

**Course Name - Bachelor of Population Studies**

**Year - III**

**Paper Name - Population, Environment and Development**

**Paper No - VII**

**Lecture No - 1**

**Lecture Title - Population and Issues of Aged Population**

### **Introduction**

Hello Viewers, in today's lecture we will discuss about the Population and Issues of Aged Population

“Whatever the circumstances of older people, all are entitled to live in an environment that enhances their capabilities.”

Today for the first time in history most people can expect to live into their sixties and beyond. These changes are dramatic. These extra years of life and demographic shifts have profound implications for each of us, as well as for the societies we live in.

### **The Concept of Aging**

Population ageing refers to shifts in the age distribution of the population in which the relative share of persons at older age increases, and the share at younger age decrease. This proportional redistribution is distinct from absolute increase in the number of older persons that can occur even if their share does not increase. These changes that constitute and influence aging are complex. At a biological level, ageing is associated with the gradual accumulation of a wide variety of molecular and cellular damage. Overtime, this damage leads to a gradual decrease in physiological reserves, an increased risk of many diseases, and a general decline in the capacity of the individual. Ultimately, it will result into death. Beyond these biological losses, older age frequently involves other

significant changes. These include the shifts in roles and social positions, and the need to deal with loss of close relationship. In developing a public health response to ageing, it is thus important not just to consider approaches that ameliorate the losses associated with older age but also those that reinforce recovery, adaption and psychological growth.

**Table 1: Trends in the percentage of population aged 60 years and older 1950-2000**

<b>YEARS</b>	<b>WORLD</b>	<b>LESS DEVELOPED</b>	<b>LEAST DEVELOPED</b>	<b>AFRICA</b>	<b>ASIA</b>	<b>LATIN AMERICA AND CARIBBEAN</b>
<b>1950</b>	<b>8.1</b>	<b>6.4</b>	<b>5.4</b>	<b>5.1</b>	<b>6.7</b>	<b>5.9</b>
<b>1955</b>	<b>8.1</b>	<b>6.3</b>	<b>5.2</b>	<b>5.0</b>	<b>6.7</b>	<b>6.1</b>
<b>1960</b>	<b>8.1</b>	<b>6.2</b>	<b>5.1</b>	<b>4.9</b>	<b>6.5</b>	<b>6.2</b>
<b>1965</b>	<b>8.2</b>	<b>6.1</b>	<b>5.0</b>	<b>4.9</b>	<b>6.4</b>	<b>6.3</b>
<b>1970</b>	<b>8.4</b>	<b>6.1</b>	<b>5.1</b>	<b>5.0</b>	<b>6.5</b>	<b>6.4</b>
<b>1975</b>	<b>8.5</b>	<b>6.1</b>	<b>5.0</b>	<b>4.9</b>	<b>6.6</b>	<b>6.5</b>
<b>1980</b>	<b>8.6</b>	<b>6.3</b>	<b>5.0</b>	<b>5.0</b>	<b>6.8</b>	<b>6.6</b>
<b>1985</b>	<b>8.8</b>	<b>6.6</b>	<b>4.9</b>	<b>4.9</b>	<b>7.2</b>	<b>6.8</b>
<b>1990</b>	<b>9.2</b>	<b>6.9</b>	<b>4.9</b>	<b>4.9</b>	<b>7.6</b>	<b>7.1</b>
<b>1995</b>	<b>9.6</b>	<b>7.3</b>	<b>4.8</b>	<b>4.9</b>	<b>8.2</b>	<b>7.4</b>
<b>2000</b>	<b>10</b>	<b>7.7</b>	<b>4.9</b>	<b>5.0</b>	<b>8.8</b>	<b>7.9</b>

**Population trends in developing countries, Ernestina Coast, LSE**

The table shows the trends in the percentage of population 60 years and older from 1950 to 2000 across world and different regions .For world this percentage increased from 8 to 10 percent across this period. This percentage also increased for less developed regions from 6.4 % to 7.7 % .The percentage of old people

remained consistent for Africa but has increased from 6.7 to 8.8 in Asia .Latin America and Caribbean also showed an increase in this percentage.

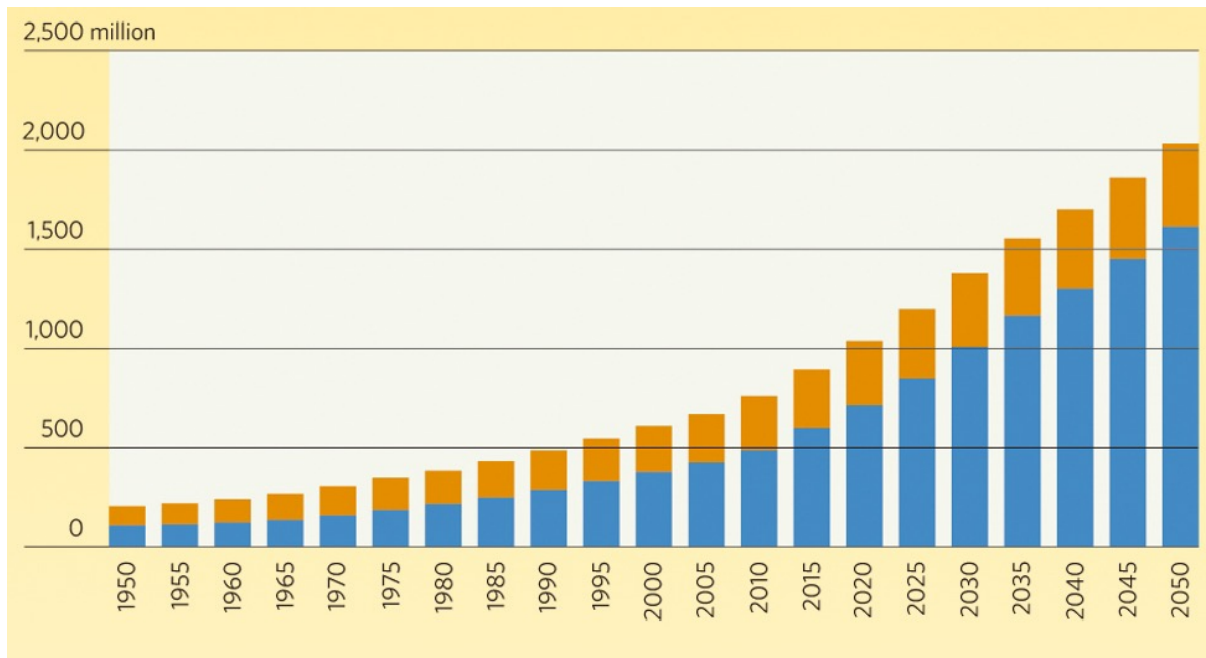
### **Global Aging Trends**

The number of older persons has tripled over the last 50 years and will more than triple again over the next 50 years. In 1950, there were 205 million persons aged 60 or over throughout the world. At that time, only 3 countries had more than 10 million people who were 60 or older that is China (42 million), India (20 million), and the United States of America (20 million). Fifty years later, the number of persons aged 60 or over increased about three times to 606 million. In 2000, the number of countries with more than 10 million people aged 60 or over increased to 12, including 5 with more than 20 million older people. Over the first half of the current century, the global population 60 or over is projected to expand by more than three times to reach nearly 2 billion in 2050. The older population is growing faster than the total population in practically all regions of the world and the differences in growth rates are increasing. More developed regions have relatively high proportions of older persons. The more developed countries are in general in a more advanced stage of the demographic transition. The proportions of older persons there are projected to remain significantly higher than the proportions in the less developed regions.. Although the regional differences in the percentage of older people are expected to decrease over the next 50 years, the difference will remain large through mid-century. By 2050, 1 in every 3 persons living in the more developed regions is likely to be 60 or older and about 1 in every 4 is projected to be 65 or older. In the less developed regions, nearly 1 in every 5 is projected to be over 60, while 1 in every 7 is projected to be over 65.

In the less developed regions, the population aged 60 or over increased at the rate of 3.7% annually in the period 2010-2015 and is projected to increase by

2.9% annually before 2050 and 0.9% annually between 2050 and 2100. Its numbers is expected to rise from 554 million in 2013 to 1.6 billion in 2050. By 2050 their proportion of older persons is projected to reach 19%. After 2050, population aging in the less developed regions will continue but at a slower pace. It is also expected that there will be a rapid increase in the persons aged 80 years and over from 63 million in 2013 to 268 million in 2050. The old age dependency burden started to increase from mid 90s onwards for Latin America, Caribbean, and Asia. The major change anticipated for the more developed regions is the transfer of population from working ages to ages 65 and over. The old age dependency ratio will almost double, increasing from 22.6 persons aged 65 and over per 100 persons of working age in 2005 to an expected value of 44.4 in 2050. In 1950, the median age of the more developed nations was only 29.0 years but it is projected to increase more than 45 years by 2050. Europe, which had already reached a median age of 39 years in 2005, is expected to increase to 47.1 years in 2050.

Diagram 1 : Number of people aged 60 or over in the world, developed and developing countries 1950-2050



UNDESA, World population ageing, 2011

The diagram 1 shows the trends in the number of old people. The yellow color depicts the trends for developed nations and blue color indicates the trends for developing nations. These are the projections till 2050. The number of old is seen to be increasing rapidly in developing regions. For the developed nations the share is proportionally smaller though the numbers are increasing there as well. In 1950, the number of old people is almost same in developed and developing nations. The gap becomes evident in coming years where the number of old is seen to consistently rise in the developing regions.

### Challenges of Aged Population

Population aging generates many challenges and sparks concerns about the pace of future economic growth, the operation and financial integrity of health care and pension systems, and the well-being of the elderly.

### Decline in the Labour Force Participation Among Elderly

Older people today are significantly less likely to participate in the labour force than they were in the past. Over the past 50 years, labour force participation of persons aged 65 or over declined by more than 40 per cent at the global level. In 1950, about 1 in every 3 persons aged 65 or over was in the labour force. In 2000, this ratio decreased to just less than 1 in 5. Economic prosperity depends crucially on the size and quality of the workforce. As people pass through their 50s and beyond, their likelihood of participating in the labour force tends to decrease. The stock of assets could also decrease as the elderly increasingly rely on their savings to finance their spending. The combination of possible labour market tightening and dissaving raises concerns that the steeply aging countries will experience slower economic growth. Some countries may even face the shrinkage of their economics.

### **Illiteracy**

Although illiteracy among older persons has consistently declined in most of the developed regions over the last two decades, it still remains generally high. In 1980, the illiteracy rate among women aged 60 or more was 22 percentage points higher than among men at the same age. By 2000, this difference increased to 28 percentage points as the aggregate rate decreased to 69 per cent among older women and to 41 per cent among older men.

### **Decline in Working Age Population**

A rapidly aging population means there are fewer working age people in the economy. This leads to a supply shortage of qualified workers, making it more difficult for businesses to fill in demand roles. An economy that cannot fill in demand occupation faces adverse consequences, including declining productivity, higher labour costs, delayed business expansion and reduced international competitiveness. In some instances, a supply shortage may push up

wages, thereby causing wage inflation and creating a vicious cycle of price/wage spiral.

### **Increase in Health Care Costs**

Given that demand for health care rises with age, countries with rapidly aging populations must allocate more money and resources to their health care systems. With health care spending as a share of gross domestic product (GDP) already high in most advanced economics, it is difficult to increase spending while ensuring care improves and other social needs do not deteriorate in the case of publicly funded or government administered health care systems.

### **Increase in Dependency Ratio**

Countries with large elderly populations depends on smaller pools of workers in which to collect taxes to pay for higher health costs, pension benefits and other publicly funded programs. This is becoming more common in advanced economics where retirees live on fixed incomes with much smaller tax brackets than workers. The combination of lower tax revenue and higher spending commitments on health care, pension and other benefits is a major concern for advanced industrialized nations.

### **Undesirable Changes to the Economy**

An economy with a significant share of seniors and retirees has different demand drivers than an economy with a higher birth rate and a larger working age population. For example rapidly aging populations tend to have greater demands for health care services and retirement homes. Although this is not necessarily negative, economics may face challenges transitioning to markets that are increasingly driven by goods and services linked to older people.

### **Non Communication Diseases**

Population aging also signals the advent of tremendous challenge of a tidal wave of non communicable disease (NCDs). NCDs are currently responsible for roughly 60% of all deaths and nearly half of the loss of actual and effective life years due to disability and death. They range from a significant to a dominant cause of disability and death in high and low income countries in every world region, and among people who are classified as old and not old. The most important NCDs are cardiovascular disease, cancer, diabetes, and chronic respiratory disease.

### **Financial Issues**

In Recent decades, much attention has been given to the potential effect of population aging on asset prices. Specifically, there have been concerns that asset prices will fall as the elderly sell off their assets. Some analysts predicted asset meltdowns in housing markets due to decreased demand from aging members of the post-World War two baby boom generations.

### **Methods to overcome Challenges**

#### **Need To Modify Business Practices.**

To adapt and possibly benefit from an increasingly aged world, businesses must shift organizational structures, and practices. As a start, attitudes need to change. Older workers are sometimes seen as a burden, with younger candidates preferred in recruitment decisions. But in an economy where knowledge rules, the experience of older workers grows in value, and they can serve as role models for younger workers.

#### **Stretching the Workforce and Working Hours**

Policy makers have to focus on raising the participation rates of women and older people. The instruments to achieve a higher participation rate of the “young” seniors are manifold. Among them, the most important are to correct

the inducement of early payments, extensive job dismissal protection as well as seniority principles. In addition, the participation rate for women must be raised by implementing new child -minding arrangements and working times could also be increased. Fewer workers have to work more hours in order to compensate for the negative demographic effect on potential growth. This implies among other things, a higher share of women in the workplace or greater numbers in part time jobs switching over to full time positions. This also requires an increase in collectively agreed weekly working times.

### **Migration will help, but Will not reverse the Shift**

Economics with a shrinking and aging population obviously need selective migration and thus a sensible immigration policy. Immigration cannot reverse the unfavorable demographic shift, at least not within reasonable, socially acceptable parameters. Immigrations can, however, help to slow down the process of ageing and shrinking of the population and mitigate its negative economic consequences. The younger, more flexible and better qualified the immigrants, the more favorable the outcome would be .Migration policy should not stop at identifying suitable immigrants ,but should also help them integrate well into society. It is of great importance for the host countries to promote harmonious relations.

### **Making Up for a Decrease in Quantity by an Increase in Quality**

The Economic success of a country and the creativity and productivity of its citizens are only partly question of population size and age. More important are their knowledge and skills as well as their work ethic. The decisive step will be to shorten the duration of school education and to increase competition between educational institutions. Universities should be granted autonomy in matters of personnel and fees.

### **Promoting Lifelong Learning, Mobility and Flexibility**

School education will no longer suffice as the vocational preparation for one's whole life. Students and workers have to understand that their education and training are their most important investment in life and much bigger than a car or a flat which will keep them employable in an ever faster changing environment. Lifelong learning is no longer a choice but a must for workers of the future. However, the onus is not only on workers, management principles and systems have to change too.

### **Redesigning Work, Retirement and Pensions**

It is important to disentangle incentives for leaving the workforce, as well as to ensure a closer alignment between public and private pension programs. For many developing nations that are now designing pension programs that have public as well as private components, there are opportunities to learn from more developed nation's experiences.

### **Improved Transfer System**

The well being of older persons often depends on intricate systems of pecuniary and non pecuniary transfers associated with individual savings, family behavior and as in the case of many social security systems, transfers from current workers to retired persons. Although considerable progress has been made in understanding these transfer systems, gaps in our understanding remain. Particularly in need of study are interrelationships across systems and a clearer picture of how changes in one system such as public pensions affect others.

### **Health Reforms**

The health of elderly populations is a critical issue and influences outcomes in all of the other policy areas affected by aging. Evidence shows that disability is declining across countries, which would suggest that more elderly people are leading longer and healthier lives. While all countries must address the

changing health needs of older citizens, the diversity of national health care systems points to the value of comparable cross national data on health care quality and outcomes which to date have largely been lacking.

## **Conclusion**

Several areas in the community will benefit from the surge in numbers of retirees who are active and healthy, independent and with time on their hands. They play an important role in supporting and maintaining informal social networks thus binding communities and families within communities. Far from being net receivers of help and support, older people are in fact net providers, at least up to the age of 75 years. They provide childcare, financial practical and emotional support to family including helping people outside the household with the tasks of daily living.

This is all for today's lecturer Thank You. Next Time we will meet again to discuss another interesting topic. Till then good-bye. Take care.

## **Course Name - Bachelor of Population Studies**

**Year - IIIrd**

**Paper Name - Population, Environment and Development**

**Paper No. VII**

**Lecture No. 10**

**Lecture Title : Climate-related Disasters and Displacement**

### **Introduction**

It took one of the world's deadliest disasters, the tsunami of 2004, to bring home to governments and policymakers around the world the need to develop more effective responses to natural disasters and the people uprooted by them. Five million people were displaced and some 250,000 killed in 11 different countries in Asia and Africa. Even today, six years later, reconstruction efforts are ongoing, while the impact on infrastructure, clean water, sanitation, and livelihoods is expected to last for decades. The tsunami was caused by an earthquake, not climate change, but floods, hurricanes, cyclones, landslides and other "sudden-onset" disasters are expected to become more frequent and severe in the future as a result of climate change. Over the past two decades, the number of recorded disasters has doubled from approximately 200 to over 400 per year; and nine out of 10 disasters have been climate-related. The total number of people affected by natural disasters over the past decade has reportedly tripled to two billion people, an average of more than 200 million people directly affected each year. The increase in natural disasters is expected to produce massive displacement that will change the world's perception of forcibly displaced people, currently thought of primarily as refugees and internally displaced people (IDPs) uprooted by persecution and conflict. The vast majority will be displaced inside their countries, although significant numbers will cross internationally recognized borders, especially when island States become

submerged. Although estimates of the numbers of those displaced will vary a 2007 Christian Aid report estimates that between the year 2007 and 2050, “climate change-related phenomena” (floods, hurricanes, drought) will “permanently” displace 250 million people.

The United Nations and the Internal Displacement Monitoring Centre (IDMC) find that while they cannot predict whether the people involved will be permanently or temporarily displaced, in 2008 alone some 36 million people were uprooted by sudden-onset natural disasters, including 20 million displaced by disasters associated with climate change. If one were to add to these numbers those compelled to leave their homes by longer-term environmental problems (e.g. drought, desertification, rising sea levels, extreme temperatures, deforestation, land degradation), known as “slow-onset” disasters, the total for 2008 would undoubtedly be tens of millions more. The UN/IDMC report cites a figure of 26.5 million drought-affected persons in 2008, but no overall estimate exists of those displaced by slow-onset disasters. Traditionally, migration from such disasters has been perceived as ‘voluntary’, but increasingly such movement is also being seen as, forced. Indeed, long-standing international definitions of forced migrants and the international systems of protection for them may have to expand to accommodate the many different patterns of migration emerging. Distinctions between disaster displaced and conflict displaced people may also blur. Climate change will likely fuel armed conflicts, some between States competing for scarce resources, others within States among different ethnic and tribal groups. Darfur, Sudan is but one recent example of how ecological degradation and water scarcity can ignite tensions between competing groups and then turn genocidal when exacerbated by the manipulations and irresponsible policies of a government like Sudan 's. UN Secretary-General Ban Ki-moon has warned that “violence in Somalia grows from a similarly volatile mix of food and water insecurity. So do the troubles in Ivory Coast and Burkina Faso.”

Environmental disasters are clearly challenging many of the long-standing conceptual, legal and organizational means of dealing with displacement. The international protection regimes set up for refugees and more recently for internally displaced persons either exclude or fail to focus on environmentally displaced persons. Whether these displaced within their own countries by slow-onset disasters can be said to fit under the rubric of “internally displaced person” and

whether those forced to cross borders for environmental reasons will fit under the term “refugee or voluntary migrant” are open questions. The possible need for new terminology and systems of protection for those displaced by environmental disasters thus requires examination. Protection of the human rights of those uprooted by disaster has received far too little attention. As Jan Egeland, former UN Under-Secretary-General for Humanitarian Affairs and Walter Kalin, Representative of the Secretary-General on the Human Rights of Internally Displaced Persons (RSG), have aptly observed, while the international response to natural disasters “has become even swifter and more sophisticated” in the rush to deliver life-saving aid, “little attention” has been paid “to the rights of those displaced people.” Efforts underway have focused on developing preventive and risk reduction strategies, improving rescue actions, accelerating the delivery of relief, and undertaking initiatives to “build back better” in recovery and reconstruction processes. Identifying the human rights concerns of disaster victims and how best to provide them with protection have received less focus. Yet recent disasters have exposed: Unequal access to food and supplies, in particular by women; discrimination in provision of aid on ethnic, caste, racial, religious or gender grounds; evacuation plans that discriminate against poor and other vulnerable people; sexual and gender-based violence, especially in camps and shelters; exploitation, trafficking and military recruitment of separated children; neglect and exploitation of the elderly, poor, disabled and sick; forced relocations of people to unsafe areas with limited economic opportunity; lack of safety in areas of displacement, return or resettlement; and inequities in addressing employment, property and compensation questions.

### **Linking Climate Change and Displacement**

There are major methodological challenges involved in establishing the link between climate change and displacement. People leave their homes for a complex set of reasons, and there is ‘multi-causality’ even in forced migration. Nevertheless, while examining some of the current and predicted effects of climate change, a number of researchers and international institutions have arrived at the conclusion that climate change will probably contribute to ‘major forced displacements’ over time. One major impact of climate change is the increased frequency and severity of certain hazards, as well as changes in their time frame and location. Hazards can combine with human vulnerability to produce disasters,

such as floods and droughts. In other words, there is a crucial human element involved in the occurrence of ‘natural’ disasters. We can call them climate-related disasters since climate change can influence their frequency, severity, time, and location; storms, floods, and droughts all belong to this category. All natural disasters can potentially result in forced displacement. The number of recorded natural disasters has doubled from approximately 200 to over 400 per year over the past two decades. The majority are climate-related disasters. According to the UN Emergency Relief Coordinator, this situation of more frequent and severe disasters may be ‘the new normal’. Although there is broad acceptance that voluntary and forced migration is likely to increase as a consequence of climate change, it is difficult to estimate the scale. In 2009, OCHA worked with the Internal Displacement Monitoring Centre of the NRC in a first attempt to assess the degree of displacement due to sudden onset natural disasters. They found that as many as thirty-six million people had been displaced by such disasters in the year 2008, over twenty million by climate-related sudden-onset disasters alone. Estimating displacement due to slow-onset disasters such as drought and sea-level rise is much more challenging because it has a more complex set of causes and because there is a continuum between voluntary and forced migration. Nevertheless, the numbers quoted above give an indication of the scale of displacement caused by climate-related disasters today. While offering its own estimate, the Stern Reviews points out that the number of displaced people will ‘depend on the level of investment, planning and resources’. In the near future at least, displacement is likely to go on being mostly internal, and in some cases regional. All countries will eventually be affected by climate change, but some are more immediately and directly exposed than others. In its report, the IPCC highlights dangers associated with the Arctic, Africa, small islands, and the Asian and African mega-deltas, while recognizing that ‘within other areas, even those with higher incomes, some people (such as the poor, young children and the elderly) can be particularly at risk, and also some areas and some activities’. Much sudden-onset, natural-disaster-induced displacement is temporary if there is effective rehabilitation and recovery, but some displacement become permanent. This research on climate change, disasters, and displacement raises central questions about the need to protect displaced individuals and entire populations. The protection needs of people displaced by natural disasters have not yet been fully explored and understood. However, one of the main ideas behind the 1998 UN Guiding Principles on Internal Displacement

was that, regardless of the reason of displacement, the people concerned often have a particular set of needs. While recognizing that much work is needed to identify protection needs, we therefore feel justified in examining more generally the current protection regime, identifying gaps and looking at possible solutions for filling those gaps in the context of climate change.

### **Filling the Gap in Cross-Border Displacement Caused by Natural Disaster**

Amending the 1951 Convention relating to the Status of Refugees since many of the people displaced across borders do not qualify as either stateless persons or refugees, some advocates for their protection have suggested amending the 1951 Convention relating to the Status of Refugees. This might seem like the most straightforward way of dealing with the cross-border protection gaps and a solution that would have the advantage of securing rights within a well recognized and established legal instrument. However, critics – including the UN High Commissioner for Refugees (UNHCR) and the NRC – have pointed out that any initiative to amend the refugee definition, as agreed in the 1951 Convention, would involve the risk of a full renegotiation of the Convention. In the current political climate, any renegotiations could undermine the international refugee protection regime altogether. Seeking to expand the definition of a refugee, no matter how pure the expanders’ intentions, could result in less protection for those who find refuge through today’s Convention. Any such weakening should be avoided; therefore, other options must be explored. Moreover, concepts and mechanisms set out in the 1951 Convention relating to the Status of Refugees, such as the persecution concept and the idea that refugee status substitutes for protection from the home states, may not be suitable in the context of climate change and natural disaster.

### **Inclusion in the United Nations Framework Convention on Climate Change or other climate agreement**

The 1992 UN Framework Convention on Climate Change (UNFCCC) provides the common international framework within which to address the causes and consequences of climate change. The current 1997 Kyoto Protocol commitments run until 2012 and the states are still negotiating what should come after that. While the Kyoto Protocol focuses on reducing greenhouse gas emissions (climate-

change mitigation), a successor agreement is also supposed to address the consequences of climate change that can no longer be avoided (climate-change adaptation). Clearly, a climate-change agreement could be crucial to preventing disasters and displacement, including displacement resulting from climate measures. In terms of protection during displacement, the UNFCCC process has less to offer. Historically, it has had little focus on remedies and there has been a reluctance to incorporate human rights issues. However, a climate-change agreement could also play a certain role in protecting people who are migrating or have been displaced. Activities related to migration and displacements qualify for funding in latest draft texts. Nevertheless, while it is important to recognize migration and displacement and to ensure funding and cooperation, it is unlikely that we will find a full solution here.

### **Creating a New Convention**

Several authors argue that the protection gaps would be best filled by creating a new international convention. Hodgkinson, Burton, Young, and Anderson argue that neither the UNFCCC nor current human rights and refugee-protection instruments are appropriate for dealing with the issue. For the operation and application of a new climate-change-displacement convention, the authors stress the need to prove that climate change causes the displacement in question. They emphasize that, although the new treaty should include people displaced by a sudden-onset of a climatic event, current science is unable to attribute a sudden climatic event directly to climate change and that applying complex analysis to sudden-onset disasters could hamper relief operations and programmes. A new instrument would therefore, according to the authors, more readily apply to slow onset disasters than to sudden-onset disasters. However, displacement caused by slow-onset disasters is often more complex than that of sudden-onset disasters, thereby further complicating causality. The possible lengthiness of determining the cause means that there would be a risk of the people displaced spending long periods with their protection needs unaddressed.

Bonnie Docherty and Tyler Giannini have suggested a similar comprehensive instrument that would stipulate guarantees of assistance, shared responsibilities between host and home state, and the right to protection and humanitarian aid. The definition of 'climate change refugee' applied by Docherty and Giannini

encompasses both slow- and sudden-onset disasters. The instrument would allow the determination of refugee status on a group basis, while still allowing individual claims. This is because climate change affects entire communities and group determination is cost-efficient, ensures equal application, and avoids repeated debate over the cause of an event. In addition to establishing causality, a major challenge is the probable lack of political will today to establish a comprehensive framework with strong and clear rights for the displaced. Moreover, the way that the existing international architecture is currently functioning raises questions about how effective it would be to add new institutions to it. Securing protection for just those displaced by climate-related disasters while excluding people displaced by other natural disasters also seems hard to justify.

### **Context-Oriented and Dynamic Interpretation of Existing Human Rights Law**

A partial solution to the normative protection gap may be found in broader human rights law pondering the possibility, permissibility, and reasonableness of return. We may see cases where a person's return to his or her place of origin at some point becomes impossible owing to climate change and/or disaster. The island states may be an extreme example. In other cases, disasters are likely to affect infrastructure, which may be necessary for a return. Forced return may also not be allowable because it is considered to breach a fundamental right. In human rights law, non-refoulement is an absolute and general ban on sending a person, independent of conduct or status, to places where they risk certain rights violations. Most agree that the prohibition of torture is a peremptory norm, but there is disagreement regarding the extent to which one is protected by customary law against ill treatment and other human rights violations.

No matter the degree to which a disaster has been created by humans, it is doubtful (to say the least) that it can meet the international definition of torture as the infliction of severe pain or other suffering by a public official for one of the purposes listed in the torture conventions, such as punishment or obtaining a confession. It could also seem far-fetched to call a disaster cruel, inhuman, or degrading treatment. In some cases, rather than claiming that an asylum-seeker forced to return to his or her country of origin is being returned to the infliction of ill treatment, the return itself could arguably constitute ill-treatment, perhaps even torture. Let us illustrate this with an example: How should we consider a case

where a public official leaves a person to fend for himself with hardly any means in the middle of a desert? Generally, courts have carefully circumscribed the meaning of ‘inhuman or degrading treatment’, but there are cases where the concept of ‘inhuman treatment’ has been interpreted rather progressively. In the case in the United Kingdom, the European Court of Human Rights considered that returning an HIV infected person to St Kitts would amount to ‘inhuman treatment’ owing, among other things, to the lack of sufficient medical treatment, a social network, a home, or any prospect of making a living. During and after disasters such as Hurricane Mitch (Central America, 1998) and Cyclone Nargis (Myanmar, 2008), both people’s homes and vital infrastructure were destroyed or damaged, which hindered the provision of basic essentials such as clean water, electricity, and food. One could consider that people with particular vulnerabilities are protected against having to return to such circumstances. Clearly, law relating to the permissibility of return is relevant in a climate-change context.

## **Conclusion**

Choosing a combination of the solutions explored above may prove the most effective way of filling the protection gaps. This complex issue needs to be dealt with in several forums and at several levels. Climate change is a global process that is influencing the occurrence of natural disasters. The resulting international responsibility needs to be reflected in the financing of protection for the people affected by that change. This can be dealt with most appropriately in a new global climate-change agreement based on the principle of common but differentiated responsibilities and other principles of environmental law. Funding would enable countries to deal better with displacement, most of which is likely to go on being internal and regional in the developing countries. It is also important to encourage further international and regional cooperation, particularly regarding cross-border displacement. It is therefore crucial to keep the reference to the migration and displacement in the adaptation text being negotiated under the UNFCCC. From a human security and protection perspective, however, there is no basic, compelling reason to distinguish between climate-related and other natural disasters. Specific law and protection should apply to all those displaced by natural disaster.

The human rights regime, the non-refoulement principle, and complementary protection mechanisms can provide building blocks for a new ways of affording

protection, particularly regarding the concept of return: if return is not possible, permissible, or reasonable owing to circumstances in the place of origin and to personal conditions, a person should receive protection and a clear status. Linking return to wider human rights has the advantage of being open to dynamic interpretation, but it also allows for discretion. An explicit reference to natural disasters or similar phenomena, such as in Finnish law, may be necessary, particularly considering the ever-shifting sentiments toward migrants and asylum seekers. The focus on return rather than the cause and impact of the initial movement may get us around some of the challenges of slow-onset disasters, including the ‘voluntary–forced’ continuum. A more permanent protection status would be necessary in some cases, in addition to the temporary protection.

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**Lecture Title : Climate-related Disasters and Displacement**

### **Introduction**

It took one of the world's deadliest disasters, the tsunami of 2004, to bring home to governments and policymakers around the world the need to develop more effective responses to natural disasters and the people uprooted by them. Five million people were displaced and some 250,000 killed in 11 different countries in Asia and Africa. Even today, six years later, reconstruction efforts are ongoing, while the impact on infrastructure, clean water, sanitation, and livelihoods is expected to last for decades. The tsunami was caused by an earthquake, not climate change, but floods, hurricanes, cyclones, landslides and other "sudden-onset" disasters are expected to become more frequent and severe in the future as a result of climate change. Over the past two decades, the number of recorded disasters has doubled from approximately 200 to over 400 per year; and nine out of 10 disasters have been climate-related. The total number of people affected by natural disasters over the past decade has reportedly tripled to two billion people, an average of more than 200 million people directly affected each year. The increase in natural disasters is expected to produce massive displacement that will change the world's perception of forcibly displaced people, currently thought of primarily as refugees and internally displaced people (IDPs) uprooted by persecution and conflict. The vast majority will be displaced inside their countries, although significant numbers will cross internationally recognized borders, especially when island States become

submerged. Although estimates of the numbers of those displaced will vary a 2007 Christian Aid report estimates that between the year 2007 and 2050, “climate change-related phenomena” (floods, hurricanes, drought) will “permanently” displace 250 million people.

