New Caledonia (strictly Nouvelle Calédonie) is the most distant French overseas territory. Located in the southwest Pacific Ocean, this small archipelago (18,575 km$^2$) is about 1,200 km from the east coast of Australia and 1,600 km northwest of New Zealand. The name was given by the famous English navigator and explorer James Cook, who published the first map of New Caledonia in 1774. Caledonia was the Roman name for Scotland, and it is said that the coasts of New Caledonia reminded Cook of Scotland, of which his father was a native.

More than a third of the main island, Grande Terre, is formed of peridotite mountains, fragments of an immense ophiolitic sheet that was obducted onto the New Caledonian microcontinent during the Eocene. Rapid weathering, with a tropical climate, has covered this ultrabasic bedrock with a thick mantle of laterite, which has concentrated metals, particularly nickel, in its lower layers. New Caledonia presents the third largest nickel deposit in the world and, according to recent estimates, has more than 25% of the world’s nickel resources and about 40% of the world’s oxidized nickel ores.

New Caledonia’s history coincides with that of nickel. In 1864, a new nickel ore, composed of garnierite (Fig. 1), a green serpentine-group mineral, (Ni,Mg)$_3$Si$_2$O$_5$(OH)$_4$, was discovered in New Caledonia by a young geologist named Jules Garnier (1839–1904). Mining developed very rapidly after 1873. Nickel, cobalt, iron, and also gold, copper, coal and jade were exploited at several sites. Settlers and adventurers set out to search for ‘green gold’. The stories of the mining pioneers are exciting, punctuated by famous names like John Higginson, André Ballande, Lucien Bernheim, Henri Lafluer, and Georges Montagnat, strong personalities and families, mixing mining fortunes and political commitments. As a result of this effervescence, migratory movements generated by the mining industry were largely responsible for the ethnic diversity of the Caledonian population, along with the indigenous people, the Melanesian Kanak communities. The production and processing of nickel continued through successive periods of boom and crisis and is now a central issue in the decolonization process (which started in 1988) being negotiated by France in New Caledonia. Nowadays, the mining areas, spread over the whole of Grande Terre, comprise about 250,000 hectares of scattered concessions shared by French or international mining companies and a few medium-scale local firms.

In a mountainous environment with intense climatic events (Fig. 3), the damages caused by the old open-pit mines (before 1970’s) are significant (Fig. 2). Other effects of the mining industry for New Caledonia are the excessive polarisation of the economy and changes in the traditional way of life of the indigenous Kanak communities. For a long time, the nickel industry was of no benefit to them. The gradual entry of the Kanak into the political and economic arena took place gradually after the Second World War. Progressively, political emancipation and a willingness to share resources led to the involvement of the Kanak people in mining activities.
Increasing environmental awareness has paved the way for a new regulatory framework. Stakes are considerable, as nature and biodiversity are fabulous in New Caledonia. The terrestrial flora and fauna present unusual rates of endemism, particularly on ultrabasic soils. New Caledonia is ranked as one of the world’s hotspots for its exceptional and highly threatened biodiversity, and several parts of the New Caledonian reef and lagoon have been classified as UNESCO World Heritage sites since 2008. Steps are now being taken to restore mining sites by introducing endemic plants (Fig. 4).

If the recent developments and the implementation of large-scale metallurgical projects have positively and lastingly changed the country’s economy, it remains for policy-makers to preserve it for future generations by promoting more sustainable development. To face the challenges of a ‘better way of mining’, mining sector stakeholders created a dedicated resource agency devoted to applied research and technology development in New Caledonia’s mining industry. This public-interest group, the National Centre for Technological Research (CNRT), acts as an operational support facility for fundamental and applied research on New Caledonia’s mining sector, something that is vital to the whole industry.

Since its inception in 2007, CNRT has funded some 50 multidisciplinary research projects. Research has focused on three identified areas (technology, natural environment and societal issues) to fill ongoing gaps in fundamental knowledge, offer and adapt new technology that is relevant to the industry, develop methodology aids, manage knowledge transfer and upgrade practices on the ground. These actions by the CNRT have effectively added value to New Caledonian research, while keeping it permanently in touch with industry. The fact that CNRT takes up social challenges, funds innovative projects and caters for its membership’s concerns, makes it more than a research-funding facility. While it does endeavour to develop fundamental and applied research projects, it also strives to provide technical and economic solutions and foster knowledge-transfer between mining companies and other businesses and professionals in the industry.

New Caledonia has become something of a ‘laboratory’ for studying the complex interactions between mining and society, now an essential component for consideration in its economic development.