Mitigation of global warming and transitioning to a green and sustainable world are counteracted by a number of barriers and dilemmas. The paper analyzes a number of these barriers and dilemmas in order to highlight efficient strategies and solutions for a sustainable development. The dilemmas include the following examples: • There are limits to economic and material growth in a finite globe, but most governments in industrial countries are calling for more growth in a period of financial crisis. • More equity is required to stem the desire for growth, but inequity is increasing. • The increase in global temperature should stay below two degrees centigrade in order to avoid irreversible consequences, but the present path points to four degrees or more. • At least 50% of known reserves of fossil fuels must remain underground in order to avoid a temperature increase higher than two degrees, but a number of industrial countries are now promoting exploitation of new fossil sources like shale gas and oil from tar sand. • Reversing population growth facilitates sustainable development, but most governments of industrial nations appear to be more concerned about decreases in their population.