The United Nations and the Internal Displacement Monitoring Centre (IDMC) find that while they cannot predict whether the people involved will be permanently or temporarily displaced, in 2008 alone some 36 million people were uprooted by sudden-onset natural disasters, including 20 million displaced by disasters associated with climate change. If one were to add to these numbers those compelled to leave their homes by longer-term environmental problems (e.g. drought, desertification, rising sea levels, extreme temperatures, deforestation, land degradation), known as “slow-onset” disasters, the total for 2008 would undoubtedly be tens of millions more. The UN/IDMC report cites a figure of 26.5 million drought-affected persons in 2008, but no overall estimate exists of those displaced by slow-onset disasters. Traditionally, migration from such disasters has been perceived as ‘voluntary’, but increasingly such movement is also being seen as, forced. Indeed, long-standing international definitions of forced migrants and the international systems of protection for them may have to expand to accommodate the many different patterns of migration emerging. Distinctions between disaster displaced and conflict displaced people may also blur. Climate change will likely fuel armed conflicts, some between States competing for scarce resources, others within States among different ethnic and tribal groups. Darfur, Sudan is but one recent example of how ecological degradation and water scarcity can ignite tensions between competing groups and then turn genocidal when exacerbated by the manipulations and irresponsible policies of a government like Sudan 's. UN Secretary-General Ban Ki-moon has warned that “violence in Somalia grows from a similarly volatile mix of food and water insecurity. So do the troubles in Ivory Coast and Burkina Faso.”

Environmental disasters are clearly challenging many of the long-standing conceptual, legal and organizational means of dealing with displacement. The international protection regimes set up for refugees and more recently for internally displaced persons either exclude or fail to focus on environmentally displaced persons. Whether these displaced within their own countries by slow-onset disasters can be said to fit under the rubric of “internally displaced person” and

whether those forced to cross borders for environmental reasons will fit under the term “refugee or voluntary migrant” are open questions. The possible need for new terminology and systems of protection for those displaced by environmental disasters thus requires examination. Protection of the human rights of those uprooted by disaster has received far too little attention. As Jan Egeland, former UN Under-Secretary-General for Humanitarian Affairs and Walter Kalin, Representative of the Secretary-General on the Human Rights of Internally Displaced Persons (RSG), have aptly observed, while the international response to natural disasters “has become even swifter and more sophisticated” in the rush to deliver life-saving aid, “little attention” has been paid “to the rights of those displaced people.” Efforts underway have focused on developing preventive and risk reduction strategies, improving rescue actions, accelerating the delivery of relief, and undertaking initiatives to “build back better” in recovery and reconstruction processes. Identifying the human rights concerns of disaster victims and how best to provide them with protection have received less focus. Yet recent disasters have exposed: Unequal access to food and supplies, in particular by women; discrimination in provision of aid on ethnic, caste, racial, religious or gender grounds; evacuation plans that discriminate against poor and other vulnerable people; sexual and gender-based violence, especially in camps and shelters; exploitation, trafficking and military recruitment of separated children; neglect and exploitation of the elderly, poor, disabled and sick; forced relocations of people to unsafe areas with limited economic opportunity; lack of safety in areas of displacement, return or resettlement; and inequities in addressing employment, property and compensation questions.

### **Linking Climate Change and Displacement**

There are major methodological challenges involved in establishing the link between climate change and displacement. People leave their homes for a complex set of reasons, and there is ‘multi-causality’ even in forced migration. Nevertheless, while examining some of the current and predicted effects of climate change, a number of researchers and international institutions have arrived at the conclusion that climate change will probably contribute to ‘major forced displacements’ over time. One major impact of climate change is the increased frequency and severity of certain hazards, as well as changes in their time frame and location. Hazards can combine with human vulnerability to produce disasters,

such as floods and droughts. In other words, there is a crucial human element involved in the occurrence of ‘natural’ disasters. We can call them climate-related disasters since climate change can influence their frequency, severity, time, and location; storms, floods, and droughts all belong to this category. All natural disasters can potentially result in forced displacement. The number of recorded natural disasters has doubled from approximately 200 to over 400 per year over the past two decades. The majority are climate-related disasters. According to the UN Emergency Relief Coordinator, this situation of more frequent and severe disasters may be ‘the new normal’. Although there is broad acceptance that voluntary and forced migration is likely to increase as a consequence of climate change, it is difficult to estimate the scale. In 2009, OCHA worked with the Internal Displacement Monitoring Centre of the NRC in a first attempt to assess the degree of displacement due to sudden onset natural disasters. They found that as many as thirty-six million people had been displaced by such disasters in the year 2008, over twenty million by climate-related sudden-onset disasters alone. Estimating displacement due to slow-onset disasters such as drought and sea-level rise is much more challenging because it has a more complex set of causes and because there is a continuum between voluntary and forced migration. Nevertheless, the numbers quoted above give an indication of the scale of displacement caused by climate-related disasters today. While offering its own estimate, the Stern Reviews points out that the number of displaced people will ‘depend on the level of investment, planning and resources’. In the near future at least, displacement is likely to go on being mostly internal, and in some cases regional. All countries will eventually be affected by climate change, but some are more immediately and directly exposed than others. In its report, the IPCC highlights dangers associated with the Arctic, Africa, small islands, and the Asian and African mega-deltas, while recognizing that ‘within other areas, even those with higher incomes, some people (such as the poor, young children and the elderly) can be particularly at risk, and also some areas and some activities’. Much sudden-onset, natural-disaster-induced displacement is temporary if there is effective rehabilitation and recovery, but some displacement become permanent. This research on climate change, disasters, and displacement raises central questions about the need to protect displaced individuals and entire populations. The protection needs of people displaced by natural disasters have not yet been fully explored and understood. However, one of the main ideas behind the 1998 UN Guiding Principles on Internal Displacement

was that, regardless of the reason of displacement, the people concerned often have a particular set of needs. While recognizing that much work is needed to identify protection needs, we therefore feel justified in examining more generally the current protection regime, identifying gaps and looking at possible solutions for filling those gaps in the context of climate change.

### **Filling the Gap in Cross-Border Displacement Caused by Natural Disaster**

Amending the 1951 Convention relating to the Status of Refugees since many of the people displaced across borders do not qualify as either stateless persons or refugees, some advocates for their protection have suggested amending the 1951 Convention relating to the Status of Refugees. This might seem like the most straightforward way of dealing with the cross-border protection gaps and a solution that would have the advantage of securing rights within a well recognized and established legal instrument. However, critics – including the UN High Commissioner for Refugees (UNHCR) and the NRC – have pointed out that any initiative to amend the refugee definition, as agreed in the 1951 Convention, would involve the risk of a full renegotiation of the Convention. In the current political climate, any renegotiations could undermine the international refugee protection regime altogether. Seeking to expand the definition of a refugee, no matter how pure the expanders’ intentions, could result in less protection for those who find refuge through today’s Convention. Any such weakening should be avoided; therefore, other options must be explored. Moreover, concepts and mechanisms set out in the 1951 Convention relating to the Status of Refugees, such as the persecution concept and the idea that refugee status substitutes for protection from the home states, may not be suitable in the context of climate change and natural disaster.

### **Inclusion in the United Nations Framework Convention on Climate Change or other climate agreement**

The 1992 UN Framework Convention on Climate Change (UNFCCC) provides the common international framework within which to address the causes and consequences of climate change. The current 1997 Kyoto Protocol commitments run until 2012 and the states are still negotiating what should come after that. While the Kyoto Protocol focuses on reducing greenhouse gas emissions (climate-

change mitigation), a successor agreement is also supposed to address the consequences of climate change that can no longer be avoided (climate-change adaptation). Clearly, a climate-change agreement could be crucial to preventing disasters and displacement, including displacement resulting from climate measures. In terms of protection during displacement, the UNFCCC process has less to offer. Historically, it has had little focus on remedies and there has been a reluctance to incorporate human rights issues. However, a climate-change agreement could also play a certain role in protecting people who are migrating or have been displaced. Activities related to migration and displacements qualify for funding in latest draft texts. Nevertheless, while it is important to recognize migration and displacement and to ensure funding and cooperation, it is unlikely that we will find a full solution here.

### **Creating a New Convention**

Several authors argue that the protection gaps would be best filled by creating a new international convention. Hodgkinson, Burton, Young, and Anderson argue that neither the UNFCCC nor current human rights and refugee-protection instruments are appropriate for dealing with the issue. For the operation and application of a new climate-change-displacement convention, the authors stress the need to prove that climate change causes the displacement in question. They emphasize that, although the new treaty should include people displaced by a sudden-onset of a climatic event, current science is unable to attribute a sudden climatic event directly to climate change and that applying complex analysis to sudden-onset disasters could hamper relief operations and programmes. A new instrument would therefore, according to the authors, more readily apply to slow onset disasters than to sudden-onset disasters. However, displacement caused by slow-onset disasters is often more complex than that of sudden-onset disasters, thereby further complicating causality. The possible lengthiness of determining the cause means that there would be a risk of the people displaced spending long periods with their protection needs unaddressed.

Bonnie Docherty and Tyler Giannini have suggested a similar comprehensive instrument that would stipulate guarantees of assistance, shared responsibilities between host and home state, and the right to protection and humanitarian aid. The definition of 'climate change refugee' applied by Docherty and Giannini

encompasses both slow- and sudden-onset disasters. The instrument would allow the determination of refugee status on a group basis, while still allowing individual claims. This is because climate change affects entire communities and group determination is cost-efficient, ensures equal application, and avoids repeated debate over the cause of an event. In addition to establishing causality, a major challenge is the probable lack of political will today to establish a comprehensive framework with strong and clear rights for the displaced. Moreover, the way that the existing international architecture is currently functioning raises questions about how effective it would be to add new institutions to it. Securing protection for just those displaced by climate-related disasters while excluding people displaced by other natural disasters also seems hard to justify.

### **Context-Oriented and Dynamic Interpretation of Existing Human Rights Law**

A partial solution to the normative protection gap may be found in broader human rights law pondering the possibility, permissibility, and reasonableness of return. We may see cases where a person's return to his or her place of origin at some point becomes impossible owing to climate change and/or disaster. The island states may be an extreme example. In other cases, disasters are likely to affect infrastructure, which may be necessary for a return. Forced return may also not be allowable because it is considered to breach a fundamental right. In human rights law, non-refoulement is an absolute and general ban on sending a person, independent of conduct or status, to places where they risk certain rights violations. Most agree that the prohibition of torture is a peremptory norm, but there is disagreement regarding the extent to which one is protected by customary law against ill treatment and other human rights violations.

No matter the degree to which a disaster has been created by humans, it is doubtful (to say the least) that it can meet the international definition of torture as the infliction of severe pain or other suffering by a public official for one of the purposes listed in the torture conventions, such as punishment or obtaining a confession. It could also seem far-fetched to call a disaster cruel, inhuman, or degrading treatment. In some cases, rather than claiming that an asylum-seeker forced to return to his or her country of origin is being returned to the infliction of ill treatment, the return itself could arguably constitute ill-treatment, perhaps even torture. Let us illustrate this with an example: How should we consider a case

where a public official leaves a person to fend for himself with hardly any means in the middle of a desert? Generally, courts have carefully circumscribed the meaning of ‘inhuman or degrading treatment’, but there are cases where the concept of ‘inhuman treatment’ has been interpreted rather progressively. In the case in the United Kingdom, the European Court of Human Rights considered that returning an HIV infected person to St Kitts would amount to ‘inhuman treatment’ owing, among other things, to the lack of sufficient medical treatment, a social network, a home, or any prospect of making a living. During and after disasters such as Hurricane Mitch (Central America, 1998) and Cyclone Nargis (Myanmar, 2008), both people’s homes and vital infrastructure were destroyed or damaged, which hindered the provision of basic essentials such as clean water, electricity, and food. One could consider that people with particular vulnerabilities are protected against having to return to such circumstances. Clearly, law relating to the permissibility of return is relevant in a climate-change context.

## **Conclusion**

Choosing a combination of the solutions explored above may prove the most effective way of filling the protection gaps. This complex issue needs to be dealt with in several forums and at several levels. Climate change is a global process that is influencing the occurrence of natural disasters. The resulting international responsibility needs to be reflected in the financing of protection for the people affected by that change. This can be dealt with most appropriately in a new global climate-change agreement based on the principle of common but differentiated responsibilities and other principles of environmental law. Funding would enable countries to deal better with displacement, most of which is likely to go on being internal and regional in the developing countries. It is also important to encourage further international and regional cooperation, particularly regarding cross-border displacement. It is therefore crucial to keep the reference to the migration and displacement in the adaptation text being negotiated under the UNFCCC. From a human security and protection perspective, however, there is no basic, compelling reason to distinguish between climate-related and other natural disasters. Specific law and protection should apply to all those displaced by natural disaster.

The human rights regime, the non-refoulement principle, and complementary protection mechanisms can provide building blocks for a new ways of affording

protection, particularly regarding the concept of return: if return is not possible, permissible, or reasonable owing to circumstances in the place of origin and to personal conditions, a person should receive protection and a clear status. Linking return to wider human rights has the advantage of being open to dynamic interpretation, but it also allows for discretion. An explicit reference to natural disasters or similar phenomena, such as in Finnish law, may be necessary, particularly considering the ever-shifting sentiments toward migrants and asylum seekers. The focus on return rather than the cause and impact of the initial movement may get us around some of the challenges of slow-onset disasters, including the ‘voluntary–forced’ continuum. A more permanent protection status would be necessary in some cases, in addition to the temporary protection.

## **Course Name- Bachelor of Population Studies**

**Year - III**

**Paper Name - Population, Environment and Development**

**Paper No. VII**

**Lecture No. 11**

**Lecture Title : Population, Climate and Health**

### **Introduction**

Global climate change will have important implications for human population health. It is one of the emerging set of global environmental changes that are already affecting human population health and will increasingly do so in the future. Climate change does not exist as a separate, single exposure, but consists of a range of exposures that are relevant for human health. Climate change will exacerbate many of the current important environmental determinants of disease. Some climate and weather factors act directly and are relatively well understood—such as the health effects of heat waves or the physical and mental consequences of floods. Other health effects are mediated by climate-sensitive biological processes, such as changes in infectious disease transmission or crop yields. Climate is ultimately the determinant of food and water availability and the distribution of vector-borne diseases. Climate-related decreases in food and water supplies are potentially responsible for the largest future burden of diseases due to climate change. But such impacts are also the most uncertain to foresee because they are contingent on future social, economic, political and population factors.

There is now a wealth of evidence regarding changes in climate and environment due to anthropogenic climate change. The Intergovernmental Panel on Climate Change (IPCC) published its Fourth Assessment Report in 2007, which included a global assessment on the impacts of climate change on human health.

### **Food and Malnutrition**

Hunger and malnutrition are widespread, and it is anticipated that climate change will exacerbate this by further reducing global food security. Presently, there are close to one billion people with insufficient calorie intake, and one third of the burden of disease in young children is attributable to malnutrition.

Future impacts will depend on the trajectories of a number of factors, including the magnitude of climate change, the size of the population, their income levels and the environment in which they live, as well as (technological) developments in agriculture. While climate change is likely to affect crop productivity, food security—and the relationship between food and health—is governed by many factors. The key determinants are: availability (the adequacy of food production and supply), stability (the consistency of these food supplies over time), accessibility (the accessibility of food to the population at large) and utility (the health of those consuming the food, and their ability to benefit from the energy and nutrients in the food they consume). Compromising any of these elements could lead to increased levels of malnutrition and poor health; future change in mean climate, extreme weather events and population size and distribution are likely to impact on each of them.

However, modeling the elements of food security simultaneously is difficult, and, to date, no quantitative studies have taken account of all of them. Consequently, assessment of future hunger and malnutrition only capture a part of the picture, despite the use of specific and plausible climate and population scenarios. A number of studies have modelled crop productivity (i.e., addressed ‘availability’) under various climate and population scenarios (see Parry et al., 2007, for an overview), and two recent papers illustrate the potential threat posed to populations with already high levels of malnutrition used statistical models for a range of crops grown in 12 food insecure regions to estimate productivity in 2030. They found that, in the near future, changes in temperature and rainfall are likely to reduce the crop yields of various food sources, particularly in South Asia and Southern Africa looked to the end of the 21st century and suggest that, by that time, there is a 90 per cent probability that growing-season temperature will exceed even the most extreme temperatures seen during 1900 to 2006. This could severely reduce crop productivity and may place three billion people, most of whom depend on agriculture for their livelihood, at risk. The areas expected to be most affected are

tropical and sub-tropical Africa and Asia and parts of South, Central and North America and the Middle East.

Where food is grown ('availability') may not be where it is consumed ('access'). The global trade in food is a determinant of access and relates to cost and the ability of populations to purchase food. While climate change is estimated to increase the population at 'risk of hunger' due to reduced crop productivity, socioeconomic factors will have a far greater impact. In scenarios in which population growth is decreasing and there is a strong economic growth, the models suggest that hunger could decrease by more than 75 per cent from current levels by 2080. In addition—driven almost entirely by socioeconomic factors but contingent on assumptions made within scenarios—the region with the greatest number of hungry people is expected to shift from South Asia to sub-Saharan Africa by the 2080s. Of course, despite their relative importance, development pathways will not occur independently of climate change; increases in wealth, narrowly defined, could come at the expense of significantly increased greenhouse gas emissions which would result in greater impacts of climate change on food production. None of the above studies include impacts of extreme weather events, such as droughts, or 'surprise' events, such as pest invasions ('stability'). Hence, the impact of climate change, which has the potential to increase both of these, could be reasonably expected to be greater than the models suggest. Furthermore, the effects of a lack of food are magnified by other factors such as diarrhoea prevalence ('utility'). If a population lacks improved water sources and sanitation which result in high rates of diarrhoea, there will be more malnutrition associated with a given level of food consumption. A multi-country analysis found that approximately a quarter of malnutrition in children aged two could be attributed to having had five or more episodes of diarrhoea. Overall, future hunger and malnutrition will be driven by a range of influences, which will, in turn, be related to both climate and population changes. Other factors, such as governance that ensures equitable access to food, will be critical.

## **Water and Health**

Climate is a key determinant of water availability. Surface water availability depends on the timing and volume of precipitation. The current burden of disease as a result of inadequate access to improved water sources and sanitation has long

been recognized, particularly the very high rates of infant mortality in deprived urban areas. There are clear social and economic reasons for the lack of access to improved water at the household level. However, populations in both high- and low-income countries have experienced failures in supply due to extreme droughts. It is also known that access to water is not equally distributed within cities, and any reductions in supply are likely to have a greater impact on impoverished populations.

Climate impact assessments are often conducted at the river catchment level and converted to water availability per capita or withdrawal-to-resource ratio. Such indicators are useful to some extent, but they provide no information on the level of access to water, the quality of water or any differences between rural or urban areas.

Climate change is likely to cause a decline in environmental water resource availability in certain areas, where water resource management is poor or non-existent. This will have a negative impact on water availability at the household level. The impact of climate change on water availability is likely to be one of the most significant for the health of the populations. However, due to the complexity of the factors that determine access to clean water (social, political, environmental), the impacts on the health are not well addressed in the climate impacts literature. Although disease rates can be reduced very cost effectively by improvements in hygiene behaviour, such improvements require access to sufficient quantities of water. In one study, interventions to improve water quality failed to deliver a significant reduction in the diarrhoeal disease in places where water availability was limited. As discussed below, heavy rainfall and flooding are also important issues for environmental health in urban areas.

### Emerging Infectious Disease

Many infectious diseases of animals, humans and plants will be affected by climate change and diseases transmitted by cold-blooded vectors will be the most susceptible to climate effects. According to the United Kingdom Foresight review, future expectations of infectious disease are based on an understanding that the majority of 'emerging and re-emerging' human infectious diseases originate in animal sources. Since these animals are likely to face continued incursions into

their natural habitat, trade for meat and exotic commodities, as well as their presence as pets, the trend of one or two new human pathogens identified each year is expected to persist. Climate-change impacts should therefore also be seen in the context of these other important drivers of the emergence of infectious disease and the large changes that are already occurring.

The global burden of vector-borne diseases, especially malaria, remain high (Thomson et al., 2006). Climate factors affect both malaria-carrying mosquito vectors and malaria parasite development rates. Although the overall impact of climate change is uncertain, it is likely to facilitate vector expansion to higher altitudes in highland areas surrounded by endemic transmission. The East African highlands are densely populated and therefore potentially at an increased risk of malaria due to climate warming. Malaria epidemics are of particular concern as they occur in populations that lack partial or full immunity to the disease and thus experience high mortality rates across all age groups.

Example of evidence for climate effects on other infectious diseases include (IRI, 2005):

- Meningitis: Occurrence in the Sahelian dry season is associated with increases in temperature and decreases in humidity and is related to dust. Epidemics occur in environmentally suitable districts during the dry season and end with the first rains. There is a moderately strong relationship between climate and outbreaks of meningitis that is not well understood.
- Cholera: Outbreaks are associated with increases in sea surface temperatures (related to ENSO), in addition to poor sanitation and hygiene behaviour. The association between climate and cholera outbreaks is strong in the coastal regions of Bangladesh.
- Rift Valley Fever: Epidemics (animal and human) are related to short-term increases in rainfall. Cold weather is associated with the end of epidemics. Rift Valley Fever is moderately sensitive to climate variability.
- Leishmaniasis: is associated with an increase in temperature and rainfall. Outbreaks of leishmaniasis show a moderate variability based on climate. Although vector-borne diseases are strongly affected by rainfall and temperature,

which can trigger outbreaks, the longer-term impacts on these diseases due to climate change is less clear. The effects will depend on the current distribution of the disease (many diseases are well within the climate-limits) and the capacity of countries to control the infection over the next decades.

### **Flooding and Disasters**

Flooding and tropical cyclones are the most common ‘natural’ disasters, accounting for 40 per cent of the 1,062 recorded disasters between 2004 and 2008. Each year, around 120 million people are exposed to tropical cyclones and storm surges, which caused an estimated 250,000 deaths between 1980 and 2000. Single events can be devastating: In Bangladesh, tropical cyclones in 1970 and 1991 caused 300,000 and 140,000 deaths, respectively. The impact of an event, however, is greatly modified by population vulnerability. For example, similar numbers of people are exposed to tropical cyclones in Japan and the Philippines each year (22.5 million and 16 million, respectively), but the death toll in the Philippines is 17 times higher than that of Japan (UNISDR, 2009). Considering low-income countries as a group, the relative mortality risk is close to 200 times higher than in countries of the Organisation for Economic Co-operation and Development (OECD) (UNISDR, 2009). These figures highlight the influence of both climate and population factors on health impacts.

Future trajectories of the population at risk of flooding have been developed using a global coastal flood model (Nicholls, 2004). The model was run for the climate and socio-economic scenarios developed by the IPCC for the Special Report on Emissions Scenarios (SRES) (IPCC, 2000). When socio-economic scenarios for a world with declining population growth and robust economic development are considered without climate change, the numbers at risk of flooding increase until the 2020s and then decline significantly by the 2080s. The initial increase in numbers at risk is driven by the model’s assumptions that coastal populations will grow at twice the rate of the whole population and that, while increasing wealth will lead to improved flood defences, the time it takes to build new coastal defences is approximately 30 years. In socio-economic scenarios with high population growth and lower economic growth, the numbers at risk of flooding continue to rise beyond the 2080s.

When sea level rise due to climate change is included in the model, significant additional impacts are not evident until the 2080s, when, depending on the scenario used, between 2 and 50 million additional people are estimated to be at risk. The model does not account for the possibility of an increase in the frequency and intensity of tropical cyclones and storm surges, which have the potential to greatly increase flood risk attributable to climate change. Overall, the model suggests that the population size, the areas in which they live, their wealth (in terms of ability to build flood defences) and the increased risk of flooding attributable to climate change will all be critical determinants of future flood risk.

### Heat Waves

An increase in heat waves is one of the most certain impacts of climate change. All populations are affected by extremes of temperatures. Epidemiological studies have mostly been undertaken in populations in temperate climates, where mortality is shown to increase in hot and cold weather. Heat mortality risk varies by age and with other social and environmental factors. The majority of European studies have shown that women are more at risk of dying in a heat wave. There may be some physiological reasons for an increased risk in elderly women but social factors are also important. Elderly men are more at risk from heat waves than women in the United States, and this was particularly apparent in the Chicago heat wave in 1995. In addition to the 'natural' patterns of ageing (or senescence) on homeostatic mechanisms, several medical conditions increase vulnerability to heat stress. Many deaths that are 'attributed' to heat do not result from heat stroke or are even in persons that exhibit the clinical signs of heat stress. It is likely that there are several mechanisms by which a person may succumb during a heat wave, as the environmental temperature places extra strain on the body. If the exposure to heat wave is severe enough, even healthy people will succumb to heat stroke. Climate change is likely to increase the number of heat-related deaths in temperate populations. Less is known about heat effects in tropical or subtropical regions. A main uncertainty in estimating the future impact of climate change on heat-related mortality is the extent to which, even without specific adaptation strategies, physiological adaptation and factors such as behavioural changes in hot weather will reduce impacts in the general population. Physiological acclimatization to hot environments can occur over a few days, and this can explain why the impact of the first heat wave on mortality is often greater than that of subsequent heat waves

during a single summer. The rate at which infrastructural changes will take place is likely to be much slower. Neither the magnitude nor the time course of the various modifying factors can be predicted with any confidence. It is clear that preventive measures will be needed to counter the substantial initial adverse effects of heat, and long-term changes are required in housing and urban infrastructure .

## **Conclusion**

Protecting and improving human population health requires new research on climate-health links, as well as improved methods to guide adaptation strategies. To identify future health threats and the populations likely to be affected by them, epidemiological methods and modelling strategies—which have conventionally focused on less complex risk-outcome structures—need to be further developed and, in particular, applied in low-income settings. In order for such research to be used to develop policy, it should, where possible, specifically consider the influence of socio-economic and demographic factors. It is often possible to include these when assessing the past and the present. However, when considering future impacts, the application of such findings is difficult, as quantitative descriptions of plausible future socio-economic and demographic conditions are generally limited to GDP and to population in terms of numbers and age-stratification. Means to overcome these limitations include the development of scenarios with more detailed quantitative descriptions of plausible future worlds and the modification of methods for assessing the means of adaptation in the face of particular health threats. Additionally, methods of assessing and characterizing uncertainties in health assessments need to be further developed and should focus particularly on ensuring that the characterization is useful to policymakers. Given that many adaptation strategies have long lead times, it is critical to ensure that the uncertainties inherent in the still developing field of climate-health research do not prevent appropriate actions from being taken. Climate change is a unique health threat in that it will affect all populations and requires consideration of extended time frames. In the near term, many of the mechanisms by which health will be affected are known—although the magnitude of the impacts and effectiveness of prevention are highly uncertain. There are likely to be many changes that are unanticipated involving ecological shifts or emerging infections. Under the higher projections of warming (more than 2-3 degree C above pre-industrial climate), the

uncertainty is greatly increased. This rate of change is unprecedented for humans and has unknown implications.

## **Course Name - Bachelor of Population Studies**

**Year- IIIrd**

**Paper Name – Population, Environment and Development**

**Paper No. VII**

**Lecture No. 12**

**Lecture Title : Population Dynamics and Policies in the Context of Global Climate Change**

### **Introduction**

Hello and welcome to the special series on Population Studies. A population's size and rate of growth fundamentally affects the dimension and gravity of environmental problems through efforts made by countries to achieve "development". In our civilization, under present technological and environmental control levels, both population growth and economic growth are environmentally dangerous. Even if humankind failed to produce a single baby during the next generation, its life on Planet Earth would still be endangered by climate change. On the other hand, if the per capita consumption levels of the relatively small and slow-growing developed countries (under the same technological and environmental control conditions) were to be achieved by some of the large and/or rapidly-growing countries, the serious environmental problems of Planet Earth would inevitably take a quantum leap. As has repeatedly been demonstrated, many planets would be needed to provide the resources that would allow the rest of the world to attain the same standard of living currently enjoyed by industrialized countries. For the future, population's contribution to global environmental

problems will depend on a combination of patterns:

- The rate of degree of incorporation, by poor countries, of the production and consumption patterns which currently prevail in industrialized countries.
- The size and rate of population growth in countries which manage to achieve or maintain high levels of economic growth.
- The pattern of development and the adoption of technologies which will permit more environmentally-friendly patterns of production and consumption, both in developed and developing countries - but particularly in large, populous ones.

World population experienced its fastest growth in history during the second half of the 20th century, swelling from 2.5 billion in 1950 to 6.1 billion in 2000, However this increase is still smaller than the growth in world GNPP during the same period and also considerably smaller than the fourfold increase in the carbon emissions. Global climate change in the 21st century will depend on the trajectory of these three patterns. Of the three trajectories, the easiest to foresee would seem to be that in the domain of population because demographic processes have a built-in inertia that determine short and mid-term outlooks more predictably than trends in the economics or environmental fields.

## **Population Projection**

Nevertheless, the art of population projection is not an easy one, and recent shifts in demographic trends have made it even more capricious. A spate of unexpected demographic transformations have radically altered traditionally-expected patterns, disrupted customary cleavages between groups of nations and countries, and altogether modified our traditional understanding of demographic processes. Over the previous half-century, most countries could be easily classified into tidy compartments: developed countries had high incomes and low fertility while poor and developing countries had low incomes and high fertility. These traditional

(though somewhat misleading) categories linking development levels to population growth rates have lately become blurred. Widespread and unexpectedly rapid declines in birthrates have been registered in most of the developing world, including much of Latin America, Asia, and the Middle East. Previous scenarios of “population explosions” are now restricted to most of Sub-Saharan Africa, plus a few other isolated countries (Timor Leste, Afghanistan, Yemen and Palestine) which still conform to the traditional mold of high fertility (with Total Fertility Rates of 5.0 and over) and high poverty. On the other hand, the list of lowest-low fertility countries has shrunk noticeably in recent years (Goldstein et al, 2009). Only Russia and the Eastern European countries continue to have low and declining below-replacement fertility. Contrary to all expectations, Northern Europeans are having more babies, with several countries now anticipating steady population growth through the middle of the century. Does this signal a regional rebound in fertility rates? Possibly, but not necessarily: A previous rebound was experienced in the Nordic countries where the total fertility rate was raised from 1.7 in 1985 to 2.0 in 1990; however, by the end of that decade, fertility levels had again receded to 1.85 (Lutz et al, 2005 in Smil, 2008:97). By contrast, in the USA, by far the world’s largest economy and largest bloc of consumers, the combination of immigrant and native reproductive patterns has boosted vigorous fertility rates that are likely to remain high in the foreseeable future. Meanwhile, several developing countries, now have the type of low fertility rates that until recently were found only in high-income countries. The Chinese decline has been well publicized but Iran, among others, has experienced an even faster decline over recent decades. Brazil has attained fertility levels that are lower than those of France, thus well below replacement level. Conversely, a doubling of population is being anticipated in the USA. In the midst of these diverse and confounding trends, world population growth – the main focus of interest in demographic patterns over

the last sixty years – continues to increase, but at a decreasing rate and volume. The fastest annual rate of increase occurred in the 1965-70 period (2.02) and has been reducing ever since. The largest annual increments in population occurred in the 1985-90 period, when some 89 million people were added on every year. Overall, according to the latest UN projections, the world population reaches 6.8 billion people in July of 2009 and is currently increasing at a rate of 78 million per year (United Nations, 2009:11). Suffice it to note that, barring natural or man-made cataclysms, world population will continue to grow in large numbers during the first half of this century.

### **Policies in Relation to Population Growth**

Importance and limitations of family planning programmes. A large proportion of the world's women still do not have access to the means that would allow them to have the number of children that are desired (UNFPA and Alan Guttmacher Institute, 2004). There is even a substantial gap between actual and desired family size among the fastest-growing demographic groups within developed countries. It is of considerable significance that the 2.5 billion difference between the United Nations' highest and lowest projection is the result of only one child difference in world fertility. That being the case, human-rights based policies that empower women and address unmet needs for reproductive health services -- whether in developed, developing or poor countries -- would have an important impact on reducing the rate of population growth and thus the eventual size of world population. While giving people, especially women, more control over their lives, this would also have some short and long-term impacts on the environment and on climate change. In this light, everything possible should be done to provide women with the means to achieve their desired family size. However, it should be clearly

understood that effectively addressing the issue of family planning needs will not give humankind a reprieve from its obligation to face the more critical environmental challenges posed by our civilization's model of "development". Both demographic and environmental outcomes are linked to development processes that occur within particular historical contexts. An exaggerated focus on a-historical simplifications that do not take into consideration the complexities of the 21st century development scenario, nor their differential implications for distinctive social contexts, favors simplistic policy suggestions. In short, the population control approach to mitigation has to be situated in the context of the world's updated demographic profile, as well as its stage of development. The timing and magnitude of the probable effects of a fertility reduction on climate change will vary considerably according to the current stage of each country on both of these dimensions. On the one hand, reducing fertility in poor and least developed countries – where fertility levels are still invariably high – would bring important social benefits in the short run and, perhaps most importantly, help to decrease the vulnerability of these populations to the effects of climate change. However, since their consumption levels and their impact on emissions are comparatively low, a reduction in their population growth will not represent a major boost to global mitigation efforts in the short run. Moreover, the social transformations that are minimally necessary to motivate the adoption of family planning are likely to have an equally significant impact on increased consumption. Land Use and Land Cover; now change of land use are considered a first order climate forcing factor: Around 31 percent of all greenhouse gas emissions are reputed to arise from the land use sector (Scherr and Sthapit, 2009:32). Although the changes in land use brought about by urban growth are routinely cited as a major factor in the growth of this source of GHG emissions, the actual level of this impact appears open to question. Although this effect has been

verified with respect to local Urban Heat Islands, the empirical evidence linking urban land use to regional or global climate change does not yet appear to be robust. Initially, it appears that most studies over a larger area find it difficult to distinguish the temperature impacts of urban land use from other land use changes. One study estimated that land-use changes accounted for half of the observed reduction in diurnal temperature range and an increase in mean air temperature of  $0.27^{\circ}\text{C}$  in the continental United States during the past century (Kalnay and Cai, 2003:528). Another study on temperature changes in the USA covering a span of 40 years (1960-1999) corroborated verifiable changes in temperature that are attributable to land use changes, but again failed to distinguish between the effects due to urban growth from those that would be derived from agriculture and deforestation. A study in Zhujiang Delta of China did conclude that strong and uneven urban growth caused the land surface temperature to rise by  $4.56^{\circ}\text{C}$  in the newly urbanized part of the study area, (Qian, Cui and Chang, 2006), but it is not clear whether this is simply a UHI effect. One recent study concluded that "... urban areas show a large warming second only to barren areas" while another found that "Converting natural vegetation to urban land-cover produced less pronounced temperature effects in all models, with the magnitude of the effect dependent upon the preexisting vegetation type and urban parameterizations"). Part of the reason for these low correlations, the latter authors explain, is simply the relatively smaller spatial extent of urban areas. In this light, it would seem critical to quantify the amount of land that is actually being converted to urban use. At the present, this quantity is not yet as enormous as seems to be generally assumed; however, it is important to examine how massive urban growth could change that in the future. Much improved estimates on the dimensions of the Earth's land area that is covered by urban localities are now available. These new sets of global databases on urban population and extent combine census data, satellite imagery

and different methods of analysis in an integrated geospatial framework. Two of the best known recent studies based on such technologies can, for purposes of this paper, be taken as the upper and lower limits of the area currently occupied by urban localities.

