Speculation about the availability and perceived scarcity of indium abounds, while data shows that adequate indium supplies will not run out. It is very common to group indium in with the “Rare Earths” but in reality, indium metal is not considered a rare earth. The future of the indium metal supply underlies much of this discussion about indium-tin oxide (ITO) and the alternatives that are being developed.

Indium is a mining by-product, and indium-containing raw material sources exist abundantly worldwide. While it is true that China is supplying the majority of raw or refined indium in the world today, other regions are actively growing their outputs. Exploration and mining activities continue throughout traditional mining regions and they are contributing to definable increased reserves.

One-third of the indium mined every year is being extracted and refined as high-purity indium; typically the range is 3/9-7 to 5/9 purity. Another third accumulates in residue, slag, and tailings for later recovery. Currently, the last third is not being recovered because there are base metal producers that do not have the capability to extract by-products such as indium. This material is considered lost, but MAY be available for future recovery and ultimately converted into useable indium metal. However, the metals industry has been investing in new and more efficient extraction and refining processes to bring more indium to market. Suppliers can and will continue to do so if the demand continues, and the pricing will lead to a profitable venture. As depicted in the following graph, the amount of indium used annually has increased steadily since 2009 after a stagnant and declining usage period that followed the worldwide recession. Of note is that during this time, reclaimed material began to rise, which leads credence to the decision-making and ability of the market to respond to the need, and necessity to make reclaim a part of everyday business. Ultimately, this is key to building a sustainable future for the metal.
Most of the indium in the world today is used in ITO on flat-panel liquid-crystal displays. Reclaiming ITO-spent targets into refined indium metal has continued efficiently and quickly. The reclaim cycle time has been reduced to approximately 12 days. This means that from the time the spent ITO arrives at a recycler, the turnaround time to convert back into high purity indium metal can be as quick as 12 calendar days. These cycle-time improvements have the effect of reducing the overall demand of virgin indium by the large FPD industry. The processes are efficient and capable of refining metal back to the required purity in a cost-effective, consistently repeatable manner. The outlook for indium applications will be discussed, focusing mainly on ITO, and comparing it to competing transparent electrode technologies.

A significant increase in demand for ITO in the last few years has caused intermittent price volatility and short-term availability of indium due to numerous factors. These include the time-lag required to install additional capacity, government regulation, and the lack of information that suppliers receive about future demand. However, mining and residue reserves; continued improvements in recoveries of virgin and reclaimed materials; ongoing exploration; indium metal producer/user leadership; and guidance to the mining, refining and smelting community are contributing to the increasingly available supply of indium.

In conclusion, although the instances of price volatility and short-term availability may occur, the long-term sustainability of indium supply and its continued affordability for current, emerging, and new applications is—and will be—available to support existing market needs and those in the future.