



Examine the relationship between energy consumption and environmental sustainability. [15 marks]

Introduction

Energy consumption typically increases with increasing levels of development and living standards. As countries develop they require increasing levels of energy consumption for industry, infrastructure (street lighting) and on a domestic scale for increased appliances in houses (tvs, washing machines, dishwashers, cars etc).

Environmental sustainability is the concept that resources should be used at a rate at which they can be replaced and so are not depleted for future generations and the waste that is produced should be able to be absorbed by the earth rather than polluting it.

Main

In general there is an inverse relationship between energy consumption and biodiversity. Historically most of the energy that humans have produced and consumed has come from the burning of fossil fuels. These are non-renewable and so any use of them is depleting them for future generations and so is not sustainable. Their combustion also released large quantities of air pollution which has exceeded the planets capacity to absorb it.

The worlds more developed countries such as the USA, Germany and the UK are some of the highest per capita consumers of energy and polluters on the planet in terms of energy consumption This is due to the levels of energy that they consume but also the types of energy they consume. High car ownership, domestic heating & air conditioning & high levels of air travel all significantly contribute.

Technological advances are changing the relationship between energy consumption and sustainability. The development and deployment of renewable energy production is making consumption more sustainable. Wind farms, HEP and solar are now common in many countries and these represent a much more sustainable energy policy. There is the initial use of resources to establish/build them but there after the energy produced is relatively sustainable. If this trend can continue, in the future the inverse relationship may no longer exist.

Unfortunately the new renewable technologies are more expensive than coal & oil combustion and it is mainly the developed countries that are adopting them. Since they are the largest consumers this makes sense and should create significant increases in sustainability. The drawback is that it is some of the developing countries that have the largest populations and therefore the largest potential energy consumption, in this sense it is essential that these countries adopt more sustainable energy production if the relationship is to change on a global scale.