### **Policy Implications Regarding Urbanization and Urban Growth**

The scale of urban growth that will be faced by the developing world in coming decades has no parallel in history. The world's urban population will show an increase of over 2.9 billion people between now and 2050, most of this in Asia and Africa. How, where, and in what conditions such growth will occur will have a huge impact on poverty reduction as well as sustainability. Contrary to prevailing feeling, densely-populated urban areas can become an important ally in efforts to mitigate GCC. Cities are the primary front of environmentally-favourable technological innovations. Urban localities actually offer better chances for long-term sustainability: Dispersion of existing population would, in most cases, exacerbate pressures on ecosystems. Well designed and administered, the compactness and economies of scale of cities can reduce per capita costs and energy demand, while minimizing pressures on surrounding land and natural resources. High-density agglomerations can also be useful in avoiding such problems as deforestation and loss of biodiversity, while generally helping to optimize the rational use of resources and the provision of cost-effective environmental services. Moreover, urbanization itself is a powerful factor in fertility decline. Historically, fertility decline has always occurred first and quickest in cities, making urbanization a powerful ally in fertility reduction efforts. Longer-term urban sustainability depends on policymakers' ability to take a broader view of the utilization of space and to link local developments with their

global consequences. Developing and developed countries face different sets of challenges and opportunities. The one advantage that potentially benefits developing countries is that much of their urban growth is still to come, giving them the opportunity to make more sustainable use of space at lesser human and financial expense. Taking advantage of this opportunity, however, will require a radical change in the anti urbanization stance taken by many developing country policymakers who still try to impede or slow urban growth rather than prepare ahead for it. One specific aspect that requires much greater attention by policymakers in developing countries is attending the land and housing needs of the poor, who represent the largest social category (40%) of developing countries cities and make up an even larger segment of new urban growth. Their needs are rarely considered effectively in urban planning; this omission has severe implications, not only for urban poverty, but also for urban environmental outcomes and for the quality of life of the entire city population. Disregard for the land and housing needs of the poor affects both ecosystem services as well as the city's ability to responsibly and effectively plan for sustainable growth. Given little choice, the poor sometimes occupy ecologically-fragile areas and watersheds, thereby endangering the city's water supply and other ecosystem services. The lack of access to water, sewage or solid waste management systems in informal settlements pollutes rivers and ends up affecting the appearance, the air quality and the health of the entire city. Deforestation, the occupation of steep slopes and the occupation of urban floodplains and wetlands increase the probability of flood damages and landslides. The lack of attention to the land and housing needs of the poor ultimately affects the very ability of a city to attract investments, to create jobs and to generate a better financial base for implementing improvements in the city. In short, attending to the land and housing needs of the urban poor not only

has a direct impact on the reduction of poverty but also affects the city's economic viability and thus its ability to implement climate-friendly policies.

## **Conclusion**

A spate of unexpected demographic transformations have radically altered traditionally expected patterns, disrupted customary cleavages between groups of countries, and altogether modified our traditional understanding of demographic processes. Over the previous half-century, most countries could be easily classified into tidy compartments: developed countries had high incomes and low fertility while poor and developing countries had low incomes and high fertility. These traditional (though somewhat misleading) categories linking development levels to population growth rates have lately become blurred. Widespread and unexpectedly rapid declines in birthrates have been registered in most of the developing world, including much of Latin America, Asia, and the Middle East. In short, the population control approach to mitigation has to be situated in the context of the world's updated demographic profile, as well as its stage of development. The timing and magnitude of the probable effects of a fertility reduction on climate change will vary considerably according to the current stage of each country on both of these dimensions. Land use changes are considered a first order climate-forcing factor: Around 31 percent of all greenhouse gas emissions are reputed to arise from the land use sector (Scherr and Sthapit, 2009:32). Although the changes in land use brought about by urban growth are routinely cited as a major factor in the growth of this source of GHG emissions, the actual level of this impact appears open to question. The scale of urban growth that will be faced by the developing world in coming decades has no parallel in history. The world's urban population will show an increase of over 2.9 billion people between now and 2050, most of

this in Asia and Africa. How, where, and in what conditions such growth will occur will have a huge impact on poverty reduction as well as sustainability. I hope this episode was of some use to you all.

Thank you so much for watching.

**Course Name - Bachelor of Population Studies**

**Year - IIIrd**

**Paper Name – Population, Environment and Development**

**Paper No. VII**

**Lecture No. 13**

**Lecture Title : Demography of Adaptation to Climate Change**

### **Introduction**

Hello and welcome to this special series on POPULATION, ENVIRONMENT AND DEVELOPMENT. Today we are discussing about Demography of Adaptation to Climate. Climate change is increasingly recognized as a major challenge facing households and communities, local and national governments and international agencies and organizations.

The earth's climate has already been altered to such an extent that mitigation (efforts to reduce the concentrations of greenhouse gases in the atmosphere) alone will be inadequate. Therefore adaptation (responding to the impacts of climate change) is increasingly necessary. Budgets for adaptation are increasing, programmes are expanding and political infrastructure is being negotiated and implemented. In the meantime, significant advances have been made in the development of adaptation programmes. Yet, to this point, existing approaches have had serious limitations. In the midst of a rapidly expanding global adaptation agenda, it is of primary importance to get adaptation and its constituent parts right, in order to generate the most appropriate and effective interventions.

This module also addresses a major gap in adaptation efforts to date by pointing to the vital role that an understanding of population dynamics has in developing effective adaptation policies and practices. It examines the key components of climate change vulnerability and adaptation and assesses the ways in which these interact with population dynamics.

### **Current limitations in Approaches to Adaptation**

Since the recognition of adaptation as one of the core pillars of global responses to climate change (along with mitigation, technology transfer and financing), there has been a rapid growth of interest in the topic and a rapid expansion in the development and implementation of adaptation projects. The overwhelming scientific consensus on the causes and likely effects of climate change suggests that much of this adaptation activity has been driven by a sense of urgency to safeguard the lives and livelihoods of people living in particularly vulnerable countries. However, these expansion efforts have often taken place without a broader understanding of the drivers of social change, with the result that several key limitations can be identified. First, perspectives on vulnerability have often been superficial, overly general and deterministic.

Direct translation of vulnerability to climate change solely from economic, social or political factors is common, without full consideration of what that translation may mean. Adaptation and poverty reduction are not the same thing, and, while vulnerability associated with poverty is related to climate vulnerability, the two do not overlap perfectly. As a result of this mistranslation, practitioners frequently list vulnerable groups (e.g., women, children, the elderly, indigenous groups or disabled people) rather than specifying the underlying mechanisms that create vulnerability. Members of these groups may indeed have heightened vulnerability

to the impacts of climate change, but, specifying a framework for understanding and addressing that vulnerability is essential.

One of the purposes of this module is to fill this gap. Meanwhile, the effects of climate change are likely to increase. Despite even greater uncertainty as to its exact form and outcomes, climate change must be the most striking environmental trend of our time. The dominant view in scientific circles is that the negative impacts of climate change over the course of the century will be large but unevenly distributed both spatially and socially. The contributors to climate change are likely to remain concentrated in wealthier parts of the world, though some of the largest increases in emissions are apt to be in urbanizing and industrializing Asia. The worst impacts, however, are expected to be in relatively poor countries, including many in Africa and Asia that are experiencing rapid urban growth. It is impossible at this time to predict more than roughly what environmental impact climate change will have in different localities, let alone how this impact will influence migratory flows. Not only will climate change have its effect on migration in combination with a range of other economic and political factors, but actions taken in response to climate change may have just as large an effect on migration as the direct physical impacts of climate change. Thus, for example, rural biofuel plantations promoted to mitigate climate change could accelerate rural-urban migration by displacing rural smallholders. Similarly, the construction of infrastructure to produce renewable energy, such as dams, and infrastructure to protect against floods and other extreme weather events could have significant impacts on local livelihoods and displace large numbers of people. Also, urban building regulations promoted to reduce carbon emissions could inhibit rural-urban migration by increasing the cost of urban living, although their effects on carbon emissions may end up being rather minimal. The extent to which such measures, which harm already disadvantaged groups, will dominate over more positive

measures will depend on how much influence such groups have in the policy arena.

## **Adaptation and Water Scarcity**

Perhaps a more fruitful way to assess the impacts of climate change on population distribution is to focus on livelihood opportunities rather than mobility per se.

From this perspective, mobility is a form of diversification of income sources.

This, in turn, helps explain mobility's diversity, especially with regard to destinations, duration of stay and the composition of migrant flows, all of which are central to developing appropriate support policies.

Overall, there is a growing consensus among urban economists that urbanization and mobility are integral to economic growth, in clear and increasingly sharp contrast with policymakers' pessimistic views. This does not mean, of course, that simply increasing urbanization and mobility will increase economic growth or productivity. However, arbitrary attempts to curb urbanization or interfere with mobility are not only likely to reduce economic growth, but are also apt to interfere with people's attempts to diversify their livelihoods, cope with uncertainty and achieve resilience in the face of climate change. Climate change is expected to alter precipitation patterns and increase the aridity of many of the world's drylands. From the perspective of climate adaptation, the question of whether dryland populations should be concentrated in urban areas is quite different from that of whether urban centres should be concentrated in drylands. All other things being equal, it is preferable if urban populations are not located in drylands where they may be exposed to water shortages and be forced to compete for scarce water supplies. On the other hand, there are various water-related reasons why it may make sense for rural dryland populations to move to local urban centres, particularly when population densities are high and agriculture is causing

environmental degradation. Especially where there is a risk of desertification, it may also make sense for a government to encourage urban development rather than agricultural intensification in drylands.

In China, there are large areas where urbanization is being promoted as a response to dryland degradation. The situation in Ordos, a municipality in Inner Mongolia with a population of about 1.6 million, provides an extreme example of some of the issues involved. This water-scarce and energy-rich city-region is urbanizing extremely rapidly, spurred on by both the booming energy-based economy and ambitious efforts to protect rural ecosystems which involve substantial government subsidies for many of those who move from rural to urban locations in the drylands. The rural population in Ordos declined from 935,000 in 2000 to about 500,000 at the end of 2009, with commensurate increases in the urban population. This government promoted “ecological migration” may indeed reduce pressures on rural environments.

However, from a narrow environmental perspective, it would probably make more sense to allow urban investment and rural-urban migration to flow to alternative locations, away from these fragile drylands. This would nevertheless raise very serious political concerns, as it would entail not only pushing local farmers and herders, including many ethnic Mongolians, out of the rural areas, but out of their homelands as well.

Most drylands are far less arid than Ordos, and outside of China government-led “ecological urbanization” is rare. All drylands are characterized by low rainfall relative to evaporation, however, which constrains agriculture and biological productivity generally and can make it difficult to secure sufficient water for domestic purposes. Overall, drylands cover 40 per cent of the world’s land area and, in 2000, contained about a third of the world’s urban population and also about a third of its rural population. More recent estimates for the same year

suggest that, in Asia, about 0.54 billion out of 1.49 billion urban dwellers lived in drylands, while in Africa it is about 0.13 billion out of 0.28 billion. A recent assessment of water resource shortages in cities in Africa, Asia and Latin America with populations greater than 100,000 estimated that, in 2000, 150 million city dwellers faced perennial water resource shortages (less than 100 litres per capita per day) within their urban extents, and this figure is projected to grow to 993 million by 2050 . Most cities divert water from rural sources, however, and even in Africa these distances have been increasing substantially. In recognition of this, the assessment also estimated the population that would still face water shortage if the city could obtain water from within 100 kilometres. Under this measure, only 24 million faced water shortage in 2000, rising to 162 million in 2050 (McDonald et al., 2011). In these projections, urban population growth is the main driver, but climate change is a contributing factor and is growing in importance. All such estimates are highly uncertain, but they do point to what could potentially be extremely severe problems. One of the biggest urban dangers, alongside that of severe ecological and agricultural disruptions, is that water scarcity will prevent people from securing adequate water to meet their basic needs.

As with coastal settlements, it needs to be recognized that not all groups will be burdened equally and that adaptation efforts that try to prevent people from living in “exposed” cities could make matters worse. The water scarcity estimates above relate to water resource availability, and, in many cities, low-income residents, especially those in informal settlements, cannot secure access to improved water supplies even when local water resources are plentiful. Such households often lack access to the urban piped water network and depend on less reliable, less convenient, less healthy and sometimes considerably more expensive supplies. Some informal settlements are far from the piped network, while others may be refused access because they are on land that they do not own or on which

residential development is not formally allowed. In some cities, there are fears that if informal settlements are provided with services such as piped water more migration and illicit settlement will be encouraged. In effect, exclusionary policies are actually helping to create the hazards, and using them to shift people away from hazards is likely to be counterproductive. Almost a third of the urban households in Africa and Asia rely on groundwater from wells in or around their homes. A disproportionate share of these are low-income households, who are more likely to depend on shallow wells affected by local rainfall patterns and surface water flows and to be unable to draw on distant supplies should local water resources be depleted. At the same time, there are often high levels of water being wasted by a small number of consumers and high shares of unaccounted-for water. Such conditions make it both particularly important and particularly difficult to develop more efficient urban water systems that are more equitable within urban areas, as well as between rural and urban areas.

As in relation to coastal hazards, unless urban land issues are addressed, it is difficult to see how an equitable adaptation effort could be mounted. In particular, if discouraging settlement in dryland cities were to become part of an adaptation strategy, the watersupply problems faced by the most vulnerable households could be compounded. As with the settlement of flood plains, the use of vulnerable water supplies is already linked to a form of exclusion.

## **Adaptation and Migration**

An objection could be raised that resolving land issues in exposed cities will attract people to these cities. Moreover, if the measures are funded centrally rather than locally, the cost differentials that might otherwise help to drive people and enterprises away from hazardous cities will be attenuated. It is true that, like many measures that help cities in hazardous locations adapt to climate change, resolving

land issues will also make these cities more attractive to live in. The effect on migration is difficult to predict, however. In any case, with respect to land issues, the obvious response is to fund the measures locally, or, better still, to resolve land issues in less hazardous locations as well, rather than to let them continue to fester in exposed cities. Although the term “environmental refugees” was first used in the late 1970s, it is only recently that it has become a relatively common notion, in the wake of the emergent understanding of the impacts of climate change on natural ecosystems. A growing body of evidence suggests that environmental change, including flooding, changes in rainfall patterns, higher temperatures and more frequent extreme weather events, will almost certainly influence migration and mobility increasingly. However, contrary to earlier predictions, it is unlikely to result in mass movements across borders and from low-income countries to wealthier ones. While extreme weather events will cause displacements, current evidence suggests that these may be short-term and short distance, depending primarily on the capacity of communities and local institutions to provide effective coping support. In turn, slow-onset global environmental change is predicted to affect migration indirectly through its impact on the key socioeconomic and political drivers of mobility. The majority of these movements are likely to take place within national borders, reflecting the general patterns of migration worldwide, with international migrants estimated to account for only about 3 per cent of the world’s population against almost 11 per cent of internal migrants. Recent research in environmentally fragile rural areas in Bolivia, Senegal and the United Republic of Tanzania goes further in exploring the impacts of environmental degradation on migration and mobility patterns. It shows that desertification, soil degradation and disrupted rainfall patterns do indeed deeply affect the livelihoods of rural people who rely primarily on natural resources. In addition, the research suggests that in many cases it is possible to

identify “precipitating events”, such as unusually harsh droughts and epidemics of livestock disease, which have a long-lasting impact on local economies and livelihoods.

What is crucial in making these events so catastrophic is a socioeconomic context which restricts people’s ability to rely on well-tested strategies and diversify their activities within both the agricultural and non-farm sectors. The undermining of the local opportunities that have traditionally ensured resilience in areas where the environment is fragile and subject to cyclical disruptions has resulted in growing climate sensitivity and deeper impacts of specific climate hazards. In the United Republic of Tanzania, Maasai pastoralists describe the prolonged dry season of 1997 that was followed by El Niño-related floods in 1998 as a turning point in their traditional way of life. The related outbreaks of Rift Valley Fever between 2000 and 2002 decimated cattle already weakened by scarce rainfall. Drought returned in 2009-2010, making it difficult to find water and good pasture. The cattle death rate was so high that, in the words of the Maasai, it was not unusual to wake up in the morning and find that five to 10 animals had died overnight. This resulted in a glut in the market, with pastoralists anxious to sell their animals before disease and malnutrition killed them all. At the same time, conflicts of interest between different land users in Maasai areas, linked to increasing land value, continued to escalate. Under the Land Act of 1999, traditional pasture land was in many cases classed as unoccupied or unused and, thus, fell under the exclusive control of the central Government, which was then able to allocate it to private or foreign investors for large-scale commercial farming. This obliged Maasai pastoralists to move further away looking for water and pasture, thus undermining their traditional responses to environmental degradation; as a result, many of them turned to sedentary farming, while growing numbers of young men migrated to the cities. In all such cases, mobility has long been a traditional coping strategy for

people living in fragile environments. While there is little doubt that environmental degradation has become more severe and extreme events such as droughts have become more frequent, their impact has also become more severe as non-environmental factors have undermined alternative local economic opportunities. As a result, migration and mobility have become much more widespread and diverse. Perhaps more important, they have become a crucial part of local livelihoods: In all the case study locations in United Republic of Tanzania and other countries, the most vulnerable households were unanimously identified as those who do not migrate or receive remittances from migrant relatives.

## **Conclusion**

There has been a rapid growth of interest in the topic and a rapid expansion in the development and implementation of adaptation projects. The overwhelming scientific consensus on the causes and likely effects of climate change suggests that much of this adaptation activity has been driven by a sense of urgency to safeguard the lives and livelihoods of people living in particularly vulnerable countries.

Perhaps a more fruitful way to assess the impacts of climate change on population distribution is to focus on livelihood opportunities rather than mobility per se. From this perspective, mobility is a form of diversification of income sources. Studies show that desertification, soil degradation and disrupted rainfall patterns do indeed deeply affect the livelihoods of rural people who rely primarily on natural resources. In addition, the research suggests that in many cases it is possible to identify “precipitating events”, such as unusually harsh droughts and epidemics of livestock disease, which have a long-lasting impact on local economies and livelihoods.

Thank you.

**Course Name - Bachelor of Population Studies**

**Year - IIIrd Year**

**Paper Name – Population, Environment and Development**

**Paper No. VII**

**Lecture No. 14**

**Lecture Title : Population Dynamics and Climate Change  
Adaptation Policy**

### **Introduction**

Climate change has been described as the biggest global health threat of the 21st century. World population is projected to reach 9.1 billion by the year 2050, with most of this growth in developing countries. While the principal cause of the climate change is high consumption in the developed countries, its impact will be greatest on people in the developing world. Climate change and population can be linked through adaptation (reducing vulnerability to the adverse effects of the climate change) and, more controversially, through mitigation (reducing the greenhouse gases that cause climate change). The contribution of low-income, high-fertility countries to global carbon emissions has been negligible to date, but is increasing with the economic development that they need to reduce poverty. Rapid population growth endangers human development, provision of basic services and poverty eradication and weakens the capacity of poor communities to adapt to climate change. Significant mass migration is likely to occur in response to climate change and should be regarded as a legitimate response to the effects of

climate change. Linking population dynamics with climate change is a sensitive issue, but family planning programmes that respect and protect human rights can bring a remarkable range of benefits. Population dynamics have not been integrated systematically into climate change science. The contribution of population growth, migration, urbanization, ageing and household composition to mitigation and adaptation programmes needs urgent investigation.

### **Mitigation and Adaptation**

It is important to recognize two distinct ways in which population issues can be linked to climate change: mitigation (reducing the greenhouse gases that cause climate change) and adaptation (reducing vulnerability to the adverse effects of climate change). Few experts doubt the importance of population in relation to climate change adaptation, but the link between population and climate change mitigation is more controversial. The statement that ‘people causes climate change’ is often made to emphasize that climate change, as it currently unfolds, is a human-induced, rather than a natural, phenomenon. However, the principle cause of climate change is high consumption by people in developed countries where population growth has been low or negative. At national the level, therefore, there is a lack of association between the growth of greenhouse gas emissions and growth of populations during the last century. It is more accurate to say that consumers, rather than people, cause climate change; there is enormous variation in greenhouse gas emissions between individuals with high consumption levels in developed countries with low fertility rates, and individuals with low or negligible consumption in poor nations with high fertility rates. In other words, climate change is driven more by consumer behaviour than simply by population number.

While acknowledging the lack of association between population growth and greenhouse gases in the past, the relation between these two dynamics in the future

becomes more critical. lower-middle income nations, such as China, with rapidly developing economies, are already contributing an increasing proportion of the growth in global greenhouse gas emissions. In simplistic terms, it is the pattern of development and consumer behaviour in such countries that will determine the nature and extent of links between population dynamics and the climate change in the future. This does not detract from the view that ‘larger future world populations will face greater challenges than smaller ones in achieving climate-sustainable emissions’ and that ‘the total human impact on the earth system scales with population’. In starker terms, China has claimed that its one-child policy, which is estimated to have reduced the population of China by 500 million (from a projected 1.8 billion without such a policy to the current level of 1.3 billion) should be seen as contributing to its overall actions on climate change.

Rapid population growth has a negative impact on human development, provision of basic services and poverty eradication; these effects are magnified and become more urgent in the context of climate change. Reducing the rate of population growth has long been a developmental goal because of the detrimental effect of rapid population growth on economic development. No country, barring a few oil-rich states, has risen from poverty while still maintaining high average fertility. In developing countries, where birth rates have successfully declined (particularly Asia and Latin America) by about 25–40%, the resulting economic growth can be directly attributed to fertility decline. The link between slowing population growth and enhanced economic development is well documented particularly at the micro level.

Rapid rates of population growth in sub-Saharan Africa are impeding its ability to even contain the number of people living in extreme poverty. Although there has been a significant reduction in the percentage (from 45% in 1990 to 41% in 2004), the actual number of people living in extreme poverty continues to rise (by more

than 55 million) due to population growth. High population growth, fuelled by high fertility, impedes progress towards achievement of the Millennium Development Goals (MDG) and sustains poverty, the central phenomenon underlying vulnerability to climate change. This situation is illustrated by a series of developing country-led reports, the National Adaptation Programs of Action (NAPAs), which document the most pressing vulnerability to climate change impacts and the most urgent adaptation priorities. Nearly all (37 out of 40) NAPA reports refer to population growth as a significant factor that exacerbates the harmful impacts of climate change. They describe the impact of population growth on fresh water availability; on land degradation and soil erosion through over-grazing; deforestation and migration to coastal areas that are vulnerable to rising sea levels, floods and cyclones. In brief:

Rapid population growth acts in tandem with climate change to deplete key natural resources, such as water, fuel and soil fertility;

Rapid population growth can cause a significant increase in demand and often mismanagement of natural resources that are compromised and in decline due to environmental variability and climate change;

Population growth heightens human vulnerability to climate change in numerous ways and may force people to migrate to areas that are either environmentally marginal or more at risk to the negative impacts of climate change. For example, population growth in Ethiopia is resulting in soil degradation, dwindling land holdings and low agricultural productivity, which increases pressure on poor people to move either to environmentally marginal or urban areas. This leaves them more vulnerable and more likely to exploit new resources in an unsustainable way, leading to a vicious cycle of poverty and degradation.

## **Migration**

Migration is a crucial aspect of the link between population and climate change. Large-scale population movement is likely to intensify as changing climate leads to the abandonment of flooded or arid and inhospitable environments. The resulting mass migration will lead to many serious health problems both directly, from the various stresses of the migration process, and indirectly, from the possible civil strife that could result from chaotic movement of people.

Millions of people now living in low-lying coastal areas may need to leave their homes if sea levels rise as predicted by most climate-change experts. Protracted and severe droughts may drive more farmers from rural areas to cities to seek new livelihoods. Residents of urban slums in flood-prone areas may migrate to rural areas to escape danger. And in some instances, gradual environmental degradation may erase income-earning opportunities, driving some across national boundaries. The reasons for which people migrate or seek refuge are complex, making it hard to forecast how climate change will affect the future of migration. Nonetheless, climate change seems likely to become a major force for future population movement, probably mostly through internal displacement but also to some extent through international migration, particularly for small island states.

The majority of environmental migrants have so far come from rural areas within the least developed countries. But in the future, there may indeed be unprecedented levels of environmentally induced migration out of urban areas, as rising seas threaten to inundate densely populated coastal areas, where 60% of the world's 39 largest metropolises or metros are located, including 12 cities with populations of more than 10 million. One third of the world's population currently lives within 60 miles of a shoreline. There is an urgent need to encourage the growth of cities in climate-safe areas.

It is not only rapid population growth but rapid urbanization that is causing problems for the poorest countries. While fertility in urban area is generally much

lower than in rural areas, in-migration can be high and by the year 2050 it is estimated that 80% of the world's population will live in urban areas, putting huge pressures on infrastructure important for health (water, sanitation, health services etc) as well as employment opportunities. Social support networks in urban areas are often weak as rural family bases are weakened. Informal urban settlements are growing and people living in them are often faced with severe health problems. Climate change could exacerbate these problems by increasing in-migration to urban areas from rural agricultural land that is threatened by climate change, or by increasing migration from very poor to moderately poor countries, thus increasing pressure on their infrastructures, as well as by direct impacts on the populations of coastal mega cities.

Migration is a coping strategy employed by many rural communities. Migration associated with environmental decline is usually characterized by short distance and long-term movements, and while there are dire predictions for huge number of environmental refugees, these very high figures are unlikely to materialize. However, migrant groups are more vulnerable to a range of stressors including impacts from climate change and poor access to health care.

Why is discussion of population and climate change a sensitive issue?

Links between population dynamics and climate change are complex and often controversial. It is politically and ethically important that any discussions of the links between the two recognizes that Northern countries with low population growth are overwhelmingly responsible for climate change, and that Southern countries with high population growth have so far contributed very little to the climate change.

Sensitivities in discussing 'population' at government or international levels have persisted since human rights concerns were raised in the 1960s and 1970s over

aggressive ‘population control’ policies, notably in India and China. In 1994, the landmark International Conference on Population and Development, sought to dispel notions of coercive family planning by promoting a broad rights-based approach to sexual and reproductive health. Nevertheless sensitivities remain and discussion of family planning and ‘population’ in the context of development has only re-emerged in the last couple of years.

At the community level, the legacy of ‘population control’ programmes casts a long shadow. There is frequently suspicion about the motivation of those who seek to put in place family planning programmes, particularly in developing countries where cultural, social or religious practices oppose ‘artificial’ or ‘foreign’ methods of reducing fertility. Barriers to the acceptability of family planning take many forms, including religious opposition, particularly from the Catholic Church, adverse political influence, including the US administrations of recent Presidents Bush and Reagan, and legal and policy prohibitions, despite convincing evidence that maternal mortality and morbidity can be significantly reduced by increasing access to family planning services.

The complexity and sensitivity of the issues makes it imperative that debate is rights-focused and constructive. If the present scenario continues, in which the industrialized North does not radically reduce its carbon emissions, than advocating reduced population growth in the South risks appearing to blame the victim, i.e. blame climate change on population growth in the South, instead of acknowledging that the South will suffer most from climate change caused by consumption in the North. Recent publicity on links between population growth and climate change has tended to polarize the issue, with advocates for significant reduction in carbon emissions identifying population growth as, at best, a distraction from the main issue, and, at worst, an attempt by the ‘population control’ lobby to attract climate change funding for their work. In fact, very few

organizations deny that reductions in both consumption in the North, and global population growth which are important; it is often a question of which they emphasize more.

What can be done now to improve the situation ?

Now discussion of strategies to reduce carbon emissions is beyond the scope of this lecture. However, one strategy, contraction and convergence, must be highlighted because population is a key factor in its chance of success. Contraction and convergence seeks to reduce overall carbon emissions to a sustainable level, according to an equal share of emissions per person globally. Industrialized countries would dramatically reduce their emissions while developing countries would increase theirs up to an internationally agreed 'ceiling' level, to allow for, and stimulate, development and poverty reduction. Population is the major denominator of this model and a major determinant of whether a globally feasible and equitable per capita emission figure can be achieved.

Secondly, increased investment in family planning is urgently needed for achievement of both developmental and climate change goals. Family planning offers a unique solution among medical interventions. It reduces poverty, and maternal and child mortality; increases primary schooling, and women's education and empowerment; it increases environmental sustainability and mitigates the effects of climate change through stabilization of global populations.

Recent evidence indicates continued high levels of unmet need for family planning and other reproductive health services. Despite gains in recent years, an estimated 215 million women who want to avoid a pregnancy are not using an effective method of contraception. Some countries have experienced little recent change in the use of modern family planning, and others continue to have very low levels of

use. In Bangladesh, Kenya and Pakistan, the use of modern methods appears to have stalled at about 47, 32 and 20%, respectively, among married women of reproductive age. In a number of West African countries, such as Niger and Nigeria, fewer than 10% of married women practice modern contraception.

The impact of family planning in reducing maternal mortality, unsafe abortion, infant and child mortality, makes it an extremely cost-effective investment. As confirmed by the latest figure, if all women needing modern contraceptives were to receive them, the cost of family planning services would increase from the current level of \$3.1 billion to \$6.7 billion, but substantial savings would accrue. For example, reducing unintended pregnancies by meeting family planning needs would save \$5.1 billion that would otherwise be used to care for pregnant women and newborns. The cost of providing a package of family planning, maternal and newborn services to all women in developing countries who need them is equivalent to an average yearly cost of \$4.50 per person (\$3.30 for maternal and newborn care and \$1.20 for contraceptive services). This cost compares favourably with other cost-effective health interventions such as anti-retroviral therapies and childhood immunizations.

Despite the evident need for family planning services, their contribution to achievement of the MDGs and their cost-effectiveness, there is a lack of global investment in family planning. The decline in funding for family planning over the last 15 years must be reversed. Although there was global agreement following the International Conference on Population and Development (1994) about the value of sexual and reproductive health and rights for a wide range of international development priorities, funding for family planning services has declined over the last 15 years. This has, in part, been due to the lack of visibility of sexual and reproductive health and rights in the MDG framework—an omission that was

partially addressed in 2005 by the addition of target 5B, under the maternal health goal, to achieve universal access to sexual and reproductive health by 2015. Substantial evidence exists to demonstrate the contribution that sexual and reproductive health and rights can make to the MDGs.

## **Recommendations for Action on Population and Climate Change**

- Increased investment in family planning to address unmet need, promote rights-based development and contribute to climate change adaptation.
- Increased investment in female education to enable control of fertility and develop a skilled labour force to maximize potential demographic dividends.
- Effective leadership to ensure that population and its importance in relation to climate change is discussed at the most influential levels, nationally and internationally, to bring about joint action.
- Expansion of successful, locally led action on climate change, including the National Adaptation Programmes of Action, to ensure that climate change adaptation reflects local knowledge, skills and expertise.
- Forward planning in relation to services, housing, land and property to accommodate expected changes in migration patterns in response to the effects of climate change.
- Stronger initiatives to encourage development of cities in ‘climate-safe’ areas.

What are the major gaps in knowledge about population dynamics and climate change?

Population dynamics have not been integrated systematically into climate change science. Research is urgently needed to clarify the contribution of population

growth, migration, urbanization, ageing and household composition to effective climate change mitigation and adaptation programmes.

