

What are the measures to cut CO₂ Emissions?

COP15 in Copenhagen made me confused, this meeting focused mostly on renewable energy and carbon sequestration solutions, yet outsiders worry over the unsure source of funding, and the insiders question the technology maturity. In a word, people are taking gloomy view on emission reduction. Apparently, we already have existing, low-cost and even negative-cost technology, which can actualize the large-scaled emission reduction in short time. It even can achieve the largest emission reduction by IPCC: 50% emission reduction based on 1990's level. The world total emission will be limited at 10.5billion tons. The key issue is recognizing the different levels.

The Global CO₂ Emissions Reduction Level Chart

Type	Level	Category	2020 Emissions Reduction Potentials		Practical Examples	Emissions Reduction Example		Cost
			Developed Country (tons)	Developing Country (tons)		Example	Reduction Rate	
Technology	№1	Eliminate technical oversight	5 bn	3 bn	Strengthen building insulation, e.g. thick insulation on walls, triple-paned windows and external solar shading	Freiburg Changsha	80%	Negative
	№2	Simple, popular and mature technology	2 bn	0.8 bn	<ul style="list-style-type: none"> • Energy efficient lighting • Inverter-controlled fan and water pump • Fresh air heat recovery • Heating household metering 	Many	<ul style="list-style-type: none"> • 80% • 60% • 70% • 40% 	Negative
	№3	New technology implementation	0.8 bn	1 bn	<ul style="list-style-type: none"> • Light cars • Light buildings • Intelligent grids 	Smart Changsha Boulder	<ul style="list-style-type: none"> • 40% • 70% • 30% 	<ul style="list-style-type: none"> • Negative • Negative • High
	№4	Waste recycle	0.5 bn	0.5 bn	<ul style="list-style-type: none"> • Cooling by exhaust from power generation • Recycle used paper, plastic & metal 	Many	<ul style="list-style-type: none"> • 60% • 60% 	Negative
	№5	To develop renewable energy	0.5 bn	0.2 bn	<ul style="list-style-type: none"> • Solar and wind energy • Geothermal that changes no geology • Biogas 	Many	Uncertain	<ul style="list-style-type: none"> • High • Negative • Negative
	№6	Carbon capture and sequestration	0.2 bn	0.2 bn	<ul style="list-style-type: none"> • Capture and pressurize it underground • Capture, plant catalysts, etc. 	Beijing	85%	High
Society	№1	Public transportation and bicycles	2 bn	1 bn	<ul style="list-style-type: none"> • Designated driveways • High tax on fuel • Additional tax on private cars 	Denmark and most European countries	70%	Negative
	№2	Compact communities	0.3 bn	1 bn	Place residence, work, consumption, education within one district; reduce roads and bridges	Many	Great	Negative
	№3	Transportation resource management	0.1 bn	0.3 bn	<ul style="list-style-type: none"> • Traffic congestion tax during rush hour • Use appropriate size of air plane for number of passengers 	•Singapore • USA	Larger	Negative
	№4	Organic farming & livestock breeding	0.2 bn	0.4 bn	<ul style="list-style-type: none"> • Reduce emissions from petroleum burning • Increase use of organic fertilizers and reduce methane emissions 	Report by UNFAO	Great	High in short term, negative in long term
	№5	Afforestation	0.1 bn	0.5 bn	Afforestation on uncultivated land, return the grain plots to forestry, tree planting in cities	Many	Great	Relatively low
	№6	Reduce long distance exchange	0.2 bn	0.1 bn	Reduce ocean-going and air transportation caused by shortages, which might be in conflict with WTO	Very few	Great	Relatively high
Individual Behavior	№1	Population control policy	0.1 bn	1 bn	One-child policy to control population within 8 bn; try to have population within 6 bn after 2050.	China	Great	Negative
	№2	Reduce unnecessary waste	0.1 bn	0.3 bn	<ul style="list-style-type: none"> • Moderate living area (30m²/ person) • Reduce air travel • Use low emissions vehicles 	Japan (31m ² / person)	Great	Negative
	№3	Life style adjustments	0.2 bn	0.1 bn	<ul style="list-style-type: none"> • Reduce consumption of frozen foods and packaged foods • Reduce dryer use and air clothes • Lights off anytime • Separate garbage • Repair and recycling 	Many	Larger	Negative
	№4	Restrain on indulgence	0.2 bn	0.1 bn	<ul style="list-style-type: none"> • Use public transportation and bicycles • Reduce indoor temp. by 2°C in winter, and increase indoor temp. by 2°C in summer • Purchase fewer newspapers 	Many	Larger	Negative
	№5	Eliminate waste	0.1 bn	0.1 bn	<ul style="list-style-type: none"> • No private jets or yachts • No luxury large-sized villas • No once-in-a-year clothes, etc. 	Few	Larger for some people	Negative
Weight of Annual CO ₂ Emissions Reductions			12.6 bn	10.6 bn	Global weight of annual CO ₂ emissions reduction = 23.2 bn			

Note: CO₂ emissions reduction figures in the chart are not 100% correct due to difficulty in quantifiable data collecting, but this should defeat the overall estimation.