

# Social mining

Junior exploration company Intex Resources is poised to begin developing what promises to become one of the world's largest nickel mines, located on one of the poorest islands in the Philippines. CEO Jon Steen Petersen explains how the company has developed a unique mine plan to deliver a minimal environmental footprint and maximum benefit to the local community



The island of Mindoro in the Philippines is just four hours from Manila by ferry and yet the lifestyle for the semi nomadic Mangyan people living in the island's interior is worlds removed. Along the coast there is a thriving tourist trade, but for those struggling to make an existence in the interior, life is hard and the poverty unrelenting. It is high on this central plateau that Oslo, Norway-based Intex Resources is planning to develop what promises to become one of the world's largest nickel mines.

CEO Jon Steen Petersen has been with the company since it was formed in 1997 under the name Mindex. "The original company began as an exploration company, and that is where our focus lies, as Intex," Petersen explains. "Our philosophy is to be the first to discover new mineral deposits, to make them available to the mining industry, and to do this efficiently."

Intex currently has a pipeline of projects at various stages of exploration and development. The furthest advanced is the Mindoro project. Alongside this, there's the Hurdal molybdenum project, located 30 kilometres north-west of Oslo-Gardermoen International Airport in Norway. "This is one of the few porphyry molybdenum deposits in Europe and I believe it is the largest on mainland Europe," says Petersen. It's still at the pre-feasibility stage and has inferred mineral resources independently estimated at 210 million tonnes. The third interest is a diamond-rich kimberlite deposit in the Maniitsoq area of Western Greenland, and the plan there is to continue taking samples to assess the commercial viability of diamond mining in the region.

It is the Mindoro project, however, that is currently creating considerable interest and excitement in the mining sector. To date, Intex has invested \$50 million developing the mine's resources and reserves and bringing a definitive feasibility study to completion. The resulting mine plan is both ambitious and ground breaking. Based on a mine life of 20 years, the intention is to produce 53,000 tonnes of nickel a year. "This would make Mindoro one of the four largest nickel laterite projects in the world," Petersen says. "Moreover, current exploration indicates that we could have a potential mine life of 40 years at this production rate while discoveries in the surrounding areas could extend this by a further 20 years."







**PTCC**

Necessary infrastructure is imperative to support and efficiently operate a mining and processing plant. It should be properly located and appropriately designed to come up with the desired end product that meets buyers' requirements. This is where PTCC's vital role in the mining business comes in. PTCC, together with its mother company, FF Cruz and Co. Inc., assures the constructability and efficient design of all infrastructure components of any mining project. An example of this is when PTCC with FFCCI assisted Intex Resources Philippines, Inc. in conducting an infrastructure definitive feasibility study on six infrastructure components of the Mindoro Nickel Project.

**Philipp's Technical Consultants Corporation (PTCC)**

PTCC is one of the prime technical and engineering consultancy firms in the Philippines with 30 years of experience. It provides extensive technical assistance and financial planning to execute projects, including full logistical organization and comprehensive local support. It offers a set of focused strategic business development services for tenders and ongoing projects aligned to fit each Client's specific objectives. PTCC offers the following services: Architectural & Engineering Design, Construction/Project Management and other specialized services (i.e. Feasibility Studies, Master Planning Traffic Impact/Environmental Assessment).

**Areas of Expertise**

- Roads and Highways
- Bridges
- Industrial Plants (Mining)
- Buildings
- Airports
- Railways
- Ports and Harbors
- Power (Transmission Lines, Wind Farm)
- Water Resources (Water Supply, Dams, Irrigation)
- Site Development, Urban and Master Planning
- Sewerage Treatment Plant



One of the biggest challenges facing Intex has been to overcome local fear and resentment. "In the Philippines there is a significant amount of scepticism towards mining, largely because of its past history," Petersen says. Some 16 years ago, for example, there was an environmentally damaging accident on Marinduque Island. "As a result, there is a great fear that mining will spoil the agriculture and make fishing impossible—and these are vital issues for people who live close to the basic survival level. In addition, the local people have felt that mining companies tend to take all the benefit for themselves. The anti-mining movement has therefore developed into an emotional thing."