Relatively little research has been conducted to explore the links between population dynamics and climate change. The most comprehensive modelling analysis to date using climate forecasts from the IPCC identifies population growth, economic growth, technological change and changes in the patterns of energy and land use as the major driving forces of CO<sub>2</sub> emissions. However, the treatment of population in the models has been questioned. While the modelling generally shows positive associations between population size and emissions outcomes, other important variables such as urbanization, ageing and household size have not been adequately taken into account. Thus far, the IPCC has not addressed population dynamics, or the potential policy implications in relations to climate change in any depth.

## **Conclusion**

The climate change and population can be linked through adaptation (reducing vulnerability to the adverse effects of climate change) and, more controversially, through mitigation (reducing the greenhouse gases that cause climate change). The contribution of low-income, high-fertility countries to global carbon emissions has been negligible to date, but is increasing with the economic development that they need to reduce poverty. Rapid population growth endangers human development, provision of basic services and poverty eradication and weakens the capacity of poor communities to adapt to climate change.

It is important to recognize two distinct ways in which population issues can be linked to climate change: mitigation (reducing the greenhouse gases that cause

climate change) and adaptation (reducing vulnerability to the adverse effects of climate change). Few experts doubt the importance of population in relation to climate change adaptation, but the link between population and climate change mitigation is more controversial. Contraction and convergence seeks to reduce overall carbon emissions to a sustainable level, according to an equal share of emissions per person globally. Industrialized countries would dramatically reduce their emissions while developing countries would increase theirs up to an internationally agreed 'ceiling' level, to allow for, and to stimulate development and poverty reduction. Increased investment in family planning is urgently needed for achievement of both development and climate change goals. Family planning offers a unique solution among medical interventions. It reduces poverty, and maternal and child mortality; increases primary schooling, and women's education and empowerment; it increases environmental sustainability and mitigates the effect of climate change through stabilization of global population.

## **Course Name - Bachelor of Population Studies**

**Year – IIIrd**

**Paper Name – Population, Environment and Development**

**Paper No. I**

**Lecture No. 15**

**Lecture Title : Population, Gender and Climate Change**

### **Introduction**

Climate change and gender is concerned with gender differences in the context of climate change and the complex and intersecting power relations arising from it. By altering the ecosystems of the planet, climate change, and more specifically global warming, directly impacts the human race. These effects vary for different segments of the population, specifically for people of different genders. In many cases, women are more vulnerable to the negative effects of climate change because of their lower social status in most countries. Many impoverished women, especially those in the developing world, are farmers and depend on the natural environment for subsistence and income. By further limiting their already constrained access to physical, social, political, and fiscal resources, climate change often burdens women more than men.

Locally and globally, both governments and non-governmental organizations respond to climate change. Some of these efforts focus on mitigating the effects of climate change while others aids societies in adapting their lifestyles to changes in their environment. Most policy responses in the late 20th and early 21st century either did not focus on the social effects of climate change or did not consider gender in these efforts.

Analysis of gender in climate change, however, not only means applying a binary male/female system of analysis on the sets of quantitative data but also scrutinizing discursive constructions that shapes power relations connected to climate change. Climate change is a lasting variation in the global climate in response to natural and/or human factors. Climate change, and more specifically global warming, can cause glaciers to melt and sea levels to rise, pushing saltwater into freshwater systems. Significant changes like the salinization of water push species to new locations, directly impacting global ecosystems. Climatic changes affect weather patterns, increasing the frequency and intensity of floods, droughts, and extreme weather events. These types of conditions also result in natural disasters. While climate change is not solely destructive, the negative impacts of global warming on health and agriculture are greater than the benefits for the majority of the world and increase as global temperatures rise. A two-degree rise in temperature threatens 25 percent of all plant and animal species on the planet with extinction. These climatic changes cause the most harm for the most vulnerable populations or those who lack the ability to cope with and adapt to climate change because of a lack of access to essential resources. Marginalized groups like women, children, the elderly, and the impoverished have less access to and control over resources and therefore are more negatively impacted by climate change.

### **Gender Differentiated Vulnerability to Climate Change Impacts**

Gender is the collective social differences between males and females, as determined by culture. Gender is one of many components of vulnerability to climatic change. Changes in the climate affect genders differently, magnifying existing gender inequality. Both women and men are affected by and vulnerable to climate change and global warming, but women often bear more of the burden. This high vulnerability is mostly not due to biological or physical differences, but is formed by the social, institutional and legal context. Subsequently, Vulnerability is less an intrinsic feature of women and girls but rather a product of their marginalization.

Accordingly, a study by the London School of Economics found that, in natural disasters in 141 countries, gender differences in deaths correlated to women's economic and social rights in those countries. Due to their social standing, women in developing countries are not generally taught survival skills like swimming or

climbing, meaning they are more likely to die in a natural disaster. When women have fewer rights and less power in society, more of them die due to climate change, but when there are equal rights for all groups, death rates are more equally matched.

The poor and impoverished are dependent on the environment and its natural resources for subsistence and income; poverty research reveals that many of the poor are women because, as a group, they have less social power. Many women in developing countries are farmers, but women as a group have trouble obtaining education, income, land, livestock, and technology, meaning climate change may negatively impact female farmers more than male farmers by further limiting their resources. In 2009, women produced between 60 and 80 percent of all food in the developing world, yet they owned ten percent of all agricultural land and approximately two percent of land rights.

As the planet warms and access to water changes, the crop yields tend to decrease. These effects are not uniform, and they have the largest impact on areas of the world where the economy depends on agriculture and the climate is sensitive to change.<sup>8</sup> In developing countries, women are often in charge of obtaining water, firewood, and other resources for their families, but these resources are directly impacted by climate change, meaning women must travel further and work longer to access these materials during crisis. Climate change increases burdens placed on women by society and further limits their access to education and employment.

Natural disasters disrupt daily routines and complicate gender and family roles, which can cause victims of natural disasters to feel powerless and frustrated. These feelings often result in aggression against less powerful groups. Women and children in developed and developing countries are at higher risk of sexual abuse during and after natural disasters than before. Condom use during disasters is also lower than at other times, because of decreased access to condoms. Combined with the accelerated spread of diseases and infections in developing countries, the breakdown of the social order and the malnourishment that sometimes accompanies climate change have led to higher rates of dengue fever, malaria, HIV, and STD or STI transmission, especially for women. Elderly women are also particularly at risk during natural disasters and times of crisis because they are more susceptible to climatically-induced health risks like disease and because they are often isolated from social support to which men and some younger women have access.

Not only the impacts of The IPCC Fifth Assessment Report concludes that there is 'robust evidence' for an increase of gender inequalities as a result of weather events as well as for the perpetuation of differential vulnerabilities. The increase of inequalities due to climate change can have several reasons. For example, girls often face more serious risks than boys due to unequal distribution of scarce resources within the household. This effect is amplified by climate change induced resource scarcity. Furthermore, Climate change often results in an increase in out-migration of men. This leaves women with an increased work-load at home, resulting in a feminization of responsibilities. Climate change is predicted to increase frequency and magnitude of natural hazards such as extreme heat. During and after these hazards especially women are burdened with increased care work for children, the sick and old, adding furthermore to already significant amount of household duties.

Some scholars believe that climate change policy that does not address gender is not effective. Much of the climate change policy created before the 21st century focused on economic rather than social effects of climatic change and global warming. Climate change research and policy began to look at gender in the 21st century. The Convention on the Elimination of All Forms of Discrimination Against Women (CEDAW), the Millennium Development Goals, and the Beijing Platform for Action are all gender-awareness initiatives that may affect climate change policy. While women in rural areas depend on the environment heavily, they are not usually represented in climate change decision-making processes, whether those processes are adaptative or mitigative.

Some of the international responses to climate change that do not address gender or employ gender-sensitive approaches include Agenda21, the Rio Declaration on the Environment and Development, the United Nations Framework Convention on Climate Change (UNFCCC), the Kyoto Protocol, the Bali Action Plan, and the Intergovernmental Panel on Climate Change (IPCC). As of 2009, the Convention on Biological Diversity (CBD) is the only international climate change response to have incorporated gender dimensions.

## **Mitigation and Adaptation Efforts**

Mitigative policy attempts to moderate the intensity of global warming's effects through measures like reducing greenhouse gases and enhancing sinks. According

to research, men and women use their knowledge of their environments to mitigate disasters, transferring this knowledge through informal education. Some of this knowledge includes food preservation processes, methods of construction, and understanding of natural resources in the area. Examples of mitigative efforts include carbon emissions trading. Mitigative efforts largely ignore gender.

Adaptive policy involves spontaneous or planned efforts to tolerate the negative effects of climate change and take advantage of the beneficial effects. Men and women respond differently to climate change and subsequently also to adaptation measures, which can affect men and women unequally, when the gender perspective is ignored in the policy. For example, the IPCC report AR5 points out that adaptation measures in agriculture can in some cases lead to increased gender inequalities.

Women can be important players in climate change policy because they have gendered knowledge about things like managing water resources. CARE's research shows that, when women are in control of the family income, it is more likely to be spent on human development. Women are also generally more risk averse than men and make safer decisions. Yet, in 2008, the EU Commission and Council on adaptation policy did not address gender at all. Furthermore, gender roles and subsequent institutional and social pressures can pose constraints to adaptive capacities. One research by Jabeen points out the impact of spatial practices that manifest power relations and marginalise women. This decreases the ability of women to make decisions and subsequently their adaptive capacity. Some feminist scholars therefore maintain that fundamental patriarchal structures are mainly responsible for the inability to adapt to and mitigate climate change.

Some scholars recommend incorporating gender dimensions into research and using human-rights approaches like the Millennium Development Goals and CEDAW as frameworks for climate change responses. Several organizations believe that linking mitigation and adaptation approaches, equally funding both types of efforts, and integrating gender into mitigative and adaptive policies will better address the consequences of climate change. The UNDP mandates gender mainstreaming in all adaptation measures, meaning adaptive responses to climate change must consider gender and gender equality from their inception and cannot incorporate a gender component late in their development or only in certain areas. Others believe that imposing mainstreaming agendas on communities can make gender-sensitive policy less effective and may even be counter-productive,

emphasizing gender differences and isolating gender issues from other areas affected by climate change. Most scholars and organizations working to address climate change agree that policy-makers must work with both women and men and take them into consideration at all levels.

In 2009, a forest-protection mechanism called Reducing Emissions from Deforestation and Forest Degradation (REDD) was agreed upon by attendees of the United Nations Conference on Environment and Development. Many development organizations praise the REDD mechanism, but others criticize its function as a market-based instrument and its impact on local communities.

Gender inequalities do not only emerge in context of climate change as a physical reality, but also within discourses of and negotiations over climate change. This is reflected in the fact that men are dominant in all levels of climate change debate – from the science to policy, from the local to the global level. This has an effect on climate change policies. Roehr notes that, while the United Nations officially committed to gender mainstreaming, in practice gender equality is not reached in the context of climate change. Little data and research results in insufficient gender awareness in enacted gender policies.

Now contribution to climate change is correlated to gender. A study on car use in Sweden for example found out that men are more likely to use the car more, for longer distances and alone compared to women, thereby exhausting more CO<sub>2</sub> than women. A study of young people in Finland shows that concern over climate change has higher impact on Climate friendly consumption in women compared to men. This may be incidental to differences in perception of climate change tend to agree with the scientific opinion that anthropogenic pollution is mainly responsible for climate change (m: 56%, f: 64%) and are more concerned about its effects: 29% of men and 35% of women in the US "worry about global warming a great deal". Women furthermore possesses unique skills and knowledge, which are important in building equal and sustainable responses to climate change. The UNFPA report State of world population 2009 - Facing a changing world: women, population and climate identifies women as important actors in mobilizing against climate changes. The report quotes Wangari Maathai that "Women hold the key to Climate's Future"; "when we talk about reducing emissions from deforestation and degradation, we need to focus on women ..."

## Gender in Climate Science

According to a survey conducted IPCC WGI Co-Chairs and Technical Support Unit (TSU) on April 25th 2014, many of the polled authors stated that they saw the need for a better gender balance. This is reflected in the gender balance of contributors to the fifth IPCC assessment report. Only 27% of contributors to Working Group II, concerned with impacts, adaptation and vulnerability and 18.5% of contributors of Working Group I, concerned with the physical science basis, are female. This also applies to other organisation, as for example only 7% of leadership positions in the offices of National Weather Services are women. On a similar note, a study conducted by the University of Oxford in cooperation with the Nielsen Company found that 18 of the 22 'most influential spokespeople on climate change' are male. Female spokespeople were neither politicians nor scientists and their direct connection to climate change is therefore doubtful. A list of prominent women scientists is available at [Women in climate change](#). Some feminist scholars hold that the debate on climate change is not only dominated by men but also primarily shaped in 'masculine' principles, which limits discussions about climate change to a perspective that focuses on technical solutions. This perception of climate change hides subjectivity and power relations that actually condition climate change policy and science, leading to a phenomenon that Tuana terms 'epistemic injustice'. Similarly, MacGregor criticizes the scientific discourse from a less quantitative perspective but focuses on discursive aspects. She attests that by framing climate change as an issue of 'hard' natural scientific conduct and natural security, it is kept within the traditional domains of hegemonic masculinity. Seager maintains that the 2°C aim, which is a reoccurring topic in the climate change debate, is not, as often assumed, a safe goal for all people on the planet. Rather it will ensure the stability of a patriarchal capitalism and subsequently the continuity of power for those who are powerful today.

### Case studies Bangladesh

Bangladesh is prone to flooding and waterlogging because of its location as a river delta. It was labeled a Least Developed Country by the United Nations, with high rates of poverty and weak government, meaning it is especially vulnerable to natural disasters. It is densely populated and about 63 percent of its population was working in the agriculture, forestry, and fishing sectors by the year 2010. Slightly less than half of Bangladesh's population is women and, in 2001, 80 percent of

women lived in rural areas. Bangladeshi women are particularly vulnerable to climate change because they have limited mobility and power in society. Research shows that, after the cyclone and flooding of 1991, Bangladeshi women aged 20–44 had a much higher death rate than men of the same age-group: 71 per 1000, compared to 15 per 1000 for men. Even if a cyclone warning is issued, many women die because they must wait at home for their relatives to return before they can seek shelter.

#### Flooded village after 1991 cyclone

As climate change progresses, access to and salinization of water sources are becoming problems in Bangladesh. When there is a lack of drinking water, women are responsible for procuring it regardless of the distance they must travel or the terrain they must cover. During natural disasters, male unemployment rises. When men become unemployed, women's responsibilities increase because they must secure and manage income and resources on the top of feeding the family and caring for children and the elderly. As the number of men at home without income or occupation rises, more women report mental and physical abuse by their male relatives. To cope with climatic change, women store matches, food for the family, fodder for the livestock, medicine, and fuel sources in safe places in case of disaster. They also teach their children skills such as swimming to prepare them for crisis. The global relief agency CARE believes that climate-resilient jobs such as duck rearing can help increase Bangladeshi women's resilience to climate change. Since the disasters of 1991, Bangladeshi women are more involved in disaster response decision-making, through local committees and community organizations established by the government and the NGOs. As the part of the United Nations Framework Convention on Climate Change's National Adaptation Programme of Action (NAPA), Bangladesh published a Poverty Reduction Strategy paper in 2005 that incorporated gender mainstreaming into its climate change adaptation plan, but as of 2008 those goals and policies were not fully implemented.

#### India

The Climate & Development Knowledge Network commissioned a film to be made on the impact of climate change on women in India. Directed by Krishnendu Bose, the film looks at the way in which women, who make up two thirds of the farming workforce, are poorly represented in agricultural policy. It depicts the challenges faced by rural women working in agriculture where drought and

flooding is harming their livelihoods and ability to farm vegetables and fish. It shows isolated stories of success where resourceful techniques are integrated into farming despite challenges from climate change and poverty, such as Rita Kamila, who feeds her chickens over her flooded fields in order to grow the number of fish that now live in her fields. She is able to earn money from the growing fish stock. The film calls upon policymakers to support local initiatives like Rita's to bolster the resilience to climate change and to enhance the work that the women are already doing to protect communities against its risks. Currently only land owning farmers are entitled to government schemes, but only 10% of land owning farmers are women, thus it is critical to scale up women's access to government schemes.

## **Conclusion**

Gender is the collective social differences between males and females, as determined by culture. Gender is one of many components of vulnerability to climatic change. Changes in the climate affect genders differently, magnifying existing gender inequality. Both women and men are affected by and vulnerable to climate change and global warming, but women often bear more of the burden. This high vulnerability is mostly not due to biological or physical differences, but is formed by the social, institutional and legal context. Subsequently, Vulnerability is less an intrinsic feature of women and girls but rather a product of their marginalization.

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**Course - Bachelor of Population Studies**  
**Year- IIIrd**  
**Paper Name - Population, Environment and Development**  
**Paper No. VII**  
**Lecture No. 16**  
**Lecture Title - Women and Climate Change**

## **Academic Script**

### **Introduction**

Hello friends, today the topic of my lecture is ‘women and climate change.’ Climate change is a perceptible and immediate reality, not just a future challenge. The whole world is experiencing the growing impact of our changing climate – from droughts in the United States to changing rainy seasons in sub-Saharan Africa and an increasing number of cyclones in South East Asia. Recent research by the World Meteorological Organization (WMO) highlighted that 94 per cent of countries had experienced their warmest ever decade in 2001–10.

Studies have shown that women enigmatically suffer the impacts of disasters, severe weather events, and climate change because of cultural norms and the unequal distribution of roles, resources, and power, especially in developing countries.

Many women around the world must adapt their lives to a changing climate. Increases in extreme weather conditions—droughts, storms, and floods—are already altering economies, economic development, and patterns of human migration, and are likely to be among the biggest global health threats this century. Everyone will be affected by these changes, but not equally. Vulnerability to climate change will be determined by a community or individual's ability to adapt.

### **Women, Climate Change and Biodiversity**

Climate change is likely to become the dominant driver for the loss of biodiversity in the coming decades. Biodiversity plays an important role in climate change adaptation and mitigation. For example, in contexts where deforestation is responsible for an average of 20% of human-induced carbon dioxide emissions, the conservation of natural habitats can reduce the

amount of carbon dioxide released into the atmosphere. Additionally, the conservation of mangroves and drought-resistant crops can reduce the impacts of climate change such as flooding and famine.

In the rural areas of Africa and Asia, women and men are highly dependent on biomass, such as wood, agricultural crops, wastes and forest resources for their energy and livelihoods. However, in the face of climate change, the ability of women and men to obtain these indispensable resources is reduced. It is important to note that the declining biodiversity does not solely impact the material welfare and livelihoods of people; it also cripples access to security, resiliency, social relations, health, and freedom of choices and actions.

In poor communities in most developing countries, women and girls are responsible for collecting traditional fuels, a physically draining task that can take from 2 to 20 or more hours per week. As a result, women have less time to fulfill their domestic responsibilities, earn money, engage in politics or other public activities, learn to read or acquire other skills, or simply rest. Girls are sometimes kept home from school to help gather fuel, perpetuating the cycle of disempowerment. Moreover, when environmental degradation forces them to search farther a field for resources, women and girls become more vulnerable to injuries from carrying heavy loads long distances, and also face increased risk of sexual harassment and assault.

### **Women, Climate Change, Agriculture and Food Security**

The serious consequences of climate change can be seen in four dimensions of food security: food availability, food accessibility, food utilization and food systems stability. Women farmers currently account for 45-80 per cent of all food production in developing countries depending on the region. About two-thirds of the female labour force in developing countries, and more than 90 percent in many African countries, are engaged in agricultural work.

In the context of climate change, traditional food sources become more unpredictable and insufficient. Women face loss of income as well as harvests—often their sole sources of food and income. Related increases in food prices make food more inaccessible to poor people, in particular to women and girls whose health has been found to decline more than male

health in times of food shortages. Furthermore, women are often excluded from decision-making on access to and the use of land and resources critical to their livelihoods.

For these reasons, it is important that the rights of rural women are ensured in regards to food security, non-discriminatory access to resources, and equitable participation in decision-making processes.

### **Women, Climate Change, Gender equality and Health**

In terms of health, some potential climate change situations include: increased morbidity and mortality due to heat waves, floods, storms, fires and droughts. What's more, the risk of contracting serious illnesses is aggravated by environmental hazards caused by climate change. In addition to the reference provided above of climate impacting women's health through water scarcity and water contamination, an abundance of evidence links the evolution and distribution of infectious diseases to climate and weather. This entails a greater incidence of infectious diseases such as cholera, malaria, and dengue fever, due to the extension of risk seasons and wider geographic distribution of disease vectors.

At the same time as climate defines the geographical distribution of infectious diseases, weather influences the timing and severity of epidemics. Diseases transmitted by mosquitoes, for example, are particularly sensitive to variations in climate. Warmth accelerates the biting rate of mosquitoes and speeds up the maturation process of the parasites they carry. Sub-Saharan Africa is already home to the most efficient mosquito species and to the most severe forms of malaria. Rising temperatures are likely to accelerate the lifecycle of the malaria parasite and to spread malaria to new areas.

Moreover, floods—increasing consistently with climate change—may also increase the frequency of water-related diseases, especially water and vector-borne diseases, which affect millions of poor people each year. In addition, an increase in prevalence of diseases will likely aggravate women's care-giving of family and community members who are ill.

### **Women, Climate Change and Water Resources**

Climate change affects the availability of water used for domestic and productive tasks. The consequences of the increased frequency in floods and

droughts are far reaching, particularly for exposed groups, including women who are responsible for water management at the household level.

In many parts of the world, women and girls bear the burden of fetching water for their families and spend significant amounts of time daily hauling water from distant sources. The water from distant sources is rarely enough to meet the needs of the household and is often contaminated. Women and girls also pay the heaviest price for poor sanitation. To give an example, in cases where the arsenic contamination of groundwater is prominent, increased flood levels intensify the rate of exposure among rural people and other socio-economically disadvantaged groups. The resulting health problems include: scratches, the hardening of skin, dark spots on hands and feet, swollen limbs and the loss of feeling. Arsenic exposure also manifests itself in the form of skin scratches that usually have negative social effects for arsenic-poisoning (arsenicosis) victims—the situation is particularly worse for women who can be shunned, excluded, and stigmatized, based on physical appearance— this also impacts the ability of single women to get married, and in many cases unmarried women are more vulnerable to poverty and social exclusion.

Given the changing climate, inadequate access to water and poor water quality does not only affect women, their responsibilities as primary givers, and the health of their families', it also impacts agricultural production and the care of livestock; and increases the over- all amount of labour that is expended to collect, store, protect and distribute water.

### **Women, Migration and Environmental Degradation**

Climate change adds a new complexity to the areas of human mobility and settlement by aggravating environmental degradation. The gradual process of environmental deterioration is likely to increase the flows of both internal and cross-border human migration over the next decades. Increased human migration entails that a greater number of people are being displaced due to severe coastal weather events, the erosion of shorelines, coastal flooding, droughts and agricultural disruption. For example, Cyclone Nargis that struck the Irrawaddy Delta region in Myanmar in May 2008 severely affected 2.4 million people and led to the displacement of 800,000 people. Similarly, desertification distressing the dry land regions of Mexico leads 600,000 to 700,000 people to migrate from these areas annually. The migratory consequences of environmental factors result in higher death rates

for women in least developed countries, as a direct link to their socioeconomic status, to behavioural restrictions and poor access to information.

While migration is a survival response to climate change, frequent human resettlement further aggravates the loss of biodiversity and ecosystems. This is the case given that migration demands vast changes in land-use, the physical modification of rivers or water withdrawal from rivers, the loss of coral reefs, and damage to sea flows, among other things.

### **Women as Agents of Change**

Mitigation, adaptation, technology transfer and financing are four major areas which have been identified as critical building blocks in response to climate change. The first two blocks are linked to manifestations of climate change; and the latter two are linked to the means for achieving development goals. Mitigation involves a process of curbing greenhouse gas emissions from human activities, for example emissions from fossil fuels as well as deforestation, with a view to stabilizing greenhouse gas concentration at a safe level. Adaptation involves a range of activities to reduce vulnerability and build resilience in key sectors, such as water, agriculture and human settlements. New and improved technologies and financing initiatives at all levels also need to receive attention as part of collective efforts to address climate change.

Mitigation and adaptation efforts should systematically and effectively address gender-specific impacts of climate change in the areas of, inter alia, food security, agriculture and fisheries; biodiversity; water; health; human rights; and peace and security.

Financing mechanisms must be flexible enough to reflect women's priorities and needs. The active participation of women in the development of funding criteria and allocation of resources for climate change initiatives is critical, particularly at local levels. Gender analysis of all budget lines and financial instruments for climate change is needed to ensure gender-sensitive investments in programmes for adaptation, mitigation, technology transfer and capacity building.

Technological developments related to climate change should take into account women's specific priorities, needs and roles, and make full use of

their knowledge and expertise, including indigenous knowledge and traditional practices. Women's involvement in the development of new technologies can ensure that they are user-friendly, affordable, effective and sustainable. Gender inequalities in access to resources, including credit, extension services, information and technology, must be taken into account in developing activities designed to curb climate change. Women should also have equal access to training, credit and skills-development programmes to ensure their full participation in climate change initiatives.

Governments should thus be encouraged to incorporate gender perspectives into their national policies, action plans and other measures on sustainable development and climate change. They can do the same through carrying out systematic gender analysis; collecting and utilizing sex-disaggregated data; establishing gender-sensitive benchmarks and indicators; and developing practical tools to support increased attention to gender perspectives.

The consultation and participation of women in climate change initiatives must be ensured. The role of women's groups and networks should be strengthened. Currently, women are underrepresented in the decision-making process on environmental governance. They should be equally represented in decision-making structures to allow them to contribute their unique and valuable perspectives and expertise on climate change. Women can make substantive contributions through their knowledge and experience on issues related to the management of natural resources. For example, women in leadership positions at all levels have made a visible difference in natural disaster responses, both in emergency rescue and evacuation efforts and in post-disaster reconstruction, as well as in the management of essential natural resources, such as fresh water.

**Conclusion-** Women are very vulnerable, and are most likely to be unreasonably affected by the adverse impacts of climate change because they constitute the majority of poor people.

Women's traditional roles as the primary users and managers of natural resources, primary caregivers, and labourers engaged in unpaid labour clearly mean that they are involved in, and dependent on livelihoods and resources that are put most at risk by climate change. Moreover women lack rights and access to resources and information vital to overcoming the challenges posed by climate change.

More frightening is the fact that women are frequently excluded from processes and decisions relating to the use and management of natural resources, including those impacting on climate change. In this regard, several gender networks have called for the effective participation of women in climate processes and decisions at all levels. Women and gender experts should ensure that they are well informed about the gendered dimensions of climate sensitive sectors, particularly the existing inequalities between men and women and how climate change can intensify these inequalities. The vulnerability of women to climate change warrants the design of gender sensitive mitigation and adaptation policies and measures. Women should be capacitated and empowered with the requisite information, knowledge, skills, rights, and with adequate resources to enable them to act.

**Course Name - Bachelor of Population Studies**

**Year - IIIrd**

**Paper Name - Population, Environment and Development**

**Paper No. VII**

**Lecture No. 17**

**Lecture Title : Youth and Climate Change**

### **Introduction**

Hello and welcome to this special series on population studies, today we are talking about youth and climate change.

Climate change is one of the defining challenges of the twenty first century. It is a challenge that is global in both its impact and its solutions but one that is not shared equally, as developing countries are likely to be among the most seriously affected by and the least able to address the consequences of climate change. Climate change touches every aspect of life and impinges on development efforts, with consequences ranging from immediate to long term. Major adjustments are required to promote more sustainable patterns of production and consumption at both the collective and individual levels. Solid evidence exists that climate change will have a more serious impact than initially anticipated and that adaptation and mitigation will entail significantly higher costs if action is deferred than if the problem is addressed now. Addressing and adjusting to the challenge of climate change is certain to be a defining feature of the future of today's youth. It is therefore critical that young people educate themselves and become more actively involved in combating this threat. Youth have long been involved in environmental protection activities at the school and community levels, but the time has come for

them to participate more actively in shaping global decisions relating to climate change.

## **Youth and Climate Change Challenges**

Young people must contribute to the process of addressing this critical challenge, as they will feel its impact most acutely throughout their lives. Young advocates for the environment are becoming more insistent that their voices be heard. In recent years, youth have been recognized as a constituency, albeit with probationary status, at the annual sessions of the Conference of the Parties to the United Nations Framework Convention on Climate Change (UNFCCC), the world's most important intergovernmental forum dealing with international efforts and commitments to combat climate change. Young people must continue to move forward, strengthening their position until they occupy a secure place in the decision-making process. To that end, the current World Youth Report provides an assessment of youth participation today and identifies steps that can be taken at the local and international levels to facilitate wider and more effective participation among youth in addressing climate change. According to the United Nations Environmental Programme (UNEP), there is a significant possibility that many of the present trends will accelerate, leading to a higher risk of abrupt and/ or irreversible climatic shifts and an even more pronounced increase in the frequency and intensity of extreme weather events. If the tipping point is reached, the world may witness the disruption of seasonal weather patterns that support the agricultural activities of half the human population, the diminution of carbon sinks in the oceans and on land, and the destabilization of major ice sheets, leading to unanticipated rates of sea level rise in the twenty first century. There is almost unanimous agreement among scientists and policymakers that human behaviour has contributed to the escalation of climate change through increased emission of greenhouse gases (GHGs), especially carbon dioxide (CO<sub>2</sub>). Global GHG emissions linked to human activities have increased considerably since pre industrial times but have accelerated dramatically in recent decades, rising 70 per cent between 1970 and 2004—predominantly owing to the burning of fossil fuels and land use change (Intergovernmental Panel on Climate Change, 2007). By 2004, the energy supply sector accounted for about a quarter of all anthropogenic

GHG emissions, while the industry, forestry, agriculture, and transport sectors each contributed between 13 and 19 per cent to the overall total.

## **Green Job Sector**

Recent years have seen significant growth in green industries—and green jobs—around the world. In addition to providing much needed employment opportunities for youth, green jobs represent a way for young people to contribute directly to the fight against climate change. They enable youth to move beyond adopting green behaviours in their private lives, making it possible for them to translate their convictions into action in the workplace. What, exactly, are green jobs? They are defined by UNEP as work in agriculture, industry, research and development, services, and administration that contributes to preserving or restoring the quality of the environment (United Nations Environment Programme and others, 2008). The growing attention given to climate change and sustainable development in the midst of the financial and economic crisis that began in 2008 translates into an ideal opportunity to promote green economic growth around the world. In the United States, about US\$ 60 billion in fiscal stimulus money will be invested in clean energy, including the creation of green jobs (United States, White House, 2009). In China, 12 per cent of a US\$ 586 billion economic stimulus package will be allocated to increasing energy efficiency and other environmental improvements (Barbier, 2009). The global market for environmental products and services is expected to double by 2020 (United Nations Environment Programme and others, 2008). It has been argued that the renewable energy sector may be well situated for the creation of green jobs both now and in the future (United Nations Environment Programme and others, 2008). There have been more than 2.3 million green jobs created in the renewable energy sector in recent years, including 300,000 in the wind industry, 170,000 in solar photovoltaics, 624,000 in the solar thermal industry, and 1,174,000 in biomass production. Investment in renewable energy has increased significantly in the past decade, growing from US\$ 10 billion in 1998 to US\$ 66 billion in 2007. With investment rising at an annual rate of 20 per cent, the number of jobs in the renewable energy sector could exceed 20 million by 2030. Potential job opportunities exist for youth in many areas of the renewable energy sector, including design and planning, energy policy analysis and development, energy economics and energy management, energy efficiency

consulting, assessment of the social and environmental impact of energy systems, and research and development (United Nations Industrial Development Organization, 2003). Some young people, such as those involved in the Kibera Community Youth Programme in Nairobi, have already begun to inject themselves into the sector and its development improving energy efficiency. Building and construction constitutes another area with considerable potential for creating green jobs for youth. There are currently 4 million jobs in Europe and the United States devoted to energy resource optimization, and this number could increase significantly. Youth who are willing to complete apprenticeships in this field may find themselves well positioned to take advantage of new employment opportunities in the coming years. Young people, in particular rural youth who seek continuity in their livelihoods, may want to take advantage of green jobs aimed at minimizing the negative impact of climate change on agriculture. Various efforts are under way to make agriculture more sustainable, both by reducing its effect on the environment and by safeguarding it against the consequences of environmental change. Organic farming is one area with enormous growth potential. This type of production is environmentally friendly, but it is also relatively labour intensive, so a continued shift in this direction could lead to the creation of more jobs in the agriculture sector. Organic farming is expanding rapidly; in 2006, sales in this subsector amounted to US\$ 100 billion globally. The rural non farm economy, which accounts for 30-50 percent of rural income across developing countries, also constitutes a potential source of green jobs for youth. Rural non farm sectors, including energy production, trade, agro processing, manufacturing, and commercial and service activities, represent a viable complement or alternative to agriculture in stimulating rural income growth. Although nonfarm sectors still frequently rely on a robust and successful agricultural sector, these two segments of the rural economy are increasingly decoupling as improved infrastructure opens up new opportunities that are less dependent on agriculture. A number of different jobs for youth can be generated in environmental protection and sustainable land management. In South Africa, the Government's Expanded Public Works Programme has created more than 800,000 jobs in infrastructure, services, and agriculture. One particular programme, Working for Water, has provided at least 6,000 young people with short term employment. The recycling industry may offer young people entrepreneurial opportunities; however, careful implementation is necessary to ensure that

practices undermining human development are not perpetuated. While recycling is a growth industry that accounts for a substantial number of new jobs, many of these do not constitute decent work and are concentrated in the informal sector, where wages tend to be relatively low and conditions precarious. Nevertheless, young people in developing countries have successfully started small scale recycling businesses, an area with great potential for expansion. The green economy must be developed in a balanced and sustainable manner, with attention given to social development considerations. Green jobs have the potential to enhance employment in rural areas across the globe. However, without careful implementation and proper monitoring, some green activities, including certain recycling practices and the production of biofuel crops, could be actually undermining human development, for example, perpetuating substandard working conditions or threatening food security. With climate change expected to bring about major shifts in the labour market and with unprecedented number of youth entering the labour market in the years to come, Governments must strive to ensure that young people are ready to take advantage of new environment oriented employment opportunities. Currently, too few of the green jobs that are being created are filled by youth, primarily because most lack the necessary skills. This is also hampering growth in green sectors. Green energy operators have noted that one of the primary impediments to continued growth in the coming years will be insufficient access to new talent and employees. Although some progress has been made in providing young people with the knowledge and technical skills they need to take advantage of new employment opportunities afforded by the shift to a greener economy, much remains to be done.

