MAR07-2006-002698

Abstract for an Invited Paper
for the MAR07 Meeting of
the American Physical Society

The future of fossil fuels

KLAUS LACKNER, Columbia University

With today's energy technology, the world faces a stark choice between economic growth and a healthy environment. The accumulation of CO_2 in the atmosphere must stop, while energy services to a growing world population striving for a high standard of living must improve. New technologies must eliminate CO_2 emissions. Only carbon capture and storage can maintain access to fossil carbon reserves that by themselves could satisfy energy demand for centuries. Technologies for CO_2 capture at power plants and other large sources already exist. A new generation of efficient, clean power plants could capture its CO_2 and deliver it for underground injection or mineral sequestration. However, the remaining CO_2 emissions from distributed sources are too large to be ignored. Either hydrogen or electricity need to substitute for carbonaceous energy carriers, or CO_2 emissions must be balanced out by capturing an equivalent amount of carbon from the environment. Biomass growth offers one such option; direct capture of CO_2 from the air provides another. Carbon capture and storage technologies can close the anthropogenic carbon cycle and, thus, provide one possible avenue to a world that is not limited by energy constraints.