Intex's approach to developing the mine and allaying the fears of the local communities has two strands. Firstly, the company has worked to improve the lives of the indigenous people. "To date, we've set up water supply systems from natural wells and provided fresh water to some 10,000 people in the adjacent stakeholder communities. And this has had a dramatic impact," Petersen explains. "Women and children no longer have to spend half their day walking to get water. The women are starting to cultivate the land around their houses and the children go to school. And we're supporting

their schooling systems with grants, books and reading programmes."

Other support includes creating skilled job opportunities along with vocational training, and providing advice on handling money. "But we're trying to do these things sensibly and to help the indigenous communities modernise without changing their original culture," Petersen says. And maintaining this social cohesion is something the company has experienced through its activities in Greenland and northern Norway. "We believe that mining today is much more a social development issue than a technical one. And as an exploration company, we're the first to be exposed to this, particularly in areas like Mindoro which has no history of mining."

The second strand of Intex's approach is to design the mine to create the smallest environmental impact and ensure its operations will bring significant benefit to the local community. Every aspect of mine design has come under intense scrutiny, and this has led to a number of innovations. On Mindoro, nickel is present in two ore types—limonite ore which appears at the surface as





a brown clay; and saprolite, which occurs beneath it. Many companies only extract the saprolite and then ship it abroad for smelting. Intex's plan is to mine both ore types and to process them locally, creating wealth generating opportunities for the islanders.

The mineral processing has therefore been redesigned along new lines. "Traditionally saprolite is processed by pyrometallurgy or smelting, and limonite by hydrometallurgy, a process that requires acid. What we've done is to combine the two into a single flow sheet utilising hydrometallurgy, and we've patented this process worldwide." The new process has undergone rigorous bench testing, followed by a period of industrial production overseen by SGS Laboratories of Canada at a specially commissioned pilot plant. "And interestingly, the results from the pilot tests were even better than the bench tests, and this has created a lot more excitement than we had anticipated."

The philosophy behind the mine plan is that everything that can be done on the island will be. Therefore, the acid required for this process will be manufactured on site, and the heat liberated by the chemical reaction will be turned into steam to drive the turbines on a 110 MW power generation plant to be constructed alongside it. The output from the plant will be sufficient to supply all the power requirements of the mine and large parts of the island. "The island's power is currently





produced by diesel-hungry generators located on barges, and these burn out all the time,” Petersen comments. “Our proposed power generation plant will provide a reliable power supply which will have zero carbon emissions. So it will have the added benefit of reducing the island’s carbon footprint and saving on the cost of fuel.”

The final part of the production cycle which neutralises the acid used in the process has also been the subject of innovation. “Traditionally limestone is used for this, but

limestone is a carbonate and liberates carbon dioxide. So we’ve designed a process new that uses saprolite instead, and this has eradicated CO2 emissions from the process.”

The mine plan has also included steps to reduce the physical impact of mining on the island’s landscape and to keep the mine’s footprint as small as possible. Although the Mindoro mine will be spread over 30 square kilometres, just 100 hectares of land will be mined each year. “This means we will have a small footprint for a mine of this size—similar mines often disturb areas five times as large.”

The disturbance will also be kept to a minimum by replanting the area as soon as the mining moves to another plot, and the rehabilitation will be managed in conjunction with the local people, who are already undergoing training in tree farming. Meanwhile, the company is working with the University of the Philippines’ Tropical Rainforest department to identify the species of trees and plants that were in the original rainforest before the logging happened 30 years ago. “What we would like to do is reintroduce the natural species, and perhaps play a part in re-establishing the rainforest,” Petersen says.

To achieve all of this, the current mine plan will require a capex of \$2.5 billion. Intex is therefore looking for a technical partner and a financial partner to co-develop the project and bring the mine into production. But all the options are open. “Realistically we may wish start off with a much smaller plant producing something in the region of 20,000 tonnes a year,” Petersen concludes. “But we believe we’ve developed a project that will have a wide appeal, and be of interest not only to nickel producers but also to end users. So a steel manufacturer, for example, could possibly be an interesting partner.”

Either way, Intex has ensured that the people of Mindoro Island will be the beneficiaries.

[www.intexresources.com](http://www.intexresources.com)