### **Entrepreneurship and Environment Employment**

**Youth entrepreneurship** With increasing numbers of youth joining the labour market, entrepreneurship can be an important source of job creation and can offer young people the chance to effect change. Young entrepreneurs can exploit opportunities to promote environmental sustainability in a number of different sectors including agriculture, renewable energy, and recycling. Young people's entrepreneurial potential is fuelled by their creativity and willingness to try new approaches. However, their relative inexperience and limited resources and networks place them at a disadvantage. Starting a new business is risky, and

potential entrepreneurs must be well prepared. In order to ensure the viability of green youth ventures, young people must be provided with entrepreneurship training, including support in the development of business plans and access to technology and technical know how. Once the groundwork has been laid, seed grants and manageable financing options need to be made available to youth to start their own businesses. In some regions, notably the Middle East and North Africa, entrepreneurship is still regarded as less appealing than public sector employment. In these areas, new initiatives that foster an entrepreneurial spirit among youth should be implemented, and increased emphasis on green and social entrepreneurship should be incorporated in existing initiatives.

Environmental public employment programmes can provide young people with marketable skills and work opportunities while at the same time engaging them in environmental rehabilitation and conservation. Historically, public employment programmes have been used to create jobs for the poor and unemployed in times of crisis. In some cases, these jobs have contributed to environmental sustainability while also providing a livelihood for those in need. The Civil Conservation Corps, established in the United States in 1933 as one of the New Deal programmes during the Great Depression, is one such example. This was active until 1942 and this initiative provided employment for 2 million people. The Corps planted between 2 and 3 billion trees, controlled erosion on 40 million acres of farmland, facilitated mosquito control over 230,000 acres of land, established 711 State parks, and developed 3 million acres of land for park use. Although this type of environmental public employment programme typically targets the poor, case could be made for expanding it to include unemployed youth. In response to the global financial and economic crisis set in motion in 2008, leaders around the world have called for the implementation of the Green Economy Initiative, or Global Green New Deal, launched by UNEP. Components of this initiative could be executed through public employment programmes, with specific areas of concentration selected on the basis of local and national needs and priorities. A number of countries, including India and South Africa, have piloted public employment initiatives that provide poor unemployed or underemployed individuals with labour intensive work, and many of these could be adapted to provide green jobs for youth. The Working for Water initiative in South Africa is one such example. Public employment schemes could also be a useful mechanism

for involving youth in specific industries such as public transportation, which might otherwise not seem like an obvious career choice for young people. In order to ensure sustained success, environmental public employment programmes must include components that facilitate young participants' transition to more permanent employment. One option might be to establish a link between these public employment programmes and existing youth training programmes in order to provide young people with targeted skills and environmental awareness so that they will be able to identify entrepreneurship opportunities in the field of environmental conservation and rehabilitation. Despite the divide between the environmental concerns and the consumption behaviour among youth, progress is being made. Climate change education is critical to bridge this gap and can teach youth to adopt a lifecycle perspective when making their consumption choices. What is important is for young people to have access to environmental education that is developed in a way that is relevant to their specific context. There is an opportunity for youth from all walks of life to contribute now, whether it is in their homes, schools or their places of work. Considering the influence young people have over the purchasing decisions of their friends and families, changes made now could produce not only immediate tangible benefits, but also have a far reaching effect on the future of the economy, ecology and the societies of generations to come. Youth employment through invasive alien species eradication under the South African Government's Expanded Public Works Programme, more than 800,000 jobs have been created in sectors such as infrastructure, services, and agriculture. One particular programme—Working for Water—has provided at least 6,000 young people with short term jobs and training in clearing invasive alien species and has supplied them with the information and experience they need to start their own micro enterprises in the discipline. The Programme employs out of work youth and poor residents to clear areas where invasive alien species of plants are causing problems. Such efforts allow less water demanding native vegetation to flourish, increased stream flows and water availability, raise land productivity and hence land values, and strengthen this programme. The Programme's success has spurred the creation of spin off initiatives using a similar labour intensive, cost-effective, and sustainable approach to dealing with natural resource issues. These initiatives include Working for Wetlands, Working on Fire, Working for the Coast, Working on Waste, and more recently, Working for Forests and Working for Energy. The last initiative listed is designed to help provide universal access to

affordable energy services through the use of decentralized renewable energy technologies such as solar water heaters. Because these types of technologies play such an important role in climate change mitigation and adaptation, there is substantial support for the rapid implementation and scaling up of this initiative, which could greatly benefit energy poor communities and unemployed youth.

## **Conclusion**

Youth have long been involved in environmental protection activities at the school and community levels, but the time has come for them to participate more actively in shaping global decisions relating to climate change. Young people must contribute to the process of addressing this critical challenge, as they feel its impact most acutely throughout their lives. Young advocates for the environment are becoming more insistent that their voices be heard. Potential job opportunities exist for youth in many areas of the renewable energy sector, including design and planning, energy policy analysis and development, energy economics and energy management, energy efficiency consulting, assessment of the social and environmental impact of energy systems, and research and development. Governments must strive to ensure that young people are ready to take advantage of new environment oriented employment opportunities. Currently, too few of the green jobs that are being created are filled by youth, primarily because most lack the necessary skills. This is also hampering growth in green sectors. Green energy operators have noted that one of the primary impediments to continued growth in the coming years will be insufficient access to new talent and employees. Although some progress have been made in providing young people with the knowledge and technical skills they need to take advantage of new employment opportunities afforded by the shift to a greener economy, and much remains to be done. Thank you so much for watching.

**Course Name- Bachelor of Population Studies**

**Year- IIIrd**

**Paper Name – Population, Environment and Development**

**Paper No. VII**

**Lecture No. 18**

**Lecture Title: Children and Climate Change**

### **Academic Script**

#### **Introduction**

Hello everyone and welcome to this special series on population environment and development. Today's topic is Children and Climate Change. Countries everywhere are experiencing the growing impact of our changing climate – from droughts in the United States to changing rainy seasons in sub-Saharan Africa and an increasing number of cyclones in South East Asia. Recent research by the World Meteorological Organization (WMO) highlighted that 94 percent of countries had their warmest ever decade in 2001–10. Climate change is a perceptible and immediate reality, not just a future challenge. While no area is immune to the impacts of climate change, evidence suggests that developing countries are currently hit hardest by the impacts. It is the children of these countries who are suffering the most, despite being the least responsible for the causes of climate change. And the evidence also suggests that developing countries will be worst hit by future changes in rainfall patterns, more frequent and intense natural disasters, and an increase in droughts and floods. Because of climate change, children in developing countries already face a greater risk of climate-linked diseases like malaria and cholera, increased risk of food and water

shortages, and disruption to their education. It is estimated that more than 88 percent of the existing global burden of disease due to climate change occurs in children under the age of five. The last Intergovernmental Panel on Climate Change (IPCC) assessment reinforced this finding, stating that climate change and temperature fluctuations were affecting children's health and citing evidence that higher temperature was strongly associated with increased episodes of diarrhea in adults and children in Peru. In addition, associations between monthly temperature and diarrhea have also been reported in the Pacific Islands, Australia and Israel. Climate change is already undermining existing gains in human development and exacerbating many of the key development challenges faced by children everywhere, making it more difficult for children to survive and flourish and reach their full potential. In 2011, one in five children living in rural Indonesia said that weather events like droughts and a failing harvest meant they had to leave school and find work to help support their family. Children in Kenya have spoken about how accelerated extreme weather patterns (like prolonged droughts and intense flooding) linked to climate change were affecting their families' ability to put enough food on the table. Similarly, the recent High Level Panel report on the post-2015 development agenda highlighted that climate change is the major factor in determining whether or not we can deliver on development objectives.

### **The effect on Children's lives**

The wider impact that the climate change is having on countries' economic growth, infrastructure and developmental prospects is also having a profound effect on children's lives. The United Nations Office for Disaster Risk Reduction (UNISDR) estimates that in the last 10 years, climate-related disasters have led to global economic losses of US\$2 trillion. In addition, the WMO estimates that, between 2001 and 2010, there were 511 tropical cyclone-related events that killed nearly 170,000 people, affected more than 250 million people, and caused estimated economic damages of US\$380 billion.

This is having an impact on the economic context that children growing up in now will continue to burden in future generations also. It also highlights the urgent need to expand adaptation measures in developing countries to help the local population develop the skills and structures that are more resilient to a changing climate. Climate change is one of the most significant challenges facing children today and children are already finding the circumstances of their lives have changed as a result. Climate change and children; There are some key statistics lets have a look at them:

- There are more 600 million children living in the 10 countries most vulnerable to climate change. (UNICEF, 2011)
- 64% of children and young people (aged 11–26 years) in the UK are worried about how climate change will affect children in other countries. (UNICEF/Ipsos MORI 2013)
- 88% of the existing global burden of disease due to climate change occurs in children under the age of five. (WHO, 2012).

The future impacts of climate change for the world, and in particular developing countries, have been well articulated over the years. Even if the world stops emitting greenhouse gases tomorrow, there will be a certain level of warming in the future due to historic emissions already in the atmosphere. While international discussions are looking for governments to agree to action that will limit warming to 2°C above pre-industrial levels, estimates vary on the level of warming we can expect in decades to come. It has been estimated that we are currently at 0.8°C of warming on pre-industrial levels, with 2°C 'locked' into the system already. Recent World Bank figures suggest that we are on course for 4°C warming, while the International Energy Agency (IEA) says we are on a course to reach 5.7°C of warming by the end of the century. While the projected impacts of climate change have the greatest implications for the lives and opportunities of children as they grow up, little emphasis have been placed on the lived experiences of children. Yet, it is today's children and future generations who will inherit the outcomes of our lack of action on climate change. A child born in 2012 will be 38 years old in 2050, by which time some of the most extreme climate change impacts are expected to have occurred. The impacts of such levels of climate change will shape the future for children everywhere. Although developing countries will bear the brunt of these impacts and their costs, developed countries will also have to face climatic impacts and their

economic consequences as well as the indirect impacts and costs of climate change on the South. Action on climate change is fundamentally about the action we must take to protect children's futures and the legacy we want to leave for them. Greater emphasis on the impacts of climatic change for children can help highlight exactly why tackling it is of vital significance to us today, when today its effect may not be so keenly felt by some. The evidence is clear.

## **The Vulnerability of Children**

Climate change is already having an effect on children's lives and will have an even more profound effect on their futures. It is something that children have a view on – whether they are living in the countries most affected by climate change or in the industrialized countries that have the greatest historical responsibility for climate change. More than 600 million children live in the 10 most climate-vulnerable countries and, as the reports 5 shows, the under-18 population in these countries is around 45 percent. The views of children and young people are therefore critically important in understanding the impact that climate change is having on people's lives now and in the future. Young people can give unique perspectives on the risks they are facing and how climate change can be tackled. Their views can provide an insightful contribution to tackling climate change and give impetus to strong political action. There is also an imperative to listen to young people's views on climate change. Article 12 of the UN Convention on the Rights of the Child – the most widely ratified of all international conventions – states that children have a right to have a say in decisions that will affect them. As climate change is affecting children's lives now and will undoubtedly continue to do so far into the future, it is only right that children's views are heard and taken onboard by those making the decisions today. Young people everywhere demonstrate a strong desire for action to be taken on climate change. Nearly eight out of ten of children in the UK age 11–16 would like to see the government do more on climate change. Children can present innovative solutions to tackling climate change and give an insight into some of the challenges that it presents. Every child has the right to enough nutritious food.

One of the most significant effects of climate change is the impact on the global food system. Agricultural yields and food security will be greatly affected by changing rainfall patterns and increasing impacts of natural disasters.

Developing countries across Asia, Africa and Latin America are forecast to see reduction in agricultural productivity of between 9 percent and 21 percent by the year 2080 due to climate changes. In some places, the effects will be felt much sooner than that. By 2020, rising temperatures and variable precipitation are likely to reduce the production of staple foods by up to 50 percent in some African countries, leading to declining yields and making it more difficult to put food on the table. Some countries are already seeing such impacts, associations have been seen between climate change-related droughts in Chad and an increase in the prevalence of Global Acute Malnutrition (GAM) within the drought-affected regions from 14.5 percent in 2011 to 18 percent in 2012. Understanding the links between climate change and food are essential in ensuring we take action to protect children from climate change. There will be direct effects such as increasing malnutrition and hunger: the IPCC states that “malnutrition linked to extreme-climatic events may be one of the most important consequences of climate change”.

There will also be indirect effects of changes in food security. For example, loss of family income in agricultural areas could lead to children being taken out of school and increased migration, putting children at greater risk of exploitation and placing barriers to their development.

Key statistics

- In Indonesia, one in five rural children interviewed in 2011 stated that, due to weather events, they had to leave school because there was not enough money for them to continue. Six in ten children also noted that food became more expensive after too much or too little rain. (UNICEF, 2011)
- 200,000 people will die and 200 million people will suffer from food insecurity as a result of climate change in lower income countries – half of these deaths are projected to be children from lower income countries. (Climate Vulnerability Monitor, 2012)

- In sub-Saharan Africa with warming of 1.2–1.9°C (between the year 2030 – 2050), undernourishment levels are expected to be in the range of 15–65 percent, due to declines in crop yields and nutritional quality of crops. (World Bank, 2013)
- In sub-Saharan Africa warming of 1.2–1.9°C is expected to cause severe stunting at a rate of 12–20 percent, compared to a 40 percent decrease in stunting levels without climate change. (World Bank 2013).

## **Threats to Health of Children**

Every child has the right to survive and develop and to receive the best possible standard of health care. The impacts of climate change on health, are already significant and are likely to intensify. It is estimated that more than 88 percent of the existing global burden of disease due to climate change occurs in children under the age of five. Sickness and disease affects child development as well as children's ability to lead full and healthy lives. Climate change has direct impacts on health, such as the increased prevalence of malaria or waterborne diseases. And climate change can also indirectly affect child health. For example, changing rainfall patterns are already diminishing crop production in sub-Saharan Africa, which in turn is leading to increased rates of child malnutrition.

Malnutrition has a range of subsequent and lasting effects on health, causing stunted growth and weakened immune systems. Impaired mental development linked to malnutrition can affect attainment at school and restrict later job prospects. It is estimated that by 2050, 25 million more children will be malnourished due to climate change. UNICEF research in East Asia highlighted that the changing climate is leading to increased rates of communicable and non-communicable diseases in children, including waterborne diseases and diarrhea. The role of climate change in increasing the frequency and intensity of natural hazards such as cyclones and extreme flooding can also increase the spread of waterborne diseases, and health risks such as contaminated food and water supplies. In Mongolia 14 percent of deaths of children younger than five years were caused by diarrheal disease, and the highest rates of incidence of dysentery and salmonella in recent years occurred between 2001 and 2003, coinciding with

a severe drought, connected to climate change, in which springs and small rivers dried up.

#### Key statistics

- 88 percent of the existing global burden of disease due to climate change occurs in children under the age of five. (WHO, 2012)
- Rainfall changes can have a significant effect on child health. A study in Bangladesh found that the number of non-cholera diarrhea cases per week increased by 5.1 percent for every 10mm increase above the threshold of 52mm of average rainfall. The number of cases also increased by 3.9 percent for every 10mm decrease below the same threshold of rainfall. (UNICEF, 2010)

#### Key statistics

- Losses from weather-related disasters alone are doubling globally every 12 years; and climate change impacts are predicted to increase the numbers of children affected by disasters from an estimated 66.5 million per year in the late 1990s, to as many as 175 million per year in the coming decade. (UNICEF, 2012)
- Women and children are 14 times more likely to die in a disaster than men. (un.org, 2013)
- Children from the poorest families are up to 10 times more likely to bear the brunt of environmental disasters linked to climate change. For example in the last five years, 67% of the poorest children in Ethiopia were hit by an environmental shock, compared to 6.5% of children from better off families. (Save the Children, 2010)
- By 2015, the number of people affected by climate-related disasters each year is estimated to rise by 50 percent, from 250 million per year today to 375 million. An important aspect of tackling climate change is the move to lower carbon economics, with reduced carbon emissions and more sustainable development. This includes pursuing sustainable energy (such as solar, wind and hydropower) and reducing carbon emissions in other activities. Moving to low carbon energy and development paths is important for both developing and developed countries. Developed countries need to move away from reliance on fossil fuels and emission-heavy activities, and developing countries have the opportunity to 'leapfrog' heavy carbon modes of development to more

sustainable modes of development. The move to low carbon economies can have potential long-term economic benefits for children, providing a sustainable long term energy pathway without the costly transition from fossil fuels. Reducing carbon emissions can also have positive benefits for the health and well-being of children. In fact, evidence is beginning to highlight how continued heavy-emission activities can negatively affect child health and development. Heavy pollution can cause higher rates of asthma (as well as other respiratory diseases) among children, particularly in urban areas. Research by the University of Southern California has indicated that children living in heavily polluted areas can see an 80 percent decrease in their lung capacity. This suggests that a transition to a low carbon economy and further action on emission reduction could also deliver health and well-being benefits for children.

There is a strong impetus from children all over the world on the need to take action to reduce carbon emissions to limit climate change. Children would like to see governments take action to reduce carbon emissions so they can grow up in a clean, healthy environment.

## **Conclusion**

While no area is immune to the impacts of climate change, evidence suggests that developing countries are currently hit hardest by the impacts. It is the children of these countries who are suffering the most, despite being the least responsible for the causes of climate change. And the evidence also suggests that developing countries will be worst hit by future changes in rainfall patterns, more frequent and intense natural disasters, and an increase in droughts and floods. Because of climate change, children in developing countries already face a greater risk of climate linked diseases like malaria and cholera, increased risk of food and water shortages, and disruption to their education.

Action on climate change is fundamentally about the action we must take to protect children's futures and the legacy we want to leave for them. Greater emphasis on the impacts of climatic change for children can help highlight exactly why tackling it is of vital significance to us today, when today its effects may not

be so keenly felt by some. I hope this information will be useful to all of you.  
Thank you very much.

## **Course Name- Bachelor of Population Studies**

**Year - IIIrd**

**Paper Name – Population, Environment and Development**

**Paper No. VII**

**Lecture No. 19**

**Lecture Title : Children, Environment and Health**

### **Introduction**

Children are our future, numbering over 2.2 billion worldwide (aged 0-19) and representing boundless potential. Child survival and development hinge on basic needs to support life; among these, a safe, healthy and clean environment is fundamental. Children are exposed to serious health risks from environmental hazards. Environmental risk factors often act in concert, and their effects are exacerbated by adverse social and economic conditions, particularly conflict, poverty and malnutrition. There is new knowledge about the special susceptibility of children to environmental risks: action needs to be taken to allow them to grow up and develop in good health, and to contribute to economic and social development.

- Each year, at least 3 million children under the age of five die due to environmental-related diseases.
- Acute respiratory infections annually kill an estimated 2 million children under the age of five. As much as 60 percent of the acute respiratory infections worldwide are related to environmental conditions.
- Diarrhoeal diseases claim the lives of nearly 1.5 million children every year. 80 to 90 percent of these diarrhoea cases are related to environmental conditions, in

particular, contaminated water and inadequate sanitation. Environmental risks to children vary from region to region. Children in many countries still face the major traditional environmental hazards, including unsafe water, lack of sanitation and contaminated food, injuries, indoor air pollution from use of solid fuel, outdoor air pollution and exposure to a myriad of toxic heavy metals, chemicals and hazardous wastes that may be brought home from the workplace. However, other children live in adverse environments that are vastly different from those of generations ago. In addition to the traditional environmental hazards, due to rapid changes in economic structures, technologies and demography, new or modern environmental hazards have appeared or have been recognized, such as the increased use of radiation in pediatric healthcare settings. These may be linked to global challenges such as uncontrolled urbanization, new technologies, industrializations in developing countries, ecosystem degradation, and impacts of climate change. Developing regions carry a disproportionately heavy share of the environmental disease burdens and children in developing nations have the highest death rates. In spite of major efforts undertaken by international organizations, individual countries, the academic community and concerned Non-Governmental Organizations (NGOs), child disability and mortality linked to environmental health factors remains high, hindering the ability to meet the Millennium Development Goals (MDGs). Significant action is required to achieve healthier, safer and cleaner environments in the places where children live, learn, work and play - this is imperative for child health. It requires using strategies that are available, building on existing programmes and partnerships, translating research and knowledge into protective policies and fulfilling political commitments to action. It requires a focus on prevention, tackling the causes of disease at their environmental source, inter alia, by strengthening ecosystem management, thereby exploiting win-win scenarios for child health and the environment.

## **Preventive Intervention Planning**

Preventive interventions on the environmental management and health sector sides have proven to be effective in protecting children from adverse exposures, and provide a wealth of knowledge and experience from which we can build a strong foundation for informed and effective action, building on tools and mechanisms already available. Interventions on children's health and environment should benefit and contribute to broader efforts aimed at catalysing the policy, institutional, and investment changes required to reduce the environmental threats to health. Policies targeting this specific vulnerable group should be a key component within packages of interventions that address health and environment programs in an integrated manner, with a view to optimizing benefits to both sectors, in support of sustainable development. Over the last 20 years there have been acknowledgements at the highest level of the need to protect the environment in order to underpin efforts to safeguard child health. As far back as 1989, States pledged in the Convention on the Rights of the Child to "combat disease and malnutrition...taking into consideration the dangers and risks of environmental pollution." WHO held two international conferences on Children's Health and the Environment, the first in Bangkok in 2002 and the second in Buenos Aires in 2005, and both made commitments for further action in the area. In 2004, the WHO European Region developed a policy framework called the Children's Environmental Health Action Plan, which contains four regional priority goals linking well with the MDGs and being implemented by the majority of Europe's 53 countries. All over the world, regional Health and Environment Ministerial meetings have highlighted the importance of working across sectors to improve child health.

Recently, the call for action to address children's environmental health has been gaining momentum, as more is now known about how adverse environments can put children's growth, development, well-being and very survival, at risk. Notably, the G8 Siracusa High Level Environment Ministerial meeting (April 2009) concluded that more should be done to ensure that children are born, grow, develop and thrive in environments with clean air, clean water, safe food and minimal exposure to harmful chemicals. Two months later the 3rd WHO International Conference on Children's Health and the Environment was held in Busan, Republic of Korea (June 2009) hosted by the Korean Ministry of Environment, in collaboration with the Ministry of Health, Welfare and Family Affairs, and organized by WHO jointly with national and international partners concerned about children's health and the environment. The conference addressed current and emerging trends, new scientific research findings, and the translation of research into policy to protect the children's health from environmental threats. The Busan Pledge for Action on Children's Health and the Environment (2009) called on WHO to facilitate the development of a global plan of action to improve children's environmental health, and regularly monitor and report on its progress. This Global Plan of Action is designed to provide a road map for WHO, governments, intergovernmental and non-governmental organizations all concerned stakeholders to contribute to the attainment of the Millennium Development Goals (MDGs) and other internationally agreed development declarations, commitments and goals, in particular those related to reducing infant mortality (MDG 4) and ensuring environmental sustainability. The overall goal is to create safe, healthy and clean environments that allow children to grow and develop in good health and to contribute to the economic and social development of societies. To achieve the

goal, 5 target areas of work are included in the Global Plan of Action for Children's Health and the Environment: 1. Data Collection and Analysis 2. Collaborative Research 3. Advocacy 4. Clinical Service Delivery 5. Awareness Raising and Education. As recognized in the Busan Pledge, the successful implementation of this global plan of action requires strong partnerships and close networking. Collaboration between and among WHO, WHO collaborating centres and international organizations, such as UNICEF and UNEP, national and regional organizations, regulatory bodies, governmental agencies and NGOs is essential for putting into action the specific components of the proposed plan and gaining the most benefit from limited resources. Children's environmental health activities have multiple links with other parallel activities, such as environmental protection, climate change adaptation, primary health care, specialized hospital based healthcare, emergency response, disaster risk reduction, occupational health, school activities and housing initiatives, and many other activities. It thus becomes clear that collaborative links have to be set up for each one of the objectives in this plan. An external WHO Advisory Committee for children's health and environment is also needed to facilitate global efforts to implement this action plan.

### **Details of the Action Plan-I**

Strategy: Data Collection and Analysis: Collect and analyze data on environmentally-related disease and disability among children. Data on environmental exposures and environmentally-related diseases in children are of vital importance for analysing trends and setting priorities for prevention and control. In most countries there are no good registers of environmental conditions and exposures or on the environmentally-determined diseases in children and even less on child disabilities. Neither are other factors of vulnerability, such as poverty, lack of education or gender measured. In many instances, in the absence of

systematic data collection efforts, progress in protecting children's health and the environment has been made on an ad hoc basis arising from the identification of adverse health effects resulting from unsafe toxic environmental exposures by astute health care providers who noticed and reported an outbreak or unusual clinical case. Collection of reports of special observations about children's health and environment into a data base is important for detecting existing environmental health problems and for planning and organizing interventions and prevention programmes.

Plan of action

- Prepare guidance for improving the quality of environmentally-related case data collection, including data on sentinel cases and key laboratory findings
- Establish mechanisms, especially emphasizing information technology, to collect and report new observations of environmental hazards for children and health
- Develop a standard tool for estimating the cost of diseases due to environmental hazards
- Develop estimates of the disability effects of environmental hazards
- Promote an integrated collection and analysis of data and indicators on health and environment and provide a central place for reporting findings
- Promote the use of environmental health-related questions in national demographic health surveys and other surveys
- Promote environmental monitoring to track, for example, pollutants in air and water on a local basis over time
- Integrate children's environmental health into "core" health tracking systems
- Identify existing country-level children's environmental health survey and surveillance data for use in Global Burden of Disease estimates
- Strengthen the interaction between the clinical, analytical and policy making sectors in using routine laboratory data on environmental measurements for preventive actions
- Promote the mapping of environmental hazards to health by using Geographic Information Systems
- Promote periodic biomonitoring of chemicals in blood, breast milk and other tissues
- Coordinate scientific and technical reviews by health and environment experts to identify knowledge gaps and refine normative

health and environmental standards and guidelines. Strategy: Collaborative Research Strengthen international and intersectoral collaborative research on children's environmental health Science should underpin policy and action. Research is critical to the development of children's environmental health policies and actions. Research activities span a broad range from the collection and analysis and report of case data in a primary health care centre that uses the environmental history to the most sophisticated longitudinal studies using biomarkers of exposure, vulnerability in children. Existing research centres have provided the critical mass of scientific information to develop prevention programs (for example in the area of asthma and lead exposure.) This knowledge has been crucial for national and local programs and also for improving the international awareness about global environmental health issues. Research provides the scientific and advisory support that policy-makers require for promoting policies protective of children's health.

Plan of action

- Develop a global research agenda for children's environmental health, which includes a list of high priority research questions and potential research projects, by holding a series of leading edge workshops involving relevant experts
- Stimulate and coordinate longitudinal research on children's environmental health especially those beginning prenatally technical capacity and address political questions
- Develop a network of specialized children's environmental health centres and WHO Collaborating Centres in children's environmental health to encourage collaborative research and common proposals. Also for research and compiling data on children's health and the environment to study questions that cannot be answered by single centres alone
- Encourage the establishment of regional laboratory facilities for research on children's environmental health (e.g. to develop work and training on biomarkers of exposure, vulnerability and effect)
- Promote exchanges of students, postdoctoral fellows, and faculty from developing countries with WHO and other research

organizations • Support international workshops and meetings that promote children's environmental health research in developing countries • Promote and provide technical support for pilot studies of innovative children's environmental health research methodologies • Promote the inclusion of children's environmental health in new emerging research agendas, such as climate change. Strategy: Advocacy Promote, update and implement policies to protect children from environmental threats As children's health and environmental issues have been gaining visibility on the international political agenda and the co-benefits of addressing child health and environment are starting to be recognized, now it is the time for capitalizing on this attention and taking action. The priority of children's health and environmental health issues should, therefore, be elevated on national and international agendas; opportunities for incorporating a focus on children's health and the environment into ongoing health and environmental programmes should be identified; and appropriate resources provided for strengthening policies to protect children's health and the environment in all relevant sectors (environment, education, development). Plan of action • Develop a communication strategy including guidance on risks communication and advocacy tools and disseminate easily understood messages on the environmentally related diseases and how to prevent them • Promote awareness of children's environmental health among policy-makers • Advocate for the inclusion of children's environmental health in international forums related to children's health and well-being, as well as international fora and processes addressing environmental issues (i.e. mercury and hazardous wastes etc) and broader global challenges such as climate change and disaster risk reduction. Domestic and global environmental policies should fully take into account children's differences and the need to reduce environmental contaminants on health grounds • Advocate for the nomination of children's environmental health focal points in Ministry of Health • Advocate for

resources (raise funds) for children's environmental health among multi and bilateral donors, foundations, national governments, local agencies and private sector.

## **Details of the Action Plan-II**

Strategy: Clinical Capacity Building to Increase Service Delivery Improve availability of environmental health clinical services. Primary health care has traditionally addressed the key environmental health threats that are referred to in the Alma Ata Declaration. However, the world has changed; new challenges have emerged in the context of technological development, globalization, urbanization, degraded ecosystems and climate change, and therefore the provision of primary health care should be expanded to help clinicians deal with the environmental threats to children and their communities. Specialized children's environmental health unit are able to function as referral centres for the identification, recognition, and evaluation of environmental threats, and prevention and treatment of adverse environmental exposures in children. Ideally, environmental health services should be provided both in the public health care setting and with back-up services from the specialized units. This arrangement would provide complementary services and a safety net for the children in the community. Networking will further enhance the strength of both the primary health care centres and specialized children's environmental health units. Plan of action • Integrate children's environmental health into existing public health programmes, especially into primary health care programmes • Promote work on human tissue measurements for contaminants that would enable clinicians to better measure children's exposure to chemicals (this would require, some regional specialized environmental health laboratories) • Incorporate children's environmental health into the Integrated Management of

Childhood Illness (IMCI) program • Promote the use of the environmental history and workplace exposure history in the context of child care and prenatal visits • Work with nurses to promote children's health and environmental health issues, using already established international nurse's group. Strategy 5. Awareness Raising and Education Educate and raise awareness about prevention of environmental exposures and environmentally-related diseases in children. There is still a lack of awareness that children are not just little adults. They are uniquely vulnerable to environmental hazards and special attention needs to be paid to reducing their exposures at home, at school, and in the community. There is a need to update providers and adequately inform children, parents, members of the community, and other key stakeholders at all levels about the importance of children's health and the environment. Plan of action • Synthesize existing knowledge, science and interventions on the environmental determinants of childhood disease and disability • Publish State-of-the-Art reviews on selected children's environmental health topics and disseminate them widely • Develop and maintain information sharing mechanisms with all relevant WHO partners • Collaborate with other relevant UN bodies to prepare and disseminate children's health and environmental health care information (e.g. website/portal, CD-ROM, other) • Strengthen the capacity of primary health care workers on the recognition, assessment and prevention of environmentally-related effects in children - from pre-conception into adolescence by preparing, updating, and disseminating the existing training materials on children's health and the environment, guidance for training curricula, and recommendations for competencies for primary care providers and key specialist groups in children's environmental health • Strengthen the capacity of schools and parents associations on the recognition and prevention of environmentally-related effects in children - from pre-conception into adolescence by creating a WHO Training Package for schools and parents,

guidance for primary and secondary school curricula, and recommendations for teachers and parents. • Encourage countries with established training capacities in children's environmental health to provide expert advice and support for training programmes regionally or bilaterally • Promote certification programs for trained children's environmental health workers • Promote the inclusion of clinical toxicologists in children's health programs at community level • Provide seed funding and technical support to networks that promote children's environmental health research in high priority issues and prevention in high burden countries • Facilitate meetings or conferences that incorporate children's environmental health • Promote the use of participatory processes, and attention to the social, economic, and gender conditions driving health and environment linkages • Develop a risk communications model (e.g. in response to local concerns such as waste sites) • Provide communications training as part of effort for scientists to communicate and frame messages more clearly for media • Create communications working groups including media, government and scientists around certain children's health and environment issues • Encourage government to develop hotlines and websites to communicate to the public on children's health and environment.

