



## Tin at the Crossroads - Tin Industry Review 2011

ITRI's latest detailed review of industry prospects concludes that there are still strong reasons to expect historically high tin prices 3 to 4 years ahead. Global demand should be around 400,000 tonnes a year by 2015, mineral resources at existing operations are being depleted and production costs are expected to rise considerably. However, in the immediate future the global economy faces major downside risks, so the short-term outlook for all metals is very uncertain.

World refined tin usage surged to an all-time peak of over 370,000 tonnes in 2007, powered mainly by the rapid industrialisation of China, a global boom in consumer electronics and a rapid transition to the use of lead-free solders. Over the next decade technological changes offer major threats and opportunities. The biggest risks are in the current main applications of electronics solders and tinplate, where miniaturisation, new assembly technologies and lower coating weights could cut usage. Offsetting this there are positive prospects for new applications in tin chemicals, energy-related technologies such as lithium ion batteries and steel alloys. On balance technology change should be positive for tin use, making a net addition in the order of 15,000 tpy or 4 - 5% to world consumption over 5 to 10 years.

World production of refined tin has been fairly stable around 350,000 tonnes annually in recent years, dipping in 2008-2009 in line with the fall in world usage as a result of the global financial crisis. Meanwhile mine production, having peaked at some 325,000 tonnes in 2005, has been declining. The growing gap between mine and refined tin production, especially in China, has been filled by increased secondary refined tin production, which exceeded 60,000 tonnes for the first time in 2010. Tin mining is very concentrated geographically, with two-thirds or more of production coming from China and Indonesia. Production in both these countries has been declining or at best stable and these downward trends are forecast to continue.

ITRI and Greenfields Research have recently completed a two year project to build a 'Tin Production Costs Model' which helps to identify the parameters of the future tin price range.

The floor price of tin – identified by marginal cash operating costs - is rising rapidly, due mainly to falling grades at Indonesian alluvial operations, while the high capital costs of replacement hard-rock mining capacity also push up the long-term industry equilibrium price.

The report identifies a pipeline of some 60 new mine projects with a combined potential capacity of over 100,000 tpy of tin-in-concentrate which could come on stream in the next 5 to 10 years. These are mainly relatively low-grade primary deposits, including a number of poly-metallic projects whose economics are helped by the presence of valuable co-products, and also include several large tailings re-treatment projects.

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### **About the Tin Industry Review 2011:**

This third major study by ITRI since 2008 is based on our ongoing statistical work and network of contacts with tin producers and consumers. It draws heavily on primary sources, including data gathered from regular field research in tin producing countries and an annual very large direct sample survey of major consumers. It is produced by a team with many decades of experience in tin market analysis and applications technology.



### **About ITRI:**

ITRI is the world's foremost authority on tin, with almost 80 years' experience of research and development in tin applications. It is a membership based organisation representing major tin producers and smelters and is the premier source of tin related information. Its members account for two-thirds of world refined tin production.

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