The Paris Agreements (COP21) plan to achieve global carbon neutrality by 2050. New infrastructures of energy production, storage, transport and use will have to be built, which consume large amounts of base and rarer mineral commodities. These raw materials require in turn large quantities of energy to be produced. Raw materials and energy issues are therefore inseparable issues that need to be addressed in a common framewok. The evolution towards low-carbon energies will have to take place in a context of increasing demand due to the rapid emergence of developing countries, increasing urbanization and the development of high technologies. The consumption of most metals and cement has doubled since the beginning of the 21st century and if the rise in consumption observed during the last 100 years continue (+3 to 5 %/year), more metals will have to be produced by 2050 than since the onset of humanity. In this anticipated tense context, two visions of the future raw materials supply have been proposed : some anticipate shortages resulting from the exhaustion of natural reserves in the course of the century, while others claim that technological change and exploitation of deeper or offshore resources as well as recycling will contribute to maintain the necessary increase in production at the level observed over a century. Dynamic modeling linking geological and economic constrains shows that there is no single solution. It allows one to better understand the coupling between reserves-primary production and recycling – price and cost of production - energy and to compare the raw materials intensities of different energy scenarios at the global scale. The results can be used to define the conditions of sustainable raw material supply and to evaluate the impact of different renewable technologies and energy mix evolutions.