## **Conclusion**

Children in many countries still face the major traditional environmental hazards, including unsafe water, lack of sanitation and contaminated food, injuries, indoor air pollution from use of solid fuel, outdoor air pollution and exposure to a myriad of toxic heavy metals, chemicals and hazardous wastes that may be brought home from the workplace. However, other children live in adverse environments that are vastly different from those of generations ago. In addition to the traditional environmental hazards, due to rapid changes in economic structures, technologies

and demography, new or modern environmental hazards have appeared or been recognized, such as the increased use of radiation in pediatric healthcare settings.

To achieve the goal, 5 target areas of work are included in the Global Plan of Action for Children's Health and the Environment: 1. Data Collection and Analysis 2. Collaborative Research 3. Advocacy 4. Clinical Service Delivery 5. Awareness Raising and Education As recognized in the Busan Pledge, the successful implementation of this government plan of action requires strong partnerships and close networking. Collaboration between and among WHO, WHO centres and international organizations, such as UNICEF and UNEP, national and regional organizations, regulatory bodies, governmental agencies and NGOs is essential for putting into action the specific components of the proposed plan and gaining the most benefit from limited resources.

**Course Name - Bachelor of Population Studies**

**Year - III**

**Paper Name - Population, Environment and Development**

**Paper No - VII**

**Lecture No. 2**

**Lecture Title - Population and Issues Concerning Youth**

### **Introduction**

Hello viewers, in today's lecture we will discuss about the Population and Issues Concerning Youth.

“Under your shoulders, Dear young people of the entire world, weigh the responsibility to transform tomorrow's world into a society where peace, harmony and fraternity reign-Bishop Carlos Belo.

Our World is home to 1.8 billion young people between the ages of 10 and 24, A swell in the global population of young people has the potential to transform economies for better or worse, depending on the decision of today's policy makers.

### **The Concept of Youth**

Youth is best understood as a period of transition from the dependence of childhood to adulthood's independence. That's why, as a category, youth is more fluid than other fixed age groups. The United Nations, for statistical purposes, defines 'youth' as those persons between the ages of 15 and 24 years, without prejudice to other definitions by Member States.

**Table 1**

**Different Definitions of Youth as per different organizations**

<b>Entity/Instrument /Organization</b>	<b>Age</b>
<b>UN Secretariat /UNESCO/ILO</b>	<b>Youth :15-24</b>
<b>UN Habitat (Youth Fund)</b>	<b>Youth:15-32</b>
<b>UNICEF/WHO/UNFPA</b>	<b>Adolescent :10-19</b> <b>Young people:10-24</b> <b>Youth:15-24</b>
<b>UNICEF/The Convention on Rights of the child</b>	<b>Child until 18</b>
<b>The African Youth Charter</b>	<b>Youth 15-35</b>

**Source : Population Facts, Department of Economic and Social Affairs, UN**

The table 1 depicts the conceptualization of the concept of Youth .Different organizations have defined this term differently .The UN secretariat /UNESCO and ILO define it as people in the age group of 15-24 years .However the UN Habitat (Youth Fund) have increased this youth age range and define it as people in the age group of 15 -32 years. UNICEF/WHO/UNFPA have given clear cut age demarcations for adolescents ,young people and youth .Adolescents are placed in the age range of 10 -19 years ,young people are in the age range 10-24 ,while youth are placed in the age range of 15-24 years .UNICEF /The convention on the Rights of child ,has defined the people of age 18 years or low as a child only .The African Youth Charter has defined youth as the section of people in the age group of 15-35 years.

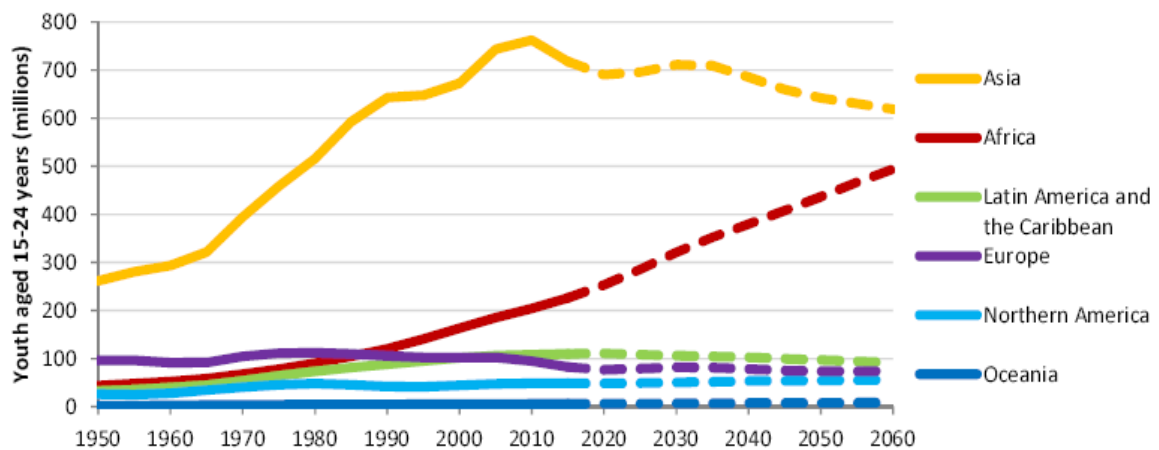
**Trends in the Youth Population**

Today’s generation of young people numbers slightly less than 1.8 billion in a world population of 7.3 billion that’s up from 721 million people aged 10 to 24 in 1950, when the world’s population totaled 2.5 billion. The highest proportion of young people today is in poor countries, where barriers to their development

and fulfillment of their potential are the highest. About 89 per cent of the world's 10 to 24 years olds, almost nine out of 10, live in less developed countries. That percentage is even higher among the youngest in this age range. There were 1.2 billion youth aged 15-24 years globally in 2015, accounting for one out of every six people worldwide. By 2030, the target date for the sustainable development goals, the number of youth is projected to have grown by 7 per cent, to nearly 1.3 billion. In Latin America and the Caribbean, Europe, Northern America and Oceania, youth populations have stabilized in size and are projected to change little over the coming decades .By contrast Asia and Africa re in the midst of substantial changes in the size of their youth populations. After rapid and sustained growth through the latter half of the 20<sup>th</sup> century, the number of young people aged 15-24 in Asia is projected to decline from 718 million in 2015 to 711 million in 2030 and 619 million in 2060. International migrants aged 10 to 24 constituted just over 12 per cent of the world's total 232 million international migrants in 2013, according to the United Nations. Most such migrants moved from one developing country to another. While the flow of young people rarely alters the age structure or slows the growth of population significantly in migrant sending countries, over time it affects population dynamics in some developed countries that receive large numbers of migrants. Globally, males out number females among people aged 12-24, with 106 males for every 100 females. The proportion of males is lowest in Africa and in Latin America and the Caribbean, at 102, and highest in Asia and the Pacific at 109. In developed countries the proportion of males among young people is 105.

Diagram1

Youth by region, 1950 to 2060



Source: Population Facts, Department of Economic and Social Affairs, UN

The diagram shows graphically the youth population, across different world regions and projections up to 2060. The curves are clearly shown in different colours for different regions. The yellow and red curves are the most distinctive in the figure. Asia to start with had a little less than 300 million youth in 1950 and reaches a peak level somewhere near 2010, where the number of youth is almost touching 800 million. It is projected to be around 600 million in 2060. Also for Africa the curve shows a consistent upward trajectory. The number of youth was around 50 million in 1950. Thereafter this number has increased and is projected to be around 500 million in 2060. For the other regions the curves show that the number of youth was less than 100 million for all the regions and are projected to remain at about the same levels at which they started back in 1950.

## Challenges Facing the Youth

**Youth today face a number of challenges. These are discussed below**

### Involvement of Youth in Conflicts

Involvement of youth in armed conflict is due to the fact the youth are passive victims in war. However, it has been noted that some of the youth, especially males are a threat to world peace. Involvement of young people in armed conflict is usually caused by poverty, lack of education and employment opportunities, seeking for protection, lack of political participation and peer pressure.

### **Education Crises among Youth**

The educational crisis among youth has been provoked by several sub-crises like low enrolment rate in primary and secondary education, poor education quality, issues of gender imparity that are related to educational access and cases of neglected informal education programs over formal education. Impacts of these sub-crises on the youth include unemployment, underemployment, health issues, low growth in nation's economy and they are barriers in promoting women's rights, self-expression and civic engagement. Good education unleashes potential but with the absence of it, many opportunities that young people would have benefited from will be forgone.

### **Sexual Abuse and HIV Aids.**

Youth have been hardly hit by this pandemic with 40% of new infections occurring among young people 15-24 years old in 2009. These high infection rates are mostly rooted on women and young children due to sexual abuse. The root cause of HIV/AIDS spread among youth is lack of knowledge about the disease and on the other hand it is their ignorance. Those who lack knowledge are mostly from developing countries, Sub Saharan region more especially where numbers of infections are really high as compared to other regions.

### **Juvenile delinquency**

Juvenile delinquents comprises mostly of youth, with youth making the high numbers of arrests than the population we consider as children in this context. Statistics show that a large percentage of the youth that age out of juvenile justice systems tend to end up homeless because they are unprepared to live independently. They have limited education and have no social support.

### **Disability among Youth is on Rise**

The number of disabled youth has been increasing gradually and has thus resulted in heightened concern in relation to their rights and well-being. Three to five hundred million people worldwide live with a disability of some kind. Many youth living with disability encounter issues such as prejudice, social isolation and discrimination from members of their respective societies.

### **Lack of Access to Information and Communication Technology**

Even with its rapid growth, some regions in the world still lack access to Information and Communication Technology with South Asia and Sub Saharan Africa with the least user statistics. This is due to the fact that countries in these regions are mostly developing countries and the cost of using this technology is hefty on them. Although a lot of good comes out of their use, disadvantages are still present when it comes to ICT, mostly due to internet crimes committed throughout the world.

### **Poverty and Hunger**

Youth who endure growing up in poverty ridden communities are usually prone to suffer from social discrimination and exclusion which affects their emotional wellbeing. There are more social ills linked to poverty like teenage pregnancy and child bearing which is more prominent in poorer communities than in wealthy communities. The same goes for child marriages and HIV knowledge among youth. Statistics show that the number of girls being married before the

age of 18 is higher in the poorest regions of the world particularly Eastern Africa, Western Africa and South Central Asia.

### **Prevalence of Drug Abuse**

Consumption of drugs is said to be abusive if users use them for recreational motives rather than for their medical benefits. Drugs that are consumed for recreational reasons contain psychoactive substances which stimulate feelings and give pleasure or excitement. Statistics show that a large number of youth are involved in this illicit abuse of substances. In 2010 alone, around 210 million people, youth inclusive were predicted to take illicit substances at least once. Youth are at both ends of the drug trade; they are involved from the manufacturing to the consumption, their main positions being traffickers, dealers and consumers.

### **Undesirable Leisure Time Activities**

In order to promote youth engagement in productive leisure-activities, it is important to first conduct a detailed analysis to understand how youth nowadays spend their leisure-time. The right leisure programs eliminate social ills such as juvenile delinquency, drug abuse and other unpleasant behaviors. An engagement of youth in the right leisure activities appears to be higher in developed countries compared to developing countries. Lack of resources like libraries and sports facilities attributes to the lack of leisure activities in developing and undeveloped countries.

### **Health Issues**

The majority of youth have health issues that arise from bad habits and poor hygiene, persistent behavioral risks, poor basic sanitation, and new and emerging diseases. All these contribute to a deadly mix that is changing the classic picture of healthy youth. Other factors that contribute to youth health

issues include accidents and injuries including those caused by insecurity, war and occupation. In all countries, whether developing ,transitional or developed ,disabilities and acute and chronic illnesses are often induced or compounded by economic hardship, unemployment, sanctions, embargoes, poverty or poorly distributed wealth.

### **Female Youth Face Bigger Challenges**

Young women and girls between 15 and 24 years of age face special challenges in many developing countries. As a whole, females receive less education than their male counterparts, marry and become parents earlier, have fewer economic opportunities, heavy household responsibilities, and are often constrained by traditions and customs that do not apply to their male counterparts. It is estimated that 33-66% of sexual assaults worldwide are perpetrated against girls of age 15 or younger. Millions, especially girls, still lack access to high-quality education. Despite all the research showing the health and other benefits of attending and staying in school, the number of children out of primary school in 2011 was still 57 million. Most of these children are never expected to enroll.

### **Lack of Decent Work Opportunities**

Good jobs are still out of reach for young people poised to enter the labor force .The ability of young people to get decent work critical on so many levels underlies their ability to achieve their sexual and reproductive health and reproductive rights. Yet, young people in many countries still do not have access to a good job or hope for a useful livelihood. What the International Labour Organization (2013) terms a “global youth employment crisis” is worsening. In the world’s least developed countries, every year about 15 million young people enter a labour force in which the large majority of workers suffer from unemployment, underemployment, or vulnerable employment.

### **Large Scale Exclusion, Marginalization and Discrimination**

In many countries and many contexts parents, families, and communities do not respect the emerging autonomy of young people, adolescents in particular. Young people are generally excluded from decision-making about the types of programmes and policies that might be best to meet their needs.

### **Lack of Enjoyment of Universal Human Rights**

The human rights that everyone is born with underpin young people's realization of their sexual and reproductive health and reproductive rights. In its 2012 resolution on adolescents and youth, the Commission on Population and Development of the United Nations urged "government to protect the human rights of adolescents and youth to have control over and decide freely and responsibly on matters related to their sexually, including sexual and reproductive health, free of coercion, discrimination, and violence, and regardless of age and marital status."

### **Lack of Access to Sexual and Reproductive Health Information and Services**

Access to appropriate health information and services is at the core of the ability of young men and women to realize their sexual and reproductive health and reproductive rights. Tragically, despite all the recent attention to their needs, most adolescents and young people are still not getting what they need in the way of information and services.

### **Social Economic and Legal Obstacles**

The yawning gap between what young people need as a basis for a safe and successful transition to adulthood and what they are getting reflects strong and persistent underplaying social, economic, and legal obstacles. Some of these barriers affect people of all ages, while others are specific to young people. All

contribute to denying young people the fullest enjoyment of their sexual and reproductive health and reproductive rights.

### **Importance of Youth Population**

Many of the countries with the largest portions of youth today are among the poorest in the world but they are also on the cusp of demographic transition that can yield a demographic dividend. Transition begins as fertility and mortality rates start to fall, leaving fewer dependents. More people, proportionally, are in the workforce. The dividend comes as resources are freed for economic development, and for greater per capita spending on higher quality health and education services. Economic growth takes off. A virtuous cycle begins where capabilities and opportunities continuously expand. More than any other group, today's young women and men will impact how people in rich and poor countries live in the 21<sup>st</sup> century. Unfortunately, hundreds of millions of youth especially young women lack education, skills and job training, employment opportunities, and health services, effectively limiting their future at a very early age. As a result, youth may react by unleashing risky or harmful behavior against themselves or society. Although youth may often be perceived as contributing to society's problems, they are, in fact, important assets for the economic, political, and social life of their communities. Addressing key global threats like the spread of HIV/AIDS, growing poverty, and political instability in developing countries depends on protecting the rights of youth and providing them with the support they need to contribute to the health and well-being of society. Globalization, technological advances, and the spread of social networking offer new opportunities for youth to connect and become more active participants in development while at the same time making their lives more complex and challenging. This youthful demographic landscape must be a central part of any development policy, one designed to integrate young people more fully in political, economic and social life and enable them to share in the

benefits of development. Throughout history, young people have actively sought to bring social, political and economic change to their countries. In so doing they are sometimes credited with changing business as usual. Often they are portrayed as rebellious, destructive reckless or violent. However, young people are today's and tomorrow's wage earners and entrepreneurs, educators and innovators, health professionals, political and civic leaders, vital to economic growth and wellbeing. This is because of many reasons.

Youth are better able to access economic and social opportunities share in economic growth, live healthy lives, and contribute to household, community and national wellbeing.

Youth fully participate in democratic and development processes, play active roles in peace building and civil society, and are less involved in youth gangs, criminal networks, and insurgent organizations.

Youth have a stronger voice in, and are better served by local and national institutions, with more robust and youth friendly policies.

Development can be accelerated when the majority of youth in any country are able to make significant contributions to economic, social, and political life in a way that lifts countries out of poverty, ensures greater stability and promotes healthier societies. Alternatively, peace, progress and prosperity are held back when countries are unable to meet the basic needs of their youth. With few exceptions, in the coming decades, developing countries have or will have a population age structure that favors economic growth, For some countries, the window to capitalize on this opportunity is short, while for others, it is just opening or still a few decades away.

## **Conclusion**

Young people matter. They matter because they have inherent human rights that must be upheld. They matter because an unprecedented 1.8 billion youth are alive today, and because they are the shapers and leaders of our global future. Yet in a world of adult concerns, young people are often overlooked. This tendency cries out for urgent correction, because it imperils youth as well as economics and societies at large.

This is all for today's lecture. Thank You. Next time we will meet again to discuss another interesting topic. Till then good-bye. Take care.

**Course Name - Bachelor of Population Studies**

**Year - IIIrd**

**Paper Name – Population, Environment and Development**

**Paper No. VII**

**Lecture No. 20**

**Lecture Title : Population and Reproductive Health in National Adaptation Programmes of Action (NAPAs) for Climate Change**

### **Introduction**

Perhaps the greatest irony of climate change is that countries that have had the least to do with growing emissions are likely to experience the most severe impacts of climate change. Due to the persistence of carbon in the atmosphere, global warming is inevitable under any scenario produced by the Intergovernmental Panel on Climate Change in the coming decades and global greenhouse gas emissions will continue to increase at least up to the year 2020 (IPCC 2007). While mitigation is critical, there is growing consensus that helping affected countries and people adapt to climate change is also important since the impacts of climate change are already being felt, and will worsen in the future. While most international focus is on mitigation of climate change, including through well-publicized international conferences and agreements such as the Kyoto Protocol, the international community has also developed mechanisms to address adaptation. As such, adaptation as a response to the climate change problem has gained

importance in the international policy agenda. The Bali Action Plan, an addendum to the United Nations Framework Convention on Climate Change (UNFCCC), recently identified the need for enhanced action on adaptation (UNFCCC 2007). A large share of the population in the developing countries is already vulnerable and living in marginalized areas, which are susceptible to climate variation and extreme weather events.

### **Need for NAPA**

Population growth is occurring most rapidly in the developing world, increasing the scale of vulnerability to projected impacts of climate change. In the average population density in 2005, developing countries was 66 people/km<sup>2</sup>, compared to 27 people/ km<sup>2</sup> in developed regions. More than half (27) of the (49) Least Developed Countries (LDCs) are projected to be at least double their current population by 2050, based on the UN's most recent population projections. Human population growth will increase vulnerability to many of the most serious impacts of climate change. Scarcity of food and water, vulnerability to natural disasters and infectious diseases, and population displacement are all exacerbated by rapid population growth. Recognizing that LDCs, including Small Island Developing States, are among the most vulnerable to, and with the least capacity to cope with, extreme weather events and the adverse effects of climate change, National Adaptation Programmes of Action (NAPAs) were established as part of the Marrakech Accords of the 2001 UNFCCC Conference of Parties (COP). NAPAs were intended to provide assistance to LDCs in developing plans to address the adverse effects. NAPAs, which are supposed to link with national development processes, provide an avenue for LDCs to identify priority activities that respond to their urgent and immediate adaptation needs. What is the experience with NAPAs to date? What interventions are being included in NAPAs? Is population and

reproductive health/family planning (RH/FP) addressed in NAPAs, including through projects proposed by countries? Among the 49 eligible LDCs, 41 (85 percent) have submitted their NAPAs to the UNFCCC. According to the UNFCCC, the rationale for developing NAPAs rests on high vulnerability and low adaptive capacity of LDCs, many of which count among some of the world's poorest. This demands in turn the immediate and urgent support for projects that allow for the adaptation to the adverse effects of climate change. "As such, activities and projects proposed through NAPAs are those whose further delay would increase vulnerability, or lead to increased costs at a later stage." (UNFCCC/LEG 2002) Acknowledging that countries need to have national adaptation plans which identify and prioritize not only the urgent and immediate needs but also the medium and long-term adaptation needs, longer-term national adaptation plans are part of the on-going UNFCCC negotiations.

### **NAPA Operating Mechanism**

NAPAs also provide an avenue for linking issues associated with implementing the three Rio Conventions on environment. An important guiding principle in the preparation of NAPAs is that the process ought to be a bottom-up, participatory approach that involves a broad range of stakeholder groups and focuses on local communities, considering their current vulnerability and urgent adaptation needs (UNFCCC/LEG 2002). Following NAPAs guidelines, countries undertake four steps to develop their NAPAs, described in more detail: 1) establish a NAPA organization that should include local communities and representatives from various sectors (e.g. agriculture, water, energy, forestry, health and tourism); 2) synthesize available information on impacts, coping strategies, national and sectoral development plans to provide a baseline measure of vulnerabilities; 3) identify projects through consultations with stakeholders and develop a list of

priority projects; and 4) submit NAPA to the UNFCCC. Once a NAPA has been submitted to the UNFCCC secretariat, the LDC Party can start the process of implementation under the LDC Fund (LDCF), which is managed by the GEF. To initiate implementation, an LDC Party prepares a concept note and requests an implementing agency of the GEF to assist it in submitting a proposal for funding to the GEF under the LDCF. The GEF agency then works with the country to develop the concept into a full project that is ready for implementation under the GEF project cycle. Osman-Elasha and Downing (2007) assessed country-level NAPA process based on the 14 NAPAs submitted to the UNFCCC by April 2007, half of which were from African LDCs. The analysis built on interviews with members of NAPAs teams, and the most important conclusion was that the NAPAs preparation needs to be viewed as a process and not as an end product. They also concluded that the main strengths of the NAPA process were the creation of awareness and sense of ownership amongst various stakeholder groups at different levels, from policy makers to the general public at the local level. The major weaknesses identified during the process of preparing the NAPAs were institutional barriers that hindered the free exchange of information including communication problems between central offices and states. They found that NAPA coordination teams are mainly found either under the umbrella of environment or the meteorology departments and mostly represent the UNFCCC Focal Points. This composition of the teams has implications for the content of the NAPAs. Although estimates of the level of funding required to assist developing countries to adapt to the impacts of climate change vary widely, there is general agreement that the cost to the public and private sector could be in the range of tens of billions of dollars per year. The total estimated cost of implementing the 448 projects prioritized by the 41 NAPAs is over \$800 million yet currently the NAPAs Fund, the Least Developed Country Fund (LDCF), has mobilized about US\$ 176 million, hence a huge disparity

between the financial needs of NAPAs and the mobilized financial resources. Furthermore, there is consensus that resource shortfalls hinder funding of NAPAs and that countries are generally underestimating the costs of adaptation (Agrawala and Fankhauser 2008, CCCD 2009). Article 4.4 of the UNFCCC commits developed countries to assist developing countries Parties particularly vulnerable to the effects of climate change to meet the costs of adaptation. This assistance is understood to come in the form of new and additional funding (i.e. beyond what developed countries provide as overseas development assistance or ODA).

## **Reproductive Health/Family Planning and Adaptation Strategies in NAPAs**

Since most of the NAPAs identify rapid population growth as an integral challenge to adapting to climate change, it follows that slowing population growth should be a key component in dealing with effects of climate change. Reduced population pressure can ameliorate some of the effects of climate change and/or increase the ability of countries to adapt. RH/FP has been recognized as one of many strategies that can slow population growth and reduce demographic pressure (Ross 2004; USAID Health Policy Initiatives 2006). Yet, as mentioned above, there is limited identification of adaptation projects in the health sector, under which RH/FP broadly falls. In addition, the identified health sector projects are not ranked favorably among the priority actions, and priority actions are likely to be implemented. Only six more NAPAs, clearly state that slowing of population growth or investments in RH/FP should be considered among the country's priority adaptation actions. These countries include Comoros, Ethiopia, Gambia, Kiribati, Zambia and Uganda. Furthermore, among those NAPAs that clearly make this case, only Uganda actually proposes a project with components of RH/FP among

its priority adaptation interventions. Another project with RH/FP components is proposed by Sao Tome and Principe, whose NAPA neither links population pressure to climate change nor to RH/FP. In both Uganda and Sao Tome and Principe's NAPAs, RH/FP is integrated with other priority adaptation interventions. Comoros' NAPA notes that population growth is a source of vulnerability, and credits family planning programs for the reduction of the population growth rate. Even though the NAPAs establishes clearly the linkage between climate change and FP policies, the NAPA team fails to identify a priority project with RH/FP programs. In Ethiopia, high population growth is identified as one of the causes of vulnerability to climate change. During the NAPA process, mainstreaming family planning into agriculture was proposed in the regional consultative workshops as an adaptation strategy. Although the NAPA identifies mainstreaming of family planning into agriculture as one of the potential cross-sectoral adaptation options, there is no component of RH/FP in any of the proposed priority agricultural projects. In Gambia, partly as a result of population pressure, the natural environment has taken the full brunt of unsustainable use of natural resources, as seen in the negative effects on the forest cover, rangelands, aquatic and marine organisms, as the NAPA reports. Taking cognizance of this fact, the NAPA proposes as a strategy for adaptation and stabilization of rural populations. However, none of the identified priority adaptation actions have RH/FP components. Kiribati's NAPA mentions that the country has population policies to encourage family planning although these policies are yet to have a substantive effect. In the final ranking of projects, the NAPA Team clearly identified family planning as an adaptation strategy. Surprisingly, the identified priority projects did not have a single RH/FP project among the priority projects, despite the explicit mention. However, the document distinguishes between short-term adaptation, whose focus is on urgent and immediate needs (through the NAPA), and long-term

strategic planning for adaptation which is addressed by an existing project outside the NAPA, the Kiribati Adaptation Project, which has “support for population and resettlement” as one of its programs. Sao Tome and Principe’s NAPA mentions the vulnerability of its essentially young (79% younger than 35 years) and predominantly urban population, manifested through frequent migration among the coastal populations due to an increase of floods and coastal erosion. However, the NAPA neither acknowledges population pressure nor links it to climate change nor to RH/FP. Yet it is one of the few countries to identify a project with components of RH/FP. The project, ranked 3rd and titled “Communication Action for Behavior Change” has the objective of informing and sensitizing the population on behavior change for the prevention of diseases related with water, of vector transmission and other problems of health linked to climate change. It specifically includes a component on family planning counseling. The Uganda NAPA makes a clear link between population and climate change and notes the need for family planning. The document identifies a negative social coping strategy, “famine marriage,” where in times of food crisis, some parents distressfully marry off their daughters to secure dowry for survival. This fuels early marriages, dropping out of school and exposure to sexually transmitted infections and related reproductive complications. The NAPA team identifies the “Community Water and Sanitation Project,” which includes slowing population growth through family planning as part of a scaled up poverty alleviation program. However, the project profile does not mention the specific interventions in RH/FP, perhaps anticipating that NAPA project activities would link with RH/FP services in the country. Zambia NAPA reiterates the importance of meeting the goals of the Fifth National Development Plan (FNDP) 2006 -2010, which includes integrated reproductive health with the objective of reducing the maternal mortality ratio. Despite this clear appreciation of the role of RH/FP in the NAPA and the linkage to the national development

plan, the project team does not propose a project specific to RH/FP. Although population is mentioned as an important factor related to climate change in 37 NAPAs, only six NAPAs explicitly state that slowing population growth or meeting an unmet demand for RH/FP should be a key priority for their adaptation strategy, and only two NAPAs proposes projects that include RH/FP. Neither of the projects has been funded. Population size, growth, composition, distribution and mobility are key factors in sustainable development and climate change. the links between population dynamics, reproductive health, gender equality and sustainable development are widely recognized by the international community. They were emphasized in the International Conference on Population and development (ICPD) Programme of action, adopted in Cairo, Egypt in 1994, and the rio declaration on environment and development from the united nations conference on environment and development in 1992. Agenda 21 of the declaration includes reproductive health and family planning among the programs that promote changes in demographic trends and sustainability. These links were reaffirmed at the united nations conference on Sustainable development (Rio +20), held in rio de Janeiro, Brazil in June 2012. A growing body of evidence demonstrates the importance of population dynamics and women's abilities to adapt to climate change. Access to reproductive health and voluntary family planning is an important part of strengthening women's capacity to adapt. Yet, in too many places around the world, access to these services is limited. Providing women and families with tools to prevent pregnancy can improve the socio-economic status of women, reduce strain on the environment, and improve natural resource conservation – all of which make significant resilience in the face of climate change. National policymakers also recognize the connection between climate change and population dynamics within their climate adaptation planning processes. For example, a majority of national adaptation Programmes of action

(NAPA), which are designed by countries to help them adapt to climate change, have identified rapid population growth as a factor that undermines and exacerbates countries' ability to cope with the effects of climate change. Some have proposed projects that invest in family planning and reproductive health (FP/RH). However, none of the projects submitted for funding under the key adaptation finance mechanisms include FP/RH. A majority of the projects funded fall under food security and water resources, with social sectors like health being less prominent. While food security, water resources, and disaster preparedness are understandably important, family planning should also be part of the long-term social sector strategy for adaptation. As adaptation planning moves towards implementation and projects are being funded, it is important to explore the planning and financing landscape to examine how amenable it is for FP/RH programming. PAI reviewed 41 National Adaptation Programmes of Action (NAPAs), submitted by Least Developed Countries (LDCs) to the United Nations Framework Convention on Climate Change, to assess the NAPA process and identify the range of interventions included in countries' priority adaptation actions. Their view highlights how population issues and reproductive health/family planning (RH/FP) are addressed as part of the LDCs' adaptation agenda.

## **Conclusion**

A majority of national adaptation Programmes of action (NAPA), which are designed by countries to help them adapt to climate change, have identified rapid population growth as a factor that undermines and exacerbates countries' ability to cope with the effects of climate change. Some have proposed projects that invest in family planning and reproductive health (FP/RH). However, none of the projects

submitted for funding under the key adaptation finance mechanisms include FP/RH. A majority of the projects funded fall under food security and water resources, with social sectors like health being less prominent. While food security, water resources, and disaster preparedness are understandably important, family planning should also be part of the long-term social sector strategy for adaptation. As adaptation planning moves towards implementation and projects are submitted for funding, it is important to explore the planning and financing landscape to examine how amenable it is for FP/RH programming.

**Course Name - Bachelor of Population Studies**

**Year - IIIrd Year**

**Paper Name - Population, Environment and Development**

**Paper No. VII**

**Lecture No. 21**

**Lecture Title : Climate Change, Gender Equality and Adaptation Plans**

**Script**

### **Introduction**

The gender dimension of human settlements as an issue of research, advocacy and urban policy has a long history. The Habitat Agenda includes various provisions on gender, and the gender dimensions of the main issues related to human settlements have been addressed, such as urban poverty and gender, housing, land and property rights of women, water and sanitation, gender mainstreaming and the involvement of women in local government. The response of city networks includes guidebooks and commitments to gender equality in the city.

While the gender and environment nexus in general has been an issue for many years, the climate change and gender nexus has only started to receive attention during the last decade. A number of publications have analysed the various connections, in particular the differentiated impacts of climate change, the absence of women in climate policy, but also the role women could play if fully involved. This emerging topic was pushed forward by women's organisations and supported by development organisations that are familiar with the connection between gender

and poverty, lack of access to energy and water, and other problems that are aggravated by the impacts of climate change.

As for the vulnerability to the impacts of climate change, poverty plays a major role. Due to the living conditions of the poor, they are often more exposed to hazards, and have fewer options to avoid, or cope with, the impacts. As, according to UNDP, more than 70 per cent of the world's poor are female, the share of women among the most vulnerable is disproportionately high. Moreover, there are additional factors indicating that vulnerability involves heavy gender differentials that need to be taken into consideration. Thus, all three linkages between climate change, gender and cities are well established and substantiated by practice and research findings. However, it has not yet been discussed how these three inter-linkages work together, and how cities and other players need to respond to the complexity of the whole picture. This lecture is an attempt to take stock of existing knowledge, identify gaps, and produce preliminary recommendations to policy-makers at urban, national and international levels.

## **Gender Vulnerabilities**

At the local level, a range of inequalities and injustices are directly apparent and tangible. In most cities around the world, the divide between the privileged and underprivileged is as large as the global divide between developed and least developed countries. While a small proportion of citizens claim the major share of land for housing, mobility and recreation, the majority of others are crowded together in slums. The size of the carbon footprints of different citizens ranges from very large to virtually zero. The poorest groups, such as slum dwellers, usually have the smallest carbon footprint, and, moreover, they often live in areas most exposed to climate hazards, such as landslide or flood prone areas.

