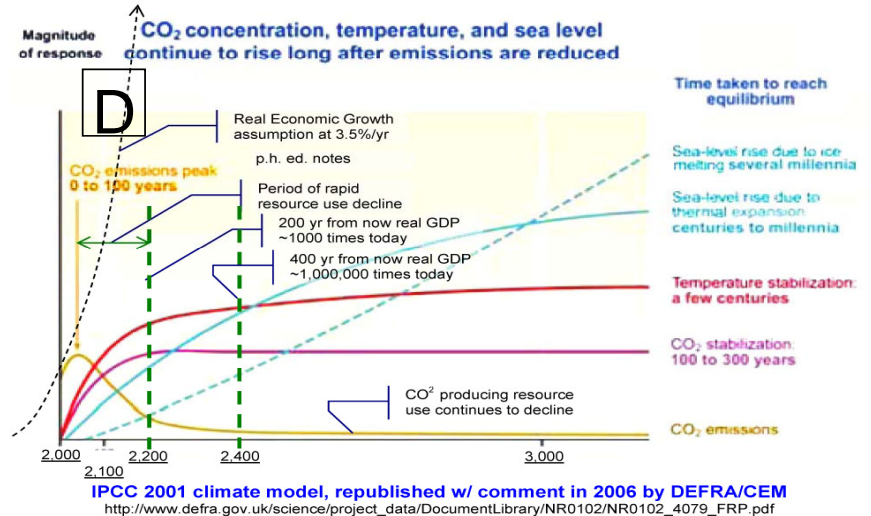
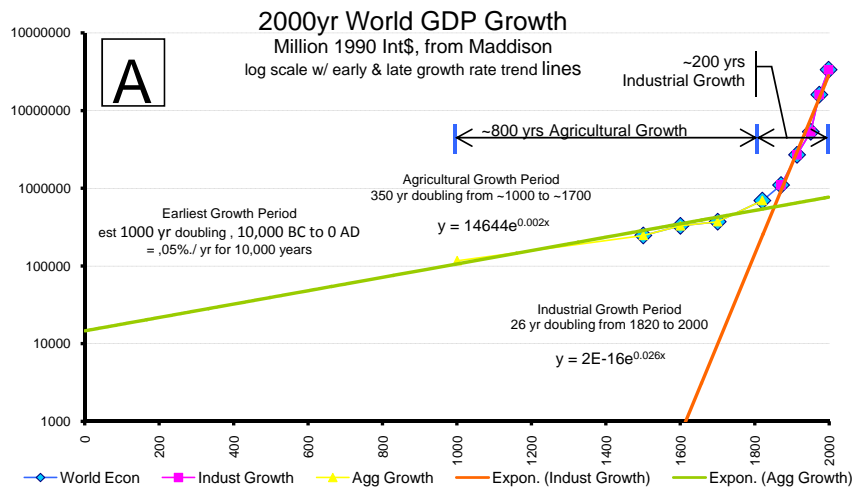
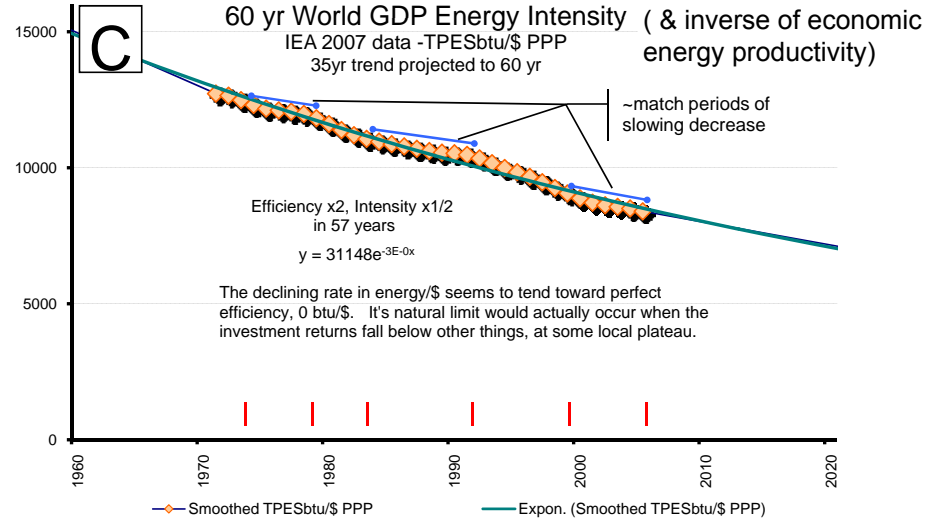
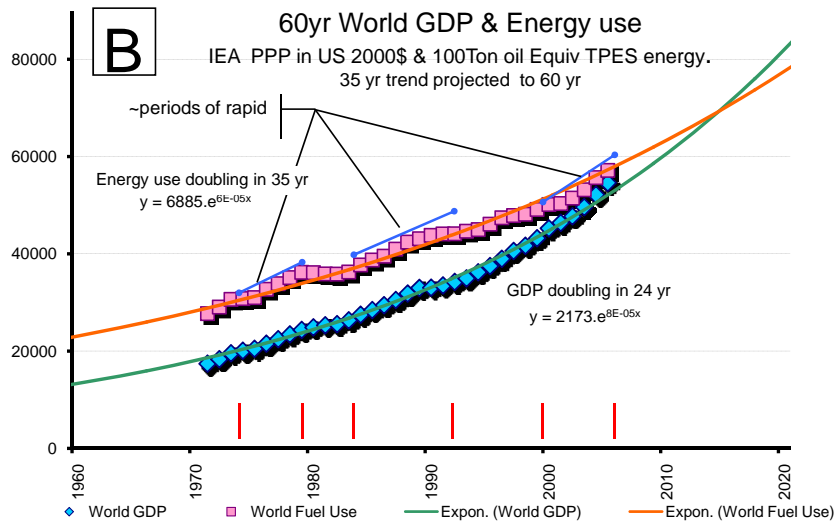


# World History, Past and Future



**After 2000 years like [A], with World GDP and energy growth now like [B] and energy/\$GDP improving like [C] Will the next 1000 years have growth with no effect like [D] as assumed in the OECD models?**

The story of modern economic growth begins with the ancient discovery of technology and its first 'killer app' agriculture, possibly as early as 10,000 BC, with systematic use beginning around 5,000 BC, and wealth doubling every ~1000 years, at ~.05%/yr. The first hard data shows an 800 year period of slow but steady exponential growth of agricultural society, at ~.2%/yr. from the early Middle Ages to the 'Enlightenment'. Around 1800 with modern science, engineering, industry, economics, trade and fossil fuel use, all dedicated to creating wealth at the most rapid rate possible, 3.5%/yr. It was foreseeable, but when it began to run into limits may be best dated by when people started noticing the problem, in the 1960's. Now with severe consequences emerging we need measures and methods.

Measurement of the total energy used to produce wealth only began in the 1970's, and [C] shows the steady improvement, at ~40% of the rate of economic growth. The main reason for continual reduction in the energy intensity of wealth is cost competition. Whoever delivers the same value for less energy makes the sale, assuring work its done for the least energy possible. It's a constraint on energy saving options as products are always delivered for the least cost. Improvement seems to speed up when growth slows down though. Since growth is faster, though, efficiency does not decrease impacts. The long range global warming plan [D] uses OECD economic models of 'decoupling' in which reducing energy the intensity of generating wealth breaks from the curve and gets ever easier and faster, possibly a mistake.