

**Selected “high-tech materials” applications for innovative “environmental technologies”.**

<b>Problem</b>	<b>Solutions</b>	<b>Raw materials (application)</b>
Future Energy supply	Fuel cells	Platinum, palladium
		REE*
		Cobalt
	Hybrid cars	Samarium (permanent magnets)
		REE: Neodymium (high performance magnets)
		Silver (advanced electromotor generators)
		Platinum, palladium (catalysts)
	Alternative energies	Silicon, gallium (solar cells)
		Silver (solar cells, energy collection/transmission)
		Gold, silver (high performance mirrors)
Energy storage	Lithium, zinc, tantalum, cobalt (rechargeable batteries)	
Energy conservation	Advanced cooling technologies	REE
	New illuminants	REE, Indium, Gallium: LEDs, LCDs, OLED
	Energy saving tyres	Various industrial minerals
	Super alloys (high efficiency jet turbines)	Rhenium
Environmental protection	Emissions prevention	Platinum, palladium
	Emissions purification	Silver, REE
High precision machines	Nanotechnology	Silver, REE
IT limitations	Miniaturisation	Tantalum, ruthenium (MicroLab solutions)
	New IT solutions	Indium (processors)
		Wolfram (high performance steel hardware)
RFID (hand-held consumer electronics)	Indium, REE, silver	

- = Rare Earth Elements (Scandium, Yttrium and lanthanides).
- DG-ENTR selection based on data provided by RWTH Aachen, 2008; BRGM, 2008 and USGS (2008).

Source: Commission Staff Working Document accompanying the COM(2008) 699 The raw materials initiative – meeting our critical needs for growth and jobs in Europe