These inequalities are related to income, class, age, race, ethnicity, health status, etc. Within all this inequalities, gender leads to a further differentiation, and in most cases, leads to different impacts of climate change on women and men. 'Within low-income populations, women often have particular vulnerabilities as a result of gender-related inequalities'.

Vulnerability depends on exposure to the negative effects of climate variability, and the capacity to avoid these effects or to cope with them. This capacity depends on income, assets, education and knowledge, and here again, there is a gender bias. all over the world, women have lower incomes, are in some countries facing constraints due to cultural patterns and norms, and are responsible for the bulk of unpaid care work. The latter often leads to an increase of the work burden of women after disasters and extreme weather events, for instance when the provision of fuel, food and water is more difficult and ill family members need to be taken care of. However, the gender division of labour is also an important factor for the crucial role of women in mitigation, since many relevant decisions influencing GHG emissions are taken at the household level. Due to their role in the community, their priorities and needs, knowledge, capacity and practical experience, women are also key actors for disaster risk reduction and enhancing the resilience of the community.

For two main reasons, gender issues need to be addressed in climate policy at all levels, and thus at the city level, as well:

First, it is a matter of equality and equity. Existing standards and norms require gender issues to be addressed at all levels in order to work towards gender equality and eliminate discrimination of women. Firstly, both women and men need to be equally and meaningfully involved in planning and decision-making. Secondly, gender mainstreaming as a tool to assess the different implications for women and men of planned legislation, policies and programmes is required in all areas and at all levels, including climate policy, and including the city level. This is crucial, as climate change and climate policy might otherwise exacerbate existing inequalities. In other words, working towards gender equity as an issue in its own right needs to be taken into consideration in all policies, and thus also in climate policy.

Secondly, it is a matter of effectiveness and efficacy of climate policy. Without taking gender issues into account, many climate change policies and measures are very likely to be less effective since they might reach and involve only a part of the citizens, or their outcome might even be harmful for certain social groups. The root

cause of GHG emissions is not industry and power stations, but consumption. In order to address consumption, policies need to target all relevant consumers, and therefore, only inclusive and gender-sensitive climate policies will be able to reach a majority of citizens. This holds particularly true for local governments, who are, as the policy level closest to citizens, in an excellent position to influence their behaviour. As for the impacts of climate change, cities and citizens are directly and immediately affected. Targeting adaptation actions at the most vulnerable groups would save more lives, reduce the number of injuries and alleviate post-disaster problems. Improving resilience as a longer-term response to climate hazards must, first and foremost, look at the poorest and thus weakest segment of society which disproportionately include women. In other words, in order to be effective, climate policy and its implementation in the various sectors such as energy, transport, water management, and disaster risk reduction, must respond to the needs of citizen and their access to resources, services and infrastructure. This response can only be effective, if it takes into account differentials in the needs and opportunities of women and men due to their different roles and gender power relations. Even for the same work, women are paid less, and this gap seems to be persisting. In Australia, for example, the female to male income ratio had started to level out during 1980s, but during the 1990s, the ratio fell again until it reached very low levels.

Women, especially younger women, experience more unemployment than men and for a longer period of time than men.

Recent data, for example from European Commission, show that women are working mainly in 'feminized' sectors and professions and remain in lower job categories with less access to senior positions. Young women still tend to choose these 'female' occupations, while their share in engineering, manufacturing and construction jobs is less than 25 per cent.

In all countries where time-use studies are available, men spend more time of their working day in market-oriented work, while women spend more time than men in care work. An example, the ratio between unpaid care work, and paid labour for men and women in some countries is given as below :

Countries	Men	Women
Argentina	0.26	1.39
India	0.09	2.00
South Korea	0.14	1.13
South Africa	0.43	1.85
Sweden	0.56	1.15

In many developing countries, water and fuel collection make up a large part of the unpaid work done primarily by women. UNIFEM estimate that women and children in Africa spend 40 billion hours every year collecting water. In South African cities, more than 40 per cent of households in informal areas and 5 per cent in formal areas have to obtain their water off-site, and in more than 50 per cent of the households, women and girls are solely responsible for water collection, while men are the main collectors only in a quarter of the households. Depending on the distance of the water source, water collection takes at least 40 minutes, and up to 70 minutes per day. At least 60 per cent of women workers in developing countries are in informal employment which is generally a larger source of income for women than for men. For instance, In Sub-Saharan Africa, 84 per cent of women in non-agricultural sectors are informally employed, compared to 63 per cent of men. Of the world's estimated 100 million home-based workers, a majority of these are women. For instance in South Asia, 80 per cent of home-based workers are women. In Pakistan in 2001, women owned less than 3 per cent of the plots, even though in the most cases, legal regulation allowed them to own land. Illiteracy is more common among women than men (and women thus have less access to information, including information on climate change and climate hazards), as two third of the world's 876 million illiterates are women. More women than men lack basic computer skills needed to use the Internet and other 'new media'.

## Power and Participation

Cities need to address the unequal power relations and the lack of representation and participation of women. There are some indications that the outcome of policies would be different, and often more ambitious, if more women would be involved. It is incontestable that improved involvement of women would help to better take their specific vulnerabilities, and that of the entire family, into consideration. Women as resource managers of household and communities hold experiences and knowledge that would benefit the city's strategies on resources, infrastructures and services. In light of the evidence on gender differentials in risk perception, women's participation would very likely result in low risk options to be favoured. Women tend to favour renewable energies and reject risky technologies such as nuclear power more than men. In Germany, for instance, more women than men support a massive increase in the use renewable energy sources. A significant higher proportion of women than men believe that effective policies to combat climate change are very important and expect determined measures from policy-makers. Given the differentials in attitudes explained above, stronger action to protect the environment and mitigate climate change could be expected if more women would have a say in urban politics.

First step to reduce vulnerability of the most vulnerable groups, of which a majority are women, and enhancing the resilience of community. To this end, urban planning, community resources and the provision for infrastructure and services are essential. In particular for disaster risk reduction, cities can, and must, play a major role at all stages, improving preparedness and information systems, disaster management, and post-disaster emergency measures.

Key areas of action to reduce vulnerability include improving food security, overcoming structural causes of famine, improving education and health systems, better urban planning, provision of services and infrastructure to the most vulnerable groups, and gender equality.

Most methodologies to identify vulnerable groups are blind for gendered vulnerabilities, since they do not distinguish between different vulnerabilities at the micro level within local communities and within households. In India, a 'Vulnerability Capacity Index' has been developed for disaster risk assessment,

which could fill this gap. It takes a number of ‘drivers of vulnerability’ into consideration, to assess material, institutional and attitudinal vulnerability, supported by shared learning dialogues at different levels between government, communities, NGOs and financial institutions.

## **Proposed Approach**

Cities that are just starting to address climate change should integrate gender issues from the start, following the steps explained above which can guide cross-mainstreaming of gender and climate policy in cities, based on the generic step-by-step approach adapted for the urban level.

For cities that already have climate policies and programmes in place, it might be more difficult to introduce gender dimension into ongoing activities. They should seek a window of opportunity, such as an evaluation and then update of the programme. They can then apply tools such as gender impact assessments to identify weaknesses and ‘re-gender’ the most urgent issues. During the implementation of programmes, they should identify entry points for gender sensitive projects; for ongoing programmes, they can at least start to collect sex-disaggregated data, for instance of the respondents to subsidy programmes.

Policy which, in any case, need to take the gender dimension into consideration are for adaptation: Disaster risk reduction, shelters, land use, access to resources and services. For mitigation, rapid gender checks for ‘re-gendering’ should look at financial instruments such as subsidies; on information, training and advice on climate change and options to mitigate and adapt. Information and materials should be gender sensitive in terms of content, language, design and communication channels, but reproducing gender stereotypes should be avoided.

As for new programmes, priority in terms of gender should be put on specific measures to combine social and gender issues with climate issues, addressing poverty and marginalisation and creating an enabling environment. This could be, for instance, poverty alleviation measures that increase resilience, energetic retrofitting programmes targeting the poor, and transport policies that favour non-motorised transport modes.

The project 'Girls in Risk Reduction Leadership' in Ikageng, a township of Potchefstroom, in South Africa, aims to reduce the social vulnerability of marginalized adolescent girls using practical capacity-building initiatives to increase individual and community resilience to disasters. Girls were trained by experts in areas such as personal and public health, fire safety, counseling and disaster planning. This is to complement traditional but important roles of women in the community. Later on, they will work with the disaster risk reduction team to help design a plan for the community to improve resilience.

The women's group 'Guardians of the Hillside' (Guardianas de la Ladera) in Manizales, Colombia, has done traditionally male work in order to preserve their houses and their environment on the unstable city hillsides. They worked together with 90 women heads of households. In the slum settlement Kalandar in Delhi, India, a commercially viable water kiosk is managed by a women's community and provides safe water at affordable costs. Each household receives a user identity card, a membership number and a set of coupons for a fixed daily quota of water per family. NGOs and a research institute had raised the women's awareness on the poor water quality and organised a community mobilisation programme to engage women in the planning, management and operation of the water kiosk as a community enterprise.

In several slums in Tiruchirapalli district, India, women's group, with guidance and funding from NGOs, installed drinking water facilities and individual toilets, in order to address the poor sanitary conditions. The state government initiated the programme and provided the land, electricity, water supply and loans to community members. A gender-sensitive community mobilisation programme with a focus on gender mainstreaming carried out by the women was part of the project.

## **Conclusion**

Gender is about socially and culturally constructed roles and power relations. It is therefore not about women, but about women and men, their different concerns, needs, involvement, contributions, attitudes, and behaviour. However, due to the power relations and the male bias in decision-making, attention needs to be drawn to the specific situation of women, which is otherwise neglected. Firstly, both

women and men need to be equally and meaningfully involved in planning and decision-making. Secondly, gender mainstreaming as a tool to assess the different implications for women and men of planned legislation, policies and programmes is required in all areas and at all levels, including climate policy, and including the city level. This is crucial, as climate change and climate policy might otherwise exacerbate existing inequalities. Key areas of action to reduce vulnerability include improving food security, overcoming structural causes of famine, improving education and health systems, better urban planning, provision of services and infrastructure to the most vulnerable groups, and gender equality.

**Course Name - Bachelor of Population Studies**

**Year – IIIrd**

**Paper Name - Population, Environment and Development**

**Paper No. VII**

**Lecture No. 22**

**Lecture Title: Gender Mainstreaming and Water Resource Management**

### **Academic Script**

Gender mainstreaming is the process of assessing the implications for women and men of any planned action, including legislation, policies and programmes in all areas and at all levels. It is a strategy for making women's as well as men's concerns and experiences an integral dimension of the design, implementation, monitoring and evaluation of policies and programmes in all political, economic and societal spheres, so that women and men can benefit equally and inequality is not perpetuated. The ultimate goal is to achieve gender equality [by transforming the mainstream] (ECOSOC, 1997, emphasis added). In the area of water resources management, an uncoordinated and sectoral approach has resulted in environmental degradation from water resources, and inappropriate allocations among competing uses, inequitable distribution of benefits and burdens, and inadequate operation and maintenance of infrastructure are some of the reasons. Inadequate involvement of both women and men has hindered programmes and projects aimed at addressing sustainability in water resources management. Community participation and management approaches have failed to address these issues, largely because communities are often seen as a collection of people with a common purpose. The reality is that a community is not a collection of equal people living in a particular geographic region. It is usually made up of individuals and groups who command different levels of power, wealth, influence and ability to express their needs, concerns and rights. Communities contain competing interest groups. Where resources are scarce, there is competition for supplies, and those at the lowest end of the power spectrum - poor women and men - will go without them. Unequal power relations place women in a disadvantaged position. Applying a gender analysis helps

water sector agencies allocate their resources better to meet the needs of different women and men and marginalised groups. People-centred approaches do not always ensure that gender perspectives are taken into account. Thus, a deliberate strategy of gender mainstreaming can be useful to ensure that these issues that affect women and men are part of analysis, programme and project planning, implementation, and evaluation. More importantly, gender mainstreaming can assist in bringing about institutional and organisational change necessary to ensure gender equality as an on-going commitment.

Water should be treated as an economic, social, and environmental good.

Freshwater is valuable and limited. Water supply services and infrastructure are economic activities, while at the same time, access to basic water supply is a fundamental human right. Water use for sanitation and domestic purposes, which tends to be the responsibility of women, should be incorporated into the assessments of economic values of the use of water. Women often have no rights to land and water, and development efforts may negatively affect their livelihoods.

o While it is desirable for water supply to be paid for, it is also important to take into account people's ability to pay. Women's interests and gender relations are often overlooked. If charges for domestic water supply have to be paid, both men and women should be involved in determining the rates. Even though women often do not have control over cash, they are still expected to pay for water and sanitation, more than men, because they are the main users and it is considered their responsibility. A gender and social equity analysis of demands is required.

o Access to basic amounts of water supply as a social good and human right needs to be included in policies and planning. Increased charges for water should not apply to meeting basic human needs and should not reduce water minimum consumption for cooking and hygiene.

## **Mainstreaming Gender in Water Management**

The ultimate goal is to achieve gender equality by transforming the mainstream (UNESCO,1997 in GWA 2003a). Operationalizing gender mainstreaming involves:

- Understanding the gender-differentiated systems for access to resources, labour, water uses, water rights, and the distribution of benefits and production. Sex-disaggregated data and the documentation of unpaid labour are important. Focusing on gender relations, not just women. Although many analyses draw attention to women (since it is generally women who face disadvantages and women's views that tend to be overlooked), a gender analysis looks at the relations (differences, inequalities, power imbalances, differential access to resources, etc.) between and among women and men and how these are negotiated. The position of women cannot be understood in isolation from the broader relationships between women and men.
- Understanding that gender is a factor that influences how people respond both individually and collectively. Men and women face different obstacles and draw on different resources when attempting to participate on a water committee, confront a local official or attend a training session.
- Understanding the gender dimension of institution at all levels in society (within the household, community-based organisations, water users associations, local governments, national civil services, etc.). These formal and informal institutions play fundamental roles in water resources management, yet they have gender dimensions: Who makes what decisions? Does the structure facilitate or hinder women's participation? Is there the capacity to reduce inequalities between women and men in the institutions? How are different needs and perspectives negotiated inside institutions? Are institutional policies developed in an inclusive and gender-sensitive manner?
- Confirming or rejecting assumptions in each specific context, ideally using participatory methodologies. Assumptions from one country or project cannot be carried over into another region or initiative. Furthermore, power relations, working arrangements, and resource availability can change over time. The specificity of each situation must be investigated.

### **Getting the Initiative or Project Right**

To ensure that the analysis increases the positive impacts of water programmes and that the overall objective to support the advancement of women is reflected in all IWRM initiatives, the following should be considered:

- Incorporating the insights from the analysis into project design. For example, it is not enough to document women's priorities. Their views should influence the priorities and objectives of the initiative.
- Giving importance and recognition to women's responsibilities and views. For example, often women's uses of water are given less importance than men's (they are not documented, women's uses are not given priority, they are not visible to the planners, etc.).
- Making links to key expected results of the initiative. There should be a clear analysis that links [the] gender analysis to the overall objectives of the project. If the project is focusing on flood control, the gender dimension should look at how women are consulted, involved and affected by various options for flood control (rather than a side initiative on small-scale credit for women).
- Identifying concrete objectives. During the project design phase, objectives relating to gender equality should be clearly specified (rather than kept general, such as 'incorporate gender equality issues into the project').
- Developing indicators to track success towards meeting the results. General indicators should be disaggregated on the basis of sex (instead of total number of people consulted, there should be a breakdown between women and men).

Gender-sensitive monitoring and evaluation indicators programme and project interventions have not led to sustained and sustainable development. Benefits and costs that accrue from an intervention are also not always disaggregated by sex and socio-economic class; consequently, it becomes difficult to understand the effects of those interventions on different groups. A monitoring and evaluation process that has gender sensitive indicators and involves men and women not as informants but as participants will result in a better understanding of who in the community has benefited, who bears the costs and what motivates different groups to act. Furthermore, a monitoring process that involves men and women ensures that monitoring becomes a self-management tool rather than a policing instrument, thus leading to collective action.

If data collection is not disaggregated by sex, it will be difficult to assess the positive or negative impacts of the programme or project on women and men, young and old and rich and poor. For example, if water provision in an urban slum has lessened the burden of water fetching for women and girls, this could free more girls to go to school. This positive result cannot be assessed without sex-disaggregated data collection, which can assist in measuring the scope of the impact, i.e., the increased enrolment and retention of girls in school. If water provision services have freed poor women's time to engage in income generating activities, without sex-disaggregated data, the positive impact will lack empirical evidence and will remain anecdotal. Since the 1990s, the international community has recognised and accepted that good governance plays a significant role in improving the livelihood of people. Weak water management impacts negatively on poor men and women through unreliable services, limited access to services, and higher costs for inefficient and ineffective services which often subsidise the rich. Improved water governance can lead to equitable water resources development and access for all. Persistent development problems, as well as the current and predicted water crises, reflect failures in governance (UNDP, 2002). There appears to be a correlation between weak water governance, persistent poverty and inadequate access to water for vulnerable groups, leading to stunted development. Good governance can have positive impacts on gender inequalities, including the following:

- Ensuring that poor women and men's human rights and fundamental freedoms are respected, allowing them to live with dignity.
- Introducing inclusive and fair rules, institutions and practices governing social interactions to improve outreach to the vulnerable, such as poor men and women, and the younger and older generations.
- Ensuring that women are equal partners with men in decision making over development, use, technology, and other aspect choice, financing of water management.
- Ensuring that the environmental and social needs of future generations are reflected in current policies and practices.
- Focusing water developmental policies toward eradicating poverty and improving the livelihoods of women and men.

Given that water is key to meeting most of the Millennium Development Goals, the solution is not only in developing new technologies and increasing supply, but also in managing the available resource effectively, efficiently and equitably. It also entails a rational assessment of the competing demands for water and equitable allocations based on a list of priorities that take into account the needs of all stakeholders. It is against this background that there has been a move towards water reforms aimed at improved water resources management. During the World Summit on Sustainable Development, held in Johannesburg in 2002, world leaders set a target for all countries to develop IWRM and water efficiency plans by 2005. It is through the IWRM planning process, with multi-stakeholder consultations, that issues of equity, access and creation of an enabling environment can be addressed. The major challenge has been the meaningful involvement of women and men from the grassroots.

### **Challenges of Gendered Approaches in Water Governance**

Water governance refers to the range of political, social, economic and administrative systems that are in place to regulate the development and management of water resources and provision of services at different levels of society. The involvement of women water users in stakeholder consultations and forums demands specific attention and approaches. The current tools used in multi-stakeholder consultations are mainly suited for an educated, literate group, and will require adaptation for use at the local level. Many women for example, in conservative social contexts, face cultural constraints that prevent them from speaking in public while poor women face economic constraints that do not allow them to voice their needs. Water has been classified as an economic good, and has a cost attached to its development, distribution, operation and maintenance. While the principle of paying for water is justified, and sometimes necessary, poor women are often not able to afford the tariffs that have been set. Access to safe and affordable water is also a basic human right and this right should also inform discussions on the economic value of water. It has been acknowledged that those who cannot pay should at least pay in kind — but for the poor there is an opportunity cost to this when their time could have been used for earning income. Often

when free labour is required, women usually provide it, but if there is paid work it usually goes to men. The efficacy of IWRM derives from institutional frameworks with sufficient capacity to manage water resources. It is assumed that the institutions will be accountable and transparent. However, there is little attention to gender concerns in the water governance structures or processes. Poor women and men's practical and locally important knowledge is rarely recognised or tapped, and many lack the skills necessary for participating in committees. For most poor women and men, time is a valuable resource and its use in meeting has to be balanced with their domestic and income generating activities. Power relations also influence the way water is allocated and the choice of technology. An irrigation pipeline is generally associated with productive use of water, and men have more influence than women over the utilisation of the resources. A hand-dug well on the other hand is generally associated with women's domestic use of water. While this use can be considered productive, and provides benefits to women and men, it may not be given a priority. The decision-making mechanisms and politics associated with water allocations have different implications for men and women. The natural environment shapes the way poor women and men access water and the way they relate to water management structures. Frequent droughts or perennial scarcity of water means that the poor often do not have access to water or have to use poor quality water. Women and men in marginalised areas lacking in infrastructure, and removed from the central government will access water through different local systems, rather than through organised services provided by governments. This further implicates their level of participation in decision-making compared to those who are more centrally located. An emerging challenge in governance is the issue of the rights of girls and boys. In sub Saharan Africa, the HIV/AIDS pandemic has created a rise in the number of child-headed households. Decision-making in governance has always assumed that there will be a adult men (and sometimes women) as heads of households. Children heading households are under age and unable to express their choices in public because of their young age and low socioeconomic status. Water governance needs to take account of the needs and roles of girls and boys in water services provision. Community management has been identified as a mechanism for ensuring effective water governance at the local level,

especially for common property resources. It is often assumed that the local institutions are inclusive and take care of fair distribution of resources. However, in reality, communities consist of different categories of men and women in different positions of power aiming to improve their own situations. Effective water governance needs to incorporate a differentiated analysis of community and community management. The Way Forward Good water governance designed to ensure effective water resources management that allows for decision making from all poor women stakeholders, including and men, should provide access to safe and affordable drinking water and basic sanitation for all, and meet water needs for improved livelihoods. It would also allow for the development of an enabling environment including supportive policies, legal instruments and fair pricing structures.

Effective gender-sensitive water management will require:

- A conscious effort to consult with men and women during the planning process. This can be achieved through the use of gender-inclusive participatory tools designed to engage grassroots men and women.
- A focus on gender in IWRM should not only target civil society, but should also address all water management structures and institutions, recognising the different constraints faced by men and women, and ensuring that there is equity.
- Capacity building at all levels is a critical component of water governance and for the incorporation of gender concerns.
- Issues of gender, governance and water management should not be viewed as women's issues only but should be recognised as broad issues of power relations, control and access to resources by disadvantaged groups, who may be women, children or men.
- The importance of social aspects of water management also needs to be taken into account. Women play a central role in managing water for social, hygiene, health and productive uses. Four Key steps of a gender-approach in governance: Information Context-specific information about women and men's different experiences, problems and priorities is essential to effective gender mainstreaming. Statistical information should be disaggregated into men and women's experiences routinely, with gender analysis being part of the situational analysis. This will assist in identifying inequalities

where they exist and in making a case for developing policies that address these inequalities.

## **Conclusion**

It is important that women and marginalised groups have a strong voice to ensure that their views are taken into account. This means promoting the involvement of women and men in consultation and decision making from the community to the highest level of management. Action to promote gender sensitive beneficiary groups Action to promote greater equality in decision making and opportunity for poor women and men should be based on context specific sex-disaggregated data and gender analytical information. Action to promote gender sensitive approaches in water governance will depend on the skills, knowledge and commitment of staff involved in implementation and management. Developing appropriate capacity in staff as well as addressing gender difference and inequality in organisations is crucial to creating inclusive water sector organisations. Water governance cannot be good governance if there is no deliberate attempt to address the institutions, policies, legal framework and technology instruments that perpetuate gender inequalities. A gender approach in governance should be an integral part of setting up governance structures and mechanisms.

**Course Name - Bachelor of Population Studies**

**Year - IIIrd**

**Paper Name - Population, Environment and Development**

**Paper No. VII**

**Lecture No. 23**

**Lecture Title : Gender Dimensions of Environmental Policies and Program**

### **Introduction**

Seventy percent of 1.3 billion people in developing countries living on less than one dollar a day, are women, therefore it follows that energy poverty is a problem that has a disproportionate effect on women because they are responsible for supplying their families with food, fuel and water, often without the benefit of basic modern infrastructure. Lack of energy for households' needs limits women's ability to take care themselves. Without access to convenient, affordable fuels for cooking and heating, women have to spend large amounts of time and physical energy obtaining traditional fuels and agricultural wastes to hot water and meals. At the same time women in rural areas often have to grow and process their own food, and transport heavy loads without any motorized equipment. If they do not have running water or motorized pumps for their homes, women also have to spend time each day gathering water from taps or possibly polluted wells, rivers or spring. In low-income homes, women often spend many hours a day near an open fire for cooking meals. As a result, they are exposed to harmful levels of gases, particles and dangerous compounds. Indoor air pollution is responsible for more than 1.6 million deaths per year due to pneumonia, asthma, bronchitis, tuberculosis, lung cancer, heart disease. Although women always play an important role to manage environment due to their traditional family roles, they are absent in decision making mechanisms for environmental politics.

Governments and other actors were invited to analyse policies regarding to their effects on women and men and promote a gender perspective in all policies and programs before decisions are taken. The concept of Gender Mainstreaming has comprised an equal representation of women with men in decision making institutions as well.

## **Importance of Gender Dimension**

In 2013, researches indicate that women continue not to exist in any planned environmental policy actions including legislation and programs and moreover environmental politics haven't been prepared by using gender lenses. However it wouldn't be possible to provide Sustainable Development if the role of women in environmental decision making is not taken into consideration. In many international human rights instruments included "Convention on the Elimination of All Forms of Discrimination Against Women", Gender Equality is accepted as inalienable and integral part of human rights and fundamental freedoms and it is essential for to achieve sustainable development, peace and security as well. It is also important to emphasize that the concept of gender is not only relating with women. Gender refers to both women and men and relations between them. Since Beijing Conference in 1995, Gender Equity was used as a terminology to provide balance between women and men. Gender Equity denotes an element of interpretation of social justice, usually based on tradition, custom, religion or culture. However, advancement of women is unacceptable by the term of Gender Equity. During the Beijing Conference, it was agreed that the term equality would be utilized. Gender Equality means that the right, responsibilities and opportunities of individuals will not depend on whether they are born male or female. Equality does not mean "the same as". In other words, promotion of gender equality does not mean that women and men will become the same. Equality involves ensuring that the perceptions, interests, needs, roles, responsibilities and priorities of women and men will be given equal weightage in planning and decision making. There is a dual rationale for promoting gender equality. Firstly, equality between women and men-equal rights, opportunities and responsibilities-is a manner of human rights and social justice. And secondly, equality between women and men is also a precondition for sustainable

development. The perceptions, interests, needs and priorities of both women and men must be taken into consideration not only as a matter of social justice, they are necessary to enrich development processes (Office of the special adviser on gender issues and the advancement of women, UN/CH rev. August 2001) Some results which have obtained from field studies are also shown that gender equality is the fundamental issue regarding to economic efficiency. For instance, the same opportunities regarding to required agricultural raw materials and vehicles are given to the women farmers in Kenya as men farmers, the amount of agricultural products could increase by more than 20 per cent. In another dramatic example from Tanzania, if reducing time that required to spend household cares, women coffee and banana growers increase household cash incomes by 10 %, labor productivity by 15% and capital productivity by 44%.

Women use and manage natural resources in order to perpetuate their families and communities. Women manage and rehabilitate natural resources and so, they play a key role to provide sustainable development. Although they create direct effects on the quality and sustainability of the life for today's and future generations, women are not available in political and decision making processes. However, if exploitation of nature and women is not ended, it is not possible to provide sustainable development. This conceptual change in gender equality brings back gender mainstreaming strategies. Gender mainstreaming does not entail to develop different development projects for women. Gender mainstreaming entails to put women's components within existing projects, programs and policies. In order to reflect gender perspective on policies following questions should be answered: What are the impacts of the decisions on women and men? How is the resource allocation for women and men? What are the roles of women and men regarding to policy development, implementation and monitoring? How the norms and standards are determined ?

## **Women in Development vs Gender in Development Approach**

### **(WID)**

In the framework of Women in Development Approach, women are considered as a distinct and vulnerable group in projects and programs. Where women's

knowledge has been utilized in areas related to family or community health (ensuring medical plans and food security) and environmental conservation (the protection of forest products). This approach also ignores the required strategies needed to pursue the various objectives involved in the use and management of environmental resources that will require the contributions of women and men alike. This approach first came to prominence in the early 1970s. Research and information collected throughout the UN Decade for Women (1975-85) highlighted the existing poverty and disadvantage of women and their invisibility in the development processes. Different policy responses and interventions focused on women as a separate group resulting in women's concerns being "added on" and peripheral to mainstream development efforts. WID policies have proposed actions targeted only to women rather than integrating them fully into the project activities. WID policies and interventions have concentrated on women's productive work. The failure to make an explicit link to women's reproductive work has often added to women's workload. Gradually, it was recognized that an approach that focused on women in isolation, was inadequate and not sustainable. Because it did not take into account the overall project objectives or integrate women fully into their implementation. Moreover, it did not address or change unequal gender relations in various social and economic settings. However, there are shortcomings to this approach because by WID, women are not available in the use and management of environmental resources. Many policy-makers tend to follow WID Approach to development discourses and programs (Moser, 1993) The Gender and Development (GAD or GID) perspective emerged in the late 1980s as response to the failure of WID projects. Aims of GAD are to provide qualitative and long-lasting changes in women's social status. The Gender and Development (GAD) focuses on social, economic, political and cultural forces that determine how men and women participate in, benefit from, and control over project resources and activities differently (Cornell Journal of Law and Public Policy, Vol: 22, Page: 672). This approach shifts the focus from women as a group to the socially determined relations between women and men. GAD refers the term of "gender" instead of "women". It is also taking into account participation of men as well as women's (Buvinic and others 1996). However, several key analytical principles, relating to gender roles and practical and strategic gender needs, as well as to control over resources and decision making in the household, civil society and the state, were determined and

translated into tools and techniques for a gender-planning process at the policy, program and project levels (Moser, 1993).

## **Gender Mainstreaming in Environmental Policies**

According to UNEP, the discussion of Gender and Environment is based on two precepts. The first one implies that gender mediates human/environment interactions and use, knowledge, and assessment of environmental issues. According to the second precept, gender roles, responsibilities, expectations and norms predict human-environmental relationship. A gender-sustainable development perspective should be infused with a commitment to change the cultural values. As such UNEP feels that the issue of concern should be “gender and environment” rather than “women and environment”. The two broad principles noted above manifest themselves in a variety of environmental relations and interactions. An analysis conducted by Castaneda and Martin in the Country Analysis Report for CEDAW points out that the inclusion of sustainable development and the environment in the gender agenda is still weak in many countries. While some reports presented sex-disaggregated data to contextualize gender gaps in rural and urban contexts, most of the reports did not. The situation is not better at international level as well. When we did revision on global indices that measure progress in gender equality in different policy areas, the number of indices that show the advancement of women in relation to environmental and development concerns Women and men have different gender-based roles and responsibilities in their own lives, families, households, and communities. They have different knowledge of, access to, and control over natural resources, and different opportunities to participate in decisions regarding natural resource use. Understanding women’s and men’s relationships to the environment plays an important role in developing solutions for more sustainable use of natural resources. Ignoring gender distorts the understanding of human impacts on the environment.

Public participation in environmental management is increasingly seen as a vital component of environmental policies. Several major United Nations conferences in the 1990s, including the Conference on Environment and Development (Rio de

Janeiro, 1992) and the Fourth World Conference on Women (Beijing, 1995), acknowledged women's contributions to environmental management and proposed actions to strengthen women's role in decision making. Yet women's involvement in the formulation, planning, and execution of environmental policy remains low at all levels, from local positions to the ranks where national and international environmental policies are determined. When women do contribute to environmental management, it is often at the local level. Women in many countries, for example, in Ukraine, Bangladesh, Russia, and Mexico, have been involved in planning the management of freshwater resources. They have come together in women's groups and cooperatives to mobilize communities and resources to highlight urgent problems in industrial areas, as well as to help conserve and protect their supplies of clean, accessible water. This limited participation in decision making means that women's perspectives, needs, knowledge, and proposed solutions are often ignored. In addition, failure to take account of women's and men's activities and to include both in the decision making process can lead to policies that criminalize women's activities without changing their behavior. For example, in El Salvador, community leaders placed restrictions on collecting timber in coastal areas and fishing in estuaries in an effort to conserve the fragile mangrove system. In this area, most men fish in the open seas, while women collect fuel wood and fish in the estuaries and along the shoreline. Women were not consulted when the ban was discussed, yet they were most affected by the restrictions. Valuing household survival over possible penalties, women continued to fish and gather fuel wood secretly. The Impacts of Environmental Degradation on Women and Men Not only do women and men differ in the ways they use and manage environmental resources, they are also differentially affected by the degradation of natural resources. Deforestation, water scarcity, soil degradation, and exposure to agricultural and industrial chemicals and organic pollutants affect women and men in varying ways

Gender-responsive environmental policies and programs are those that seek to achieve environmental outcomes while explicitly taking into account both men's and women's opinions, needs, and interests. Such policies derive from social, health, and ecological research that provides a more comprehensive picture of the impact of humans on the environment, and the impacts of environmental change on people. A number of countries have taken initiatives to incorporate a gender

perspective into environmental policies and programs by taking the following actions:

Collecting sex-disaggregated information is a first step toward developing gender-responsive policies and programs. Data that provide information on women and men's resource use, access to resources, and participation in environmental decision making contributes to sound policies. Currently, sex-disaggregated information is rarely used in national environmental policies or programs. However, some agencies have begun collecting disaggregated information at the local level. In Brazil, a conservation organization, used a "stakeholder assessment" to identify people's needs, design appropriate interventions, and later evaluate the effect of policies and programs in the Jaú National Park. Interviewers used separate questionnaires for women and men, along with other instruments, including a 24-hour recall questionnaire and activities profile, to better understand residents' interaction with the environment in the park. The government of Tunisia also combined data gathered at the local level with more standard survey information to design a plan of action for integrating women into the country's ninth Five-Year Plan.

