

# The Reality: China is Geared-up to Manufacture Your Electric Vehicle in China

Over the past 25 years China has been progressively moving downstream, such that it now dominates not only the production of rare earths per se, but also through the rare earths embedded in magnets, drives, electric vehicles, computers, cell phones etc that are produced in China. We are aware that through *Made in China 2025* there is a goal to produce 50% of the global demand for electric vehicles (EVs) and hybrid vehicles by 2025; that is quite apart from the manufacture and export of wind turbines, MRIs, domestic appliances, computers etc. China has achieved its current dominance through quotas, taxes and lax environmental legislation; which has been rectified to a limited extent by the recent removal of export quotas and taxes, but the low cost of production due to lax enforcement of environmental legislation still favours China.

To reduce greenhouse gas emissions most of the rest of world (ROW) nations have put legislation in place that mandates an increasing percentage of automobile sales must be in the form of EVs and hybrids. Due to the China's dominant position (~90%) as the manufacturer of rare earth permanent magnets (REPMs) the vast majority of these ROW EVs and hybrids contain rare earths produced in China. Over the past 10-15 years, through the ready access to domestic rare earths at low prices, China has been able to *persuade* many automotive industry manufacturers to locate their manufacturing facilities in China. As a result of their success in this regard, coupled with the fact that China's rare earth separation capacity is approximately twice global demand, it is very difficult for new projects to obtain the necessary supply contracts from end users that would underwrite the funding for another ROW development independent of China.

Lynas is doing a great job; but we need more diversity.

The rare earth end users have been aware of this progressive domination by China of the rare earth value-add manufacturing chain for 3-4 years. Unfortunately, by and large, our industry leaders, like our politicians today, are not prepared to make a commitment that will not yield results for 3-5 years from which their successor may benefit! The focus on price without regard to the need for diversity for sustainability and regard for the environment (in China) has made China's task of attracting automotive industry manufacturing to China relatively easy. The impact of the migration of several million automotive industry jobs to China from the USA, Europe, and Asia (outside China) over the coming years is now being recognised.

China does not have to formally ban the export of rare earths to increase its monopoly of rare earth downstream manufacturing. In consultation with the appointed six State-Owned Enterprises (SOEs), who have been entrusted with owning and operating the rare earths industry, it could be decided that as China's rare earth resources are finite then their sale/use should be restricted to their domestic industry. Effectively this means China would sell rare earths to ROW embedded in original equipment; not as rare earth chemicals or metals. In other words, it could well be that within a few years the EV/hybrid that you purchase from a ROW brand will, more than likely, have been manufactured, wholly or in large part, in China.

It is time for our industry leaders and politicians to stop wringing their hands and take some action before there is a real crisis in terms of employment in the automotive industry and other rare earth end-user industries.

Think about the implications of the above if no action is taken; reduced employment opportunities for your children and grandchildren.

Professor Dudley J. Kingsnorth  
Western Australian School of Mines  
Industrial Minerals Company of Australia