ecuadorean mining operations.

Located under the same geological structures as the other Andean mining countries of South America, **Ecuador** may be considered an unexploited market. Ecuador has significant mining, metallic and non-metallic resources, and the sector is on the verge of a boom. Large deposits

of copper and gold are currently being developed by junior Canadian mining companies.

Mining has become one of **Colombia's** most important economic sectors, accounting for 3% of its GDP and over 20% of its total exports in 2004, with a significant unexploited mining potential remaining. Resource development has become a priority in Colombia's national economic growth. Sector reforms and a democratic security policy are being implemented to address issues related to rural area security.

A growing number of international mining companies are turning their eyes to a relatively unexplored territory and considering opportunities in **Venezuela**, as mineral resources become scarce in other parts of the world. Venezuela depends primarily on imported services and technology in order to meet the demand in this sector. It offers opportunities in exploitation for gold, copper and diamonds. Canadian engineering and consulting firms have proved successful in providing services to bauxite, iron ore and alumina projects.

**Bolivia** has a rich mineral endowment and offers good market opportunities for Canadian exporters of equipment and services.

