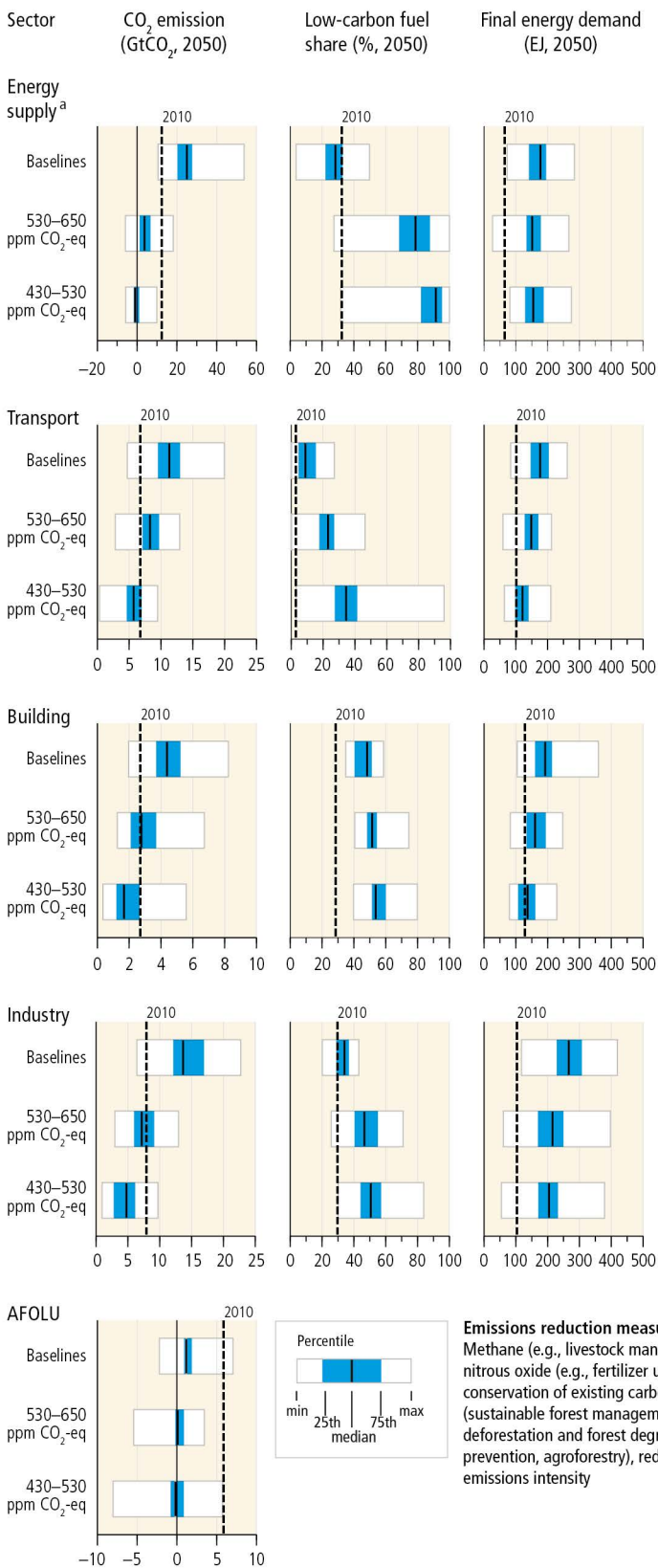


Sectoral CO₂ emissions and related energy system changes



Examples for sectoral mitigation measures

Key low-carbon energy options	Key energy saving options	Other options
<p>Renewables (wind, solar bioenergy, geothermal, hydro, etc.), nuclear, CCS, BECCS, fossil fuel switching</p>	<p>Energy efficiency improvements of energy supply technologies, improved transmission and distribution, CHP and cogeneration</p>	<p>Fugitive CH₄ emissions control</p>
<p>Fuel switching to low-carbon fuels (e.g., hydrogen/electricity from low-carbon sources), biofuels</p>	<p>Efficiency improvements (engines, vehicle design, appliances, lighter materials), modal shift (e.g., from LDVs to public transport or from aviation to HDVs to rail), eco-driving, improved freight logistics, journey avoidance, higher occupancy rates</p>	<p>Transport (infrastructure) planning, urban planning</p>
<p>Building integrated RES, fuel switching to low-carbon fuels (e.g., electricity from low-carbon sources, biofuels)</p>	<p>Device efficiency (heating/cooling systems, water heating, cooking, lighting, appliances), systemic efficiency (integrated design, low/zero energy buildings, district heating/cooling, CHP, smart meters/grids), behavioural and lifestyle changes (e.g., appliance use, thermostat setting, dwelling size)</p>	<p>Urban planning, building lifetime, durability of building components and appliances, low energy/GHG intensive construction and materials</p>
<p>Process emissions reductions, use of waste and CCS in industry, fuel switching among fossil fuels and switch to low-carbon energy (e.g., electricity) or biomass</p>	<p>Energy efficiency and BAT (e.g., furnace/boilers, steam systems, electric motors and control systems, (waste) heat exchanges, recycling), reduction of demand for goods, more intensive use of goods (e.g., improve durability or car sharing)</p>	<p>HFC replacement and leak repair, material efficiency (e.g., process innovation, re-using old materials, product design, etc.)</p>
<p>Emissions reduction measures: Methane (e.g., livestock management), nitrous oxide (e.g., fertilizer use), conservation of existing carbon pools (sustainable forest management, reduced deforestation and forest degradation, fire prevention, agroforestry), reduction in emissions intensity</p>	<p>Sequestration options: Increasing existing carbon pools (e.g., afforestation, reforestation, integrated systems, carbon sequestration in soils)</p>	<p>Substitution options: Use of biological products instead of fossil/GHG intensive products (e.g., bioenergy, insulation products)</p>
<p>Demand-side measures: Reduction of loss and waste of food, changes in human diets, use of long-lived wood products</p>		

