Agro eco regions in india essay

Based on the current trend, there will be a total to about 9. 2 billion people on the earth by mid-century, fuelled by the birth of 220000 children a day and falling mortality rates (Population Institute, 2014). This estimate raises questions about the future of humanity and the planet we inhabit.

The debate about an optimal size for human population is one that has waged over the years. The question is fundamentally about sustainability; whether the resources that drive our lives can be sustained indefinitely can support humanity in the long term.

We operate on the assumption that, on a finite planet, nothing physical can grow indefinitely. As our population grows, the fewer resources there are for each of us and members of other species with which we share the planet. Because of the finite nature of the resources and the ability of our planet to provide us infinite resources, we need to, carefully consider some aspects of our existence, like our consumption, acceptable living standards, what technologies make best use of the resources available and explore ways to preserve the ecosystems on which we depend.

The primary concern egarding rapid global population growth includes aggravated poverty, starvation, water scarcity, political & social instability and depletion of natural resources.

How will we feed 9. 2 billion people when high food prices and the global economic recession have pushed 100 million more people than last year into chronic hunger and poverty around 1 billion people starve every day. Factors like climate change, increasing energy costs, and water scarcity will make it harder to grow the crops necessary to feed an expanding population.

Increasing soil erosion and the loss of arm land will also add to the challenge of boosting food production. Water scarcity is also a growing concern as we see lakes are going dry and underground water aquifers are depleting rapidly. Water sources are not renewable.

Since the time we know, earth has held the same amount of water, in different forms, but the total amount has remained the same. Only 2. 5% of water available is fresh and available for human consumption. A large amount of this fresh water is used in agriculture and industries.

With climate change, dry regions will be more susceptible to to rought, wetter areas more susceptible to flooding and the summer runoff from polar snowcaps and glaciers will diminish. As food, water, and other resources are strained by the mounting demands of a growing population, there will be an increase in the size of environmental refugees and so will the potential for conflict and civil war.

The debate surrounding earth’s growing population has been going on for decades and there are several perspectives on ‘ optimal’ population levels and growth, based on debate supported by well-defined arguments from various interest groups.

Here we ill have a look at the question of sustainable populationn mainly in relation to food and water, from the Neo-Malthusian and Cornucopian perspectives. Water Scarcity: It is estimated that by 2025, around 35% of the world’s population would live in regions subject to severe water stress, which highlights the disparity between available supplies of fresh water and the population’s growing requirements (Hinrichsen et al. 1998). The neo-

Malthusian position argues that there is finite availabili ty in the water supply.

The Falkenmark indicator is the most widely used measure of water stress.

It is defined as the volume of renewable water resources per capita, or the ratio of an effectively unalterable measure of a natural resource endowment and the size of a country’s population. (Falkenmark et al. 1989) This is clearly a neo-Malthusian form of anxiety about population growth in the context of water scarcity as it accounts only of abstractable water (i. e. flows in rivers, measured flowing water), and neglects the aspects like rain-fed agriculture.

It also fails to account for water stocks like fresh water lakes, use of rain water, re-using of water from polluted or transformed water (Satterthwaite & McGranahan, 2003).

The cornucopian perspective takes into account various aspects like demand for water (which varies by region, climate, type agriculture and industry it is used in) availability of water (takes into account not Just flowing water, but also the use of rain water and other forms of water that can be used in industries and for agriculture. It is a fact that the per-capita water withdrawals began to decline in 1985, despite continued population growth, in many countries. For eg, the following fgure shows actual vs projected withdrawals for the period between 1960 to 2000, in the USA. Figure 1.

Actual water global withdrawals, 1960-2000, and past forecasts of year 2000 water withdrawal.

(Source: P. Gleick, The World’s Water, 1998 Island Press). The reduction in water withdrawals is due to the considerable improvements in water use over this time period. Countries that experience water stress can overcome their limitations with resources and meet their populations’ needs by replacing products (particularly grain), where production requires large quantities of water, with less water intensive crops (Bouwer, 2000).

Technological innovations can help us use water more efficiently for eg.

Drip irrigation, methods such as water harvesting or collecting runoff or rain harvesting. It is believed in these circles that the threat to water scarcity can be dealt with improving distribution and efficiency, and tapping underused social resources (media and education). We have seen this sort of reduction in household water usage, in different parts of the world.

Technological innovations also have helped us improve industrial processes, which use significantly less water than before, for example, organic cotton needs less water during production, compared to wool and cashmere.

Food Scarcity: Neo- Malthusian perspective argues that the earth’s population has the potential to outstrip agricultural production. It points to the food inequality where developing regions with higher population growth rates has lower agriculture production growth rates, whereas the developed nations will present an inverse relationship (Pimentel, 1994). The proponents of this perspective also note that the fish and marine life is diminishing in the oceans. The amount of farmland per person is steadily declining and so is the productivity from the soil.

Global warming is expected to interfere with ood supplies in unpredictable ways.

The Green Revolution, which enabled countries like India to become self-sufficient with food, has slowed. Grain production per hectare has risen at only 1 percent since 1990 after rising at twice that rate for the previous 40 years. Genetically modified food and crops may be good, but it might a c e biodiversity adversely. Cornucopian proponents believe that research and science will enable us to feed more billions. They point to the fact that food production is still growing, and material prices are falling, indicating ever increasing supply.

According to their point of view, malnutrition and starvation reflect political incompetence or war, not problems with the food supply.

Even with apparent slowdowns in agricultural productionstatistics from the United Nations Development Program's 1999 Human Development Report show that food production per capita increased 25% during 1990-1997. (22)Technology and the information revolution allow us to do more with fewer resources. One solution put forward towards food production in sub-Saharan countries is the introduction of native including its own species of rice, fonio, pearl millet, sorghum and several dozen ore.

African grains have been found to be hardy, needs less amount of water, and they are more heat and drought tolerant than other common cereals.

Techniques like Polyculture (Dewar, 2007) (more than one species of crops on a piece of land) and intercopping (growing a variety of plants with no

distinct row arrangement, a bio- mimicry technique that resembles natural ecosystems in prairies.) is considered to be the road ahead to deal with population growth. We also can look at increased ability of biotechnology to modify characteristics of plants to deal with food security n the scenario of climate change.

There is also the possibility of using genetically modified crops to meet the population needs. Both the perspectives offer valuable insight into the problems and opportunities that arise from population growth.

However, population growth is not a problem that needs to be considered in isolation, in a sustainability context. The other side of the coin is consumption. Countries with large population and small ecological footprints can benefit the most from small changes that can be adapted on a large scale basis