Worldwide women are poorly represented in governments and decision making bodies. This lack of representation limits women's influence over public policies and programs. Women need official channels to reflect their needs and to have a voice in environmental policy decisions. Several countries have done this by setting aside seats to ensure women's participation in environmental management and decision making bodies. In the 1990s, a number of countries, including India, Uganda, Brazil, and the Philippines, formally set aside a percentage of seats on national and local bodies for women. In Jamaica, changes in recruitment strategies have led to an increase in women's leadership in natural resource and environmental management. As a result, women make up more than a third of the Forestry Department's technical staff. In Tunisia, women hold 19 percent of senior management positions in the Ministry of Environment.

Commitment to addressing gender concerns must be reflected at the highest level. Several governments around the world have taken steps to incorporate a gender perspective into their national environmental policies. Gender policy declarations are important because they demonstrate a government's intent to address gender

concerns; provide a reference document for technical staff that are working on national policies and programs; and provide the basis for action to develop the capacity of both women and men to address gender concerns. Uganda's National Environment Plan, adopted in 1995, supports using participatory approaches and gender analysis for environmental planning. A section of the Malawi National Environmental Policy calls for integration of gender, youth, and child concerns into environmental planning and decisions at all levels. In the Philippines, a Gender and Development Focal Point was set up in the Division of Environment and Natural Resources to serve as a catalyst for gender-responsive planning and programming. Signing International Agreements Building on the momentum of the UN conferences in the 1990s will be key to translating international commitments into concrete actions. UN conference documents—often called a platform, program, or plan of action—represent a common policy statement among all of the nations that participate in the process. Conference agreements can be a catalyst for national action: They can influence government policies through international “peer pressure”; advocates can use the documents to put pressure on governments to fund or approve actions that support the agreements; and the goals and benchmarks in the documents can serve as tools for monitoring national progress and encouraging action. The five-year review of the Fourth World Conference on Women in 2000 in New York found that while significant progress had been made in carrying out the 1995 accord, major obstacles remain to achieving greater economic opportunities and autonomy for women. The 2002 World Summit on Sustainable Development, in Johannesburg, South Africa, provides an important opportunity to review progress and lessons learned in translating the 1992 UN Conference on Environment and Development's Platform of Action into equitable and sustainable solutions.

## **Conclusion**

The different roles and responsibility of women and men are closely linked to environmental change. This is true both for how women and men affect the environment through their economic and household activities and how the resulting environmental changes affect people's well being. Understanding these gender differences is an essential part of developing policies aimed at both better

environmental outcomes and improved health and well being. Experience and research suggest a number of actions policymakers and planner can take to improve the integration of gender concerns into environmental planning: Improve data collection on women's and men's resource use, knowledge of, access to and control over resources, and opportunities to be involved in decision making. Train staff and management on the relevance of gender issues to environmental outcomes. Establish procedures for incorporating a gender perspective in planning, monitoring, and evaluating environmental projects. Ensure opportunities for women to participate in decisions about environmental policies and programs at all levels, including roles as designers, planners, implementers, and evaluators. Foster commitment at all levels—local, national, and international—that the integration of gender concerns into policies and programs leads to more equitable and sustainable development. Continued commitment and increased capacity at all levels of society are essential for achieving these goals.

## **Course Name - Bachelor of Population Studies**

**Year - III**

**Paper Name - Population, Environment and Development**

**Paper No. VII**

**Lecture No. 24**

**Lecture Title : Gender, Environment and Inclusive Growth**

### **Introduction**

A growing body of evidence shows that gender inequalities can make the process of development less inclusive by weakening the ability of household members to care for each other or to engage in productive activities. For example, gender discrepancies in education can make the labor force less effective, undermining the economy's growth potential. At the same time, structural changes that accompany the development process—as a result of technological change, international competition, or policy liberalization—can substantially alter the constraints that women and men face when they approach new economic opportunities. The extent to which these forces lead to greater gender parity or greater divisions will influence the extent of inclusiveness of future growth.

Policy and scholarly discourse offer alternative notions of gender equality, with varying degrees of emphasis on equality of opportunity and equality of outcome. Equality of opportunity is most often associated with formal, legal equality in access to education, health services, and employment. It is also associated with equal chances for men and women to participate in decision making and to have a voice within and outside of the household. In contrast, equality of outcome commonly refers to gender parity in income, wealth, assets, market-based work, and household work. The two concepts are closely related and mutually reinforcing. Giving women greater opportunities can improve their economic outcomes, while more equal outcomes can foster more balanced gender relations that in turn help equalize opportunities.

## Links Between Economic Growth and Gender Inequality

While understanding how gender inequality and the macroeconomy interact is needed to formulate supportive policies, the relationship is complex. Considerable debate has emerged regarding both the direction of causality and the distributional consequences. Theoretically, rising income levels can narrow gender inequality through such channels such as the demise of traditional structures that reinforce human capital differences between men and women, the rising opportunity cost of women's time outside of the labor force, the strengthening of women's economic and property rights, and the introduction of labor-saving consumer durables through technological process.

Yet economic growth does not necessarily mean inequality will decline, especially if unpaid work burdens, biased laws, differential access to resources, and social norms continue to constrain women's ability to take advantage of new, well-paid employment opportunities (World Bank 2011b). Gender differences in the drivers of labor market opportunities play a crucial role in constraining women's advancement in the labor market and in achieving gender equality in the labor market. These drivers include household dynamics (especially women's relatively greater time burdens in performing unpaid household work), formal institutions (including statutory laws that favor men and inadequate public infrastructure that contributes to women's domestic work burdens), markets (particularly unequal access to credit, agricultural inputs, and investments in human capital), and informal institutions (such as employers' discriminatory attitudes toward women workers and social norms that restrict women from engaging in market-based work). These drivers are mutually reinforcing and can generate persistent obstacles toward more equitable occupational distributions and narrowing pay differentials.

In the reverse direction, gender inequality can harm economic growth through a complex set of channels, including the reduction of the human capital of women and their children, inefficient allocation of resources, suboptimal governance in business and governments, and reduced aggregate productivity. Yet some aspects of gender inequality may well induce more rapid economic growth, especially in the short term when women's concentration in low-paid jobs helps to keep labor costs low and improve competitiveness in world markets. Given the contradictory theoretical links, ultimately it comes down to the empirical evidence.

Growth Affect Gender Inequality

A growing number of empirical studies have shown causal links between economic growth and gender inequality, with inequality improving or worsening depending on the gendered indicator under consideration. A considerable body of evidence indicates that economic development reduces the disadvantages faced by women, especially in educational attainment, life expectancy, and labor force participation (World Bank 2011b). Economic development brings higher incomes and improved service delivery, which helps close gender gaps in educational attainment, health outcomes, and employment. For some countries, technological improvements worked to women's relative advantage as the returns to cognitive skills rose relative to the returns to manual skills.

Increased openness to trade and foreign direct investment (FDI) has been a key growth driver in many Asian countries, often giving women greater access to employment in export oriented labor-intensive manufacturing. However, women may not benefit on net from these new paid employment opportunities if their employment gains have been accompanied by precarious working conditions and an expansion of informal-sector jobs (which lack basic legal and social protections and are not subject to formal economic regulations). Pressure from international markets to keep production costs low may induce firms to offer increasingly insecure jobs that are temporary, casual, flexible, and characterized by poor working conditions. For example, Bhaumik (2003) found that following India's sweeping trade

liberalization in 1991, the share of the workforce considered to be casual grew, with larger increases for women workers compared to men in both rural and urban areas. In the reverse direction, gender inequality can also have a causal impact on economic growth. A growing body of empirical evidence indicates that gender inequality can promote some macroeconomic aggregates when considering short-term effects, while gender inequality serves as a drag on growth when considering longer-term effects. In particular, gender inequality in wages and employment can actually stimulate export growth in the shorter term. Since the 1970s, women's jobs in highly competitive export industries (especially in garments, textiles, and electronics) have been important in generating foreign currency earnings.

Reliance on women workers in labor-intensive, export-oriented manufacturing has become a common pattern across Asia's high-growth economies as women's share of manufacturing employment rose during their export drives. While the concentration of women in export manufacturing has received the most attention, even in agriculture,

women's seasonal or daily wage labor on farms has proven critical to keeping costs low and export demand high.

In the longer term, a number of compelling studies indicate that gender inequality in education and employment act as a drag on economic growth. Educational gender gaps, for example, are linked to higher rates of fertility and lower saving rates. Rising fertility can reduce investment in children's education and health. Moreover, educational inequality can contribute to women's unequal household bargaining power, affecting the distribution of household resources, given women's greater tendency to allocate spending to children's needs. By lowering the resources invested in children, gender inequality reduces the quality of the future labor supply and long-run productivity growth. Further, systematic differences in investments in girls' and boys' education can be inefficient due to distortions in skill levels (Boschini 2003). Investing too much in less-talented men while investing too little in competent women reduces the average skill level in the economy, with negative repercussions for total productivity. Such distortions may arise from cultural forces around gender norms that channel men and women into gendered occupations. Hence, social norms can influence gender-specific educational choices, which in turn can result in a suboptimal allocation of ability. Cross-country evidence in a research (2003) showed that the presence of gender stereotypes reduces skill acquisition, technological change, and economic growth.

### **Conclusions and Policy Implications**

A better understanding of drivers of women's labor force participation can contribute to more effective policy responses that will promote women's status in the labor market, which in turn can lead to long-term benefits for individuals and for society as a whole. Comprehensive and up-to-date statistical evidence on the determinants of women's employment is particularly important given the heavy weight in international policy dialogues that is placed on generating employment opportunities for women. As argued in this lecture, GDP growth has the potential to minimize the wedges and facilitate progress toward gender equality. Yet there is a strong rationale for policy reforms that alleviate the constraints that women face, especially those related to heavy time burdens devoted to unpaid work, regulations that favor men, inadequate public infrastructure, lack of credit, insufficient access to agricultural inputs, discriminatory practices in the labor market, and traditional social norms.

Results from this study support the implementation and enforcement of a number of policy interventions. Of particular importance is a transformative approach that boosts the remunerative value and security of women's jobs, improves the compatibility of women's market work with childcare, and promotes enabling policies that so that women in the informal sector become less marginalized and more integrated in the labor market. Such enabling policies include providing women with greater access to credit, strengthening women's property rights, promoting skills development for women beyond gender stereotypes, improving the productivity of women farmers, and implementing gender-responsive social protection measures. The bottom line of most of these reforms and programs is that effective targeting can help tight budgets go a long way in improving societal well-being.

Boosting the value and security of women's jobs. Improving the pecuniary returns that women receive for their jobs in the form of higher wages, greater job security, and improved terms of employment will have a direct bearing on their employment decisions. Policy measures to achieve these goals are most commonly embedded in national labor standards that cover formal sector workers. In an effort to eliminate discrimination in employment and pay against women, most countries have adopted policies that promote equal treatment in the workplace. In particular, "equal pay for equal work" requires employers to provide equal pay for workers performing the same job with equal efficiency, regardless of gender. Moreover, governments have tackled occupational segregation through equal opportunity provisions that prohibit sexbased discrimination in hiring, training, promotion, and firing. Enforcing antidiscrimination measures will provide women with more rewarding career opportunities, and it will also promote essential workforce training for meeting macroeconomic growth objectives.

Measures such as safe workplace conditions, overtime pay, and paid benefits, although potentially costly to implement, promote lower turnover rates, improve well-being for workers, and contribute to extended firm-specific tenure. These measures need to be provided to a broader range of workers by removing exemptions, promoting awareness of benefit availability, and strengthening enforcement efforts. That said, a high proportion of women work in low-paid or unpaid jobs that remain uncovered by national labor standards. In addition to enforcing labor standards in paid jobs that are supposedly covered by national labor laws, a related policy goal is to create more wage-employment and productive self-employment opportunities for women through policy reforms that incentivize opportunities to switch from low-paid work in marginally productive activities to more remunerative work in productive activities.

## Remedial Measures

Crucial to bolstering women's progress toward equality in the formal sector, maternity leave benefits allow women to keep their position with a particular employer while they take time off to care for a newborn. In terms of labor market impacts, studies on maternity and parental leaves have generally found that these policies have a positive impact on women's employment, although not always statistically significant. For example, in a research (2003) it was found that enforcement of maternity leave legislation in Taipei, China led to a 2.5-percentage-point increase in women's employment.

This positive employment effect is interpreted as an indication that women value the financial benefits of paid leave and the opportunity to return to their previous employers after childbirth. Previous studies have generally found maternity benefits to have a negative wage effect, reflecting variations in such factors as mandated versus voluntary provision by firms, financing by national insurance, maternity leave duration, and the wage compensation rate. If public funding covers beneficiary payments, then wages will not decline as much, if at all. In addition to supporting women's efforts to remain and advance in the labor market, maternity benefits can contribute to the health of an infant by encouraging women in the labor force to spend more time at home following childbirth.

In addition, public support of out-of-home child care services helps to relieve the time and budgetary constraints that women experience. Public support of childcare also helps women to compete on a relatively more level playing field in the labor market, given that women's greater work burdens at home make it more difficult for them to maintain labor force attachment levels equal to those of men. Public support for early education programs also directly benefit those children who otherwise could be receiving inferior-quality care from alternative providers, as well as children who otherwise might have to accompany their mothers to work in unhealthy environments. Public support of childcare services also promotes higher levels of educational attainment among older children, especially girls, who otherwise might be pulled out of school to care for younger siblings.

Improving women's access to credit. A substantial proportion of women engage in self-employment in order to support themselves and their families. Self-employment commonly takes the form of a household enterprise, and women-operated household enterprises are often smaller in scale than those operated by men. Women's self-employment can entail an unstable income stream and less job

security, and these jobs usually remain uncovered by formal labor regulations. An effective policy intervention in mitigating these risks and promoting more productive employment is the provision of small-scale loans that are mediated via rural banking reforms and microfinance initiatives. Such initiatives target individuals who have difficulty obtaining conventional loans through commercial banks, often due to a lack of collateral, and are left to rely on informal-sector money lenders and other expensive sources of credit.

Providing women with increased access to credit serves as a viable means of incentivizing the shift from low-paid work in marginally productive activities to more remunerative work in productive activities. Both microfinance and rural banks have aided in reducing poverty by providing a diverse range of financial services to the poor and the disenfranchised. Moreover, McKenzie's (2009) assessment of microenterprises and finance in developing countries concluded that additional policies designed to improve business training, provide business development services, and facilitate shifts into more profitable sectors were most useful in enhancing the impact of credit on small business ventures.

Promoting skills development beyond gender stereotypes. Gender-sensitive policies to promote skills development focus on both meeting current economic needs and building the capacity for meeting future development needs. Relevant policies focus on identifying and tackling gender norms that lead to the clustering of girls in what are considered appropriate fields. This clustering in turn constrains their employability. Such policies also include initiating mentoring programs in which women who have successfully broken the glass ceiling serve as mentors to younger women with less seniority in the labor market. Promoting skills development also includes improving the quality of education for both boys and girls. This policy discussion draws on recommendations in ILO and ADB (2011).

**Inclusive Growth and Gender Inequality in Asia's Labor Markets.** Although many Asian countries have successfully closed gender gaps in educational attainment, there are still imbalances in the quality of the education that young people are getting. Moreover, depending on the types of activities in which women choose to engage, public support of vocational training can also be useful in preparing women for better-paying jobs. Closely related is the need for training programs built around women's labor market intermittency due to childcare to help promote their employability upon reentry into the workforce. Women may also face more barriers than men when they first enter the labor market, thus providing a rationale for policies that facilitate the transition of women from school to their first job. Finally, to better reach women in the informal sector and in remote areas, specially

designed training programs, such as those that are community-based or geographically mobile, can provide training opportunities to women who otherwise remain unreached by standard education and training initiatives.

## **Conclusion**

Improving productivity of women farmers. Transformative policies supporting women's employment must also pay close attention to the needs of women farmers, especially given the relatively greater dependence of women in the poorest Asian economies on earning their livelihoods from agriculture. Most broadly, technological progress and investment in agriculture will help promote greater diversification and agricultural productivity. However, these and more targeted reforms need to address women's relatively limited access to assets, information, and training compared to their male counterparts. A potential gain from more land titles and formal recognition of property rights for women improved productivity of women farmers, with greater access to formal credit, extension

services, and subsidized inputs acting as key channels. Greater access to these inputs in turn will help to lower women's cultivation costs and bring them closer to those of men, who often enjoy more state protection. Additional proposed reforms include integrated programs that enable women to group together and collectively buy land, as well as training in environmentally-sound farming techniques. Specialized agricultural extension services that cater to small-scale farms will also help to reach more women, as will greater policy focus on nonfarm activities in rural areas conducted by small enterprises, such as cooperatives and other community-based organizations.

Implementing gender-responsive social protection measures. Asian governments have paid relatively limited attention to gendered vulnerabilities in their social protection policies (ILO and ADB 2011). Improvements in social protection that address gendered concerns include the establishment of a social floor consisting of universal health care access, income security for all children and elderly, and social assistance to people living in poverty so as to save them from living in destitution. Of particular importance are social protection policies that support retired women and widows. Closely related are measures that extend the coverage of social protection to workers in the informal sector. Possible measures include promoting new micro-insurance and area-based schemes, and encouraging tax-based social benefits.

Examples of such measures include India's Unorganized Sector Workers Social Security Bill 2005 and the more recent National Social Security Fund for informal sector workers. Strengthening the enforcement of occupational safety and health provisions and extending their reach into the informal sector will also go a long way toward reaching vulnerable female workers. More broadly, interventions that address gendered vulnerabilities need to be more transformative in that they promote economic and social equity and eliminate exclusion by creating more balanced power relations between women and men.

**Course Name - Bachelor of Population Studies**

**Year - III**

**Paper Name - Population Environment and Development**

**Paper No -VII**

**Lecture No - 3**

**Lecture Title - Population Policies in the Developed Countries**

### **Introduction**

Hello viewers, in today's lecture we will discuss about the Population policies in the Developed countries.

The Greatest Threat to Human Existence Is Our Own Lack of Ability To Control Our Own Growth.”

### **Concept of Population Policy**

Population policy means either direct intervention in the development by adopting and implementing targeted measures or, more often, by creating conditions of such population development which corresponds with the long-term intention of a state. As a rule, this involves measures influencing natality and indirectly also nuptiality, but it also includes migration policy (foreign migration). According to the United Nations there is no generally accepted definition of population policy. A narrow definition refers to all deliberate government actions such as laws, regulations, and administrative programs intended to influence population growth, size, distribution and composition. Stycos defined policy as ‘a statement of important goals, accompanied by a specific set of means to achieve them. A well- elaborated set of means constitutes a program. In many low-income countries, rapid population growth has long been viewed as detrimental to future economic growth. As a result, national and international policy debates have focused on reducing fertility rates. Beginning in the 1960s and 1970s, a number of countries adopted explicit policies of “Population control” often with inadequate consideration of the impact on women’s reproductive rights, which are disproportionately and often negatively affected as a result. The International Conference on Population and Development (ICPD), held in Cairo in 1994 was a major turning point in the history of population policies. At the ICPD, countries agreed that the advancement and protection of women’s human rights should be central to

government efforts to address population and development issues. The resultant ICPD Programme of Action focused unprecedented attention on gender equality, and women's empowerment. It expressed the view that "The empowerment and autonomy of women and the improvement of their political, social, economic and health status is a highly important end in itself." Further, the ICPD Programme of Action declared that "the promotion of the responsible exercise to these rights for all people should be the fundamental basis for government-and community –supported policies and programmes in the area of reproductive health, including family planning. "The document also affirmed that coercive practices in the provision of family planning services constitute a violation of reproductive rights and should be eliminated. Today, most population policies continue to implicate women's reproductive health and rights. In addition to stating the government's broad objectives on population, these policies often provide the framework for the delivery of reproductive health care.

### **Types of Population Policies**

Population policies can be of various types depending upon its purpose.

#### **Direct or Indirect**

Direct policies affect population variables directly while indirect policies affect population variables indirectly. For example, encouraging immigration can increase growth rates. The Rising levels of education usually result to lower fertility. Thus making secondary education compulsory could have an indirect effect on fertility.

#### **Explicit or Implicit**

Explicit policies are associated with the stated intention of a national government of influence population events. For example, after the Second World War, Australia had a direct immigration policy designed to increase its population, summed up in the very explicit slogan 'populate or perish'.

#### **Policies of Intervention or Non-Intervention**

The United Nations has indicated that a government may have explicit or implicit policies of non-intervention. This situation could arise when, perhaps after substantial investigation, the government concluded that intervention was unnecessary or undesirable.

## **Domestic or International**

Bessemer defined international policy as the official attitude adopted by a country in question to attempt to affect population growth rates in the world as a whole, or in particular countries or regions which are held to have a population problem. This attitude can express itself in the giving or not giving of aid to family planning programs in other countries or through activity in any of the international agencies concerned with population problems.

## **Antinationalist or Pronationalist**

The population policy is either antinationalist, designed to curb high fertility, and thus hampering a rapid growth in the population number, or a pronationalist, which involves the intention of maintaining a favorable development of fertility or, in the case of negative situation, it wants to achieve its reversal. The former type of population policy is used in many developing countries, the latter appears in European populations with low fertility, which involves decrease in the population number through population change. Most European countries do not have any population policy as they evidently do not feel its need.

## **Objectives of a Population Policy & World Population Policies**

The purpose of the population policy is, in combination with other sectoral policies, to improve the quality and conditions of life for the population. Prudent and efficient use of natural resources and equitable distribution of the national revenue are essential to accomplishing this goal. To take into account and help manage demographic growth, the national population policy pursues the following objectives.

To promote the health of the population particularly that of mothers and children.

Implementation of the Desirable Births Program.

Promotion of the status of women.

Preparation and incorporation of youth into the process of development.

Organization and promotion of the job market.

Implementation of education, information, and communication programs relating to the population issue.

Spatial redistribution of the population.

Maintaining a clean and preserved environment.

Improvement of data collection and research technicians relating to the population issue.

## **World Population Policies**

**Population policies can be discussed with respect to the following areas**

### **Population Growth**

To a large extent, concerns about the consequences of high and low population growth rates have been translated into policy interventions. In 2013, 37 per cent of Governments Worldwide had policies to lower the rate of population growth, whereas 20 per cent had policies to raise it. The remaining 43 per cent of Governments had policies to maintain the current rate of population growth or did not intervene to influence it.

### **Aging**

In 2013, information about changes in statutory retirement age and major reforms in the pension system in the past five years was available for 189 countries. Among these countries, Governments of 61 countries (32 per cent) changed their statutory retirement age and Governments in 89 countries (47 per cent) reformed their pension system in the past five years. Forty seven of the 189 Governments (25 per cent) changed both the retirement age and reformed their pension system during this time. A little less than half (46 per cent) of the Governments with data either changed the statutory retirement age or reformed the pension system during the past five years.

### **Fertility**

In 2013, 27 per cent of Government had policies to raise the level of fertility, 43 per cent had policies to lower it, and the remaining 30 per cent either had policies to maintain fertility at current levels or were not intervening to influence it.

### **Support for Family Planning**

Globally, in 2013, 160 out of 197 Governments (81 per cent) provided direct support for family planning. The proportion of governments providing direct support has risen steadily since 1976 when less than two thirds of Governments (63 per cent) provided such support. In 2013, Governments in 20 countries provided only indirect support for family planning through the private sector, including non-governmental organizations.

### **Abortion**

Induced abortion is permitted by almost all countries to save the life of pregnant women. Although some laws and regulations provide detailed lists of the complications that are considered life- threatening most of them do not specify them explicitly, leaving it to the judgment of a medical personal performing the abortion. In 2013, 97 percent of Governments permitted abortion to save a woman's life. Only the government of Chile, the Dominican Republic, El Salvador, the Holy See, Malta and Nicaragua did not permit abortion under any circumstances.

### **Violence against Women**

In 2013, information on legal provisions or policies on domestic violence was available for 195 countries. Among these, all but 10 Governments (95 per cent) had adopted some legal measures or policies to prevent domestic violence, including 78 per cent with legal measures, 90 per cent with policies and 73 per cent with both legal measures and policies.

### **HIV AIDS**

The Extent to which Governments politically commit to addressing HIV/AIDS has important implications for how the epidemic develops, how it is controlled and how it impacts on those affected by the disease. In 2013, information was gathered on six key measures that Governments had adopted to address the HIV/AIDS epidemic. These included routine screening of blood supply, information, education and communication (IEC) campaigns on the prevention and treatment of HIV/AIDS, provision of antiretroviral treatment, adoption of legal measures to protect against HIV/AIDS- related discrimination, condom distribution programmes and prevention of mother to child transmission (PMTCT). Overall, in 2013, 64 per cent of the Governments worldwide had adopted all six of the above measures to address HIV/AIDS.

### **Policies for Developed Nations**

**The policies for the more developed regions can be understood with respect to the same areas mentioned above.**

### **Population growth**

In 2013, 49 per cent of Governments in more developed regions had policies to raise their rate of population growth and only 2 per cent had policies to lower it. In Contrast, an equal proportion (49 per cent) of Governments in less developed regions had policies to lower the rate of population growth and 10 per cent had policies to raise it. Over time, as population rates have declined, the percentage of Governments with policies to raise the rate of population growth has increased steadily in more developed regions, from 23 per cent in 1996 to 49 per cent in 2013.

### **Aging**

Governments of 80 per cent of countries in more developed regions either changed the statutory retirement age or reformed their pension system or took both measures in the past five years, compared with only 46 per cent of Governments in less developed regions that adopted at least one of the two measures to address population ageing. The difference by development regions was particularly stark in the percentage of Governments that adopted both measures, 53 per cent in more developed regions compared with only 15 per cent in less developed regions.

**Table 1 : Government level of concern about the aging of the population in more developed regions, 2005-2013**

<b>Policy concern</b>	<b>2005</b>	<b>2013</b>
<b>Major concern</b>	<b>76</b>	<b>92</b>
<b>Minor concern</b>	<b>24</b>	<b>8</b>
<b>Not a concern</b>	<b>0</b>	<b>0</b>

**Source : World Population Policies ,2013,Economic and Social Affairs ,United Nations**

The table 1 shows the Government level of concern about aging of population in more Developed regions .This is shown as a percentage of nations who considered it as a major concern, minor concern or no concern at all. In 2013 aging had become major concern for around 92 % developed countries up from

76 % in 2005. The percentage of countries considering it as a minor concern has declined from 24 to 8%. There were no countries that considered it as unimportant in both years. It is clear that for the developed regions, aging is a major policy concern since they are aging rapidly and are facing a number of challenges associated with it.

### **Fertility**

In 1976, only about one in every five Governments in more developed regions has policies to raise fertility, but by 2013 this proportion had risen steadily to more than two thirds. In contrast, in 1976, half of all Governments in less developed regions did not intervene to influence fertility and one in three had policies to lower fertility. Since the mid-1990s, the proportion of Governments that viewed adolescent fertility as a major concern has been rising in both more and less developed regions. Of the 195 countries with information available in 2013, 90 per cent of Governments in less developed regions had policies and programmes to reduce adolescent fertility, compared with 77 per cent of Governments in more developed regions.

**Table 2 : Government policies on the level of fertility for the more developed regions, 1976-2013**

<b>Year</b>	<b>Raise</b>	<b>Maintain</b>	<b>Lower</b>	<b>No intervention</b>
<b>1976</b>	<b>21</b>	<b>21</b>	<b>0</b>	<b>59</b>
<b>1986</b>	<b>24</b>	<b>18</b>	<b>0</b>	<b>59</b>
<b>1996</b>	<b>33</b>	<b>8</b>	<b>2</b>	<b>56</b>
<b>2003</b>	<b>50</b>	<b>17</b>	<b>0</b>	<b>33</b>
<b>2013</b>	<b>69</b>	<b>14</b>	<b>0</b>	<b>16</b>

**Source : World Population Policies, 2013, Economic and Social Affairs, United Nations.**

The table 2 shows the percentage of more developed nations in terms of their policies to alter fertility across different years. The policies are categorized into 4 groups like those to raise fertility, maintain it, lower fertility or policies of no intervention. It can be seen that the percentage of developed regions opting for raising their fertility levels has increased from 21 to 69 % between 1976 and 2013, that is almost 3 times. The nations that wanted to maintain the same

level of fertility were 21 % in 1976 and fell to 14 %.None of the countries wanted to lower fertility across all time periods except 1996 .Also countries adopting no intervention policies have reduced drastically from 59 percent in 1976 to 16 % in 2013 .More countries in the developed world are opting fertility raising policies .In 1976 majority were opting for no intervention policies .

### **Support for Family Planning**

In more developed regions, the percentages of Governments providing direct support declined gradually from 62 per cent in 1976 to 38 cent in 2005, but then increased a little to 45 per cent in 2013. Despite this recent increase, Governments in less developed regions were more than twice as likely as those in more developed regions to provide direct support for family planning in 2013.

### **Abortion**

Since the mid-1990s, the number of grounds on which abortion is allowed has been rising in an increasing number of countries in both more developed regions and less developed regions However, abortion laws and policies continue to be much more restrictive in countries in less developed regions than in countries in more developed regions on all grounds, except to save a women's life. In 2013, Governments of 82 per cent of countries in more developed regions permitted abortion for economic and social reasons and 71 per cent allowed abortion on request.

### **Violence against Women**

Governments in more developed regions were more likely to have adopted such measures than those in less developed regions. In more developed regions, 98 per cent of Governments had adopted both legal measures and policies to prevent domestic violence, compared to 71 per cent with legal measures, 87 per cent with policies and 65 per cent with both among Governments in less developed regions.

### **Maternal Mortality**

In 2013, among the 197 countries, Governments of 122 countries (62 per cent) viewed the level of maternal mortality in their populations unacceptable, down from 69 per cent in 2005. By development level, three out of four Governments in less developed regions considered their level of maternal mortality as

unacceptable, compared with less than one out of four Governments in more developed regions.

### **Migration from rural to urban areas**

In 2013, the proportion of Governments that had policies to lower rural to urban migration was higher in less developed regions (84 per cent) than in more developed regions (67 per cent). Between 1996 and 2013, the proportion of Governments with policies to lower rural to urban migration had increased in both more and less developed regions, as well as in all world regions. In recent years, Governments of many countries, mostly those in more developed regions have modified their migration policies. Some countries have strengthened policies to protect migrant rights (e.g., Mexico, Greece and Denmark) while others have adopted more restrictive policies (e.g., the United Kingdom and the Netherlands). Still others have modified policies to improve the management of migrant flows. In 2013, policies to raise the immigration of highly skilled workers were more common in more developed regions (55 per cent) than in less developed regions (34 per cent). Naturalization policies were more restrictive in countries in less developed regions than in more developed regions. 76 per cent of Governments in more developed regions allowed “less restrictive” acquisition of naturalized citizenship in 2013, compared with 60 per cent of Governments in less developed.

### **Conclusion**

The population Policy should focus on the following to achieve any of its objectives. Firstly it should focus on improvement of the social welfare through better integration of demographic factors into the process of development and rehabilitation of moral values. Secondly it should aim at balanced distribution of the population and the reduction of regional disparities. Also it should lay emphasis on the preservation of the environment and lastly research on the population issue is very important.

This is all for today’s lecture. Thank You. Next time we will meet again discuss another interesting topic. Till then good-bye. Take care.

**Course Name - Bachelor of Population Studies**

**Year - IIIrd**

**Paper Name - Population, Environment and Development**

**Paper No. VII**

**Lecture No. 4**

**Lecture Title - Population Policies in Developing Countries**

**Academic Script**

### **Introduction**

Hello viewers welcome to the bachelor course of population studies. Today we'll discuss Population Policies in Developing Countries.

In demographics, we can explain world population as the total number of humans currently living on the earth. World population grew to 7.06 billion in mid-2012 after having passed the 7 billion mark in 2011. By 2050, the world's population is likely to reach an unprecedented size between 8.3 billion and 10.9 billion people. Most of the future population growth will occur in developing countries, particularly in least developed countries. A developing country, also called a less developed country, is a nation or sovereign state with a less developed industrial base and a low Human Development Index (HDI) relative to other countries. Developing countries accounted for 97 percent of this growth because birth rates in these countries are falling rapidly but are still above death rates so population growth continues. Many developing countries with population growth rates if sustained, would undermine their development and put pressure on future generations. Consequently, stabilizing population growth is a goal in many of these countries. This goal must be achieved in order to preserve the options for the future and ensure sustainable development.

### **Position of World Population**

Countries in the world are grouped geographically into six major areas: Africa, Asia, Europe, Latin America, Northern America and Oceania. These major areas are further divided geographically into 21 regions. In addition, the regions are classified in more developed and less developed regions. The more developed regions comprise all regions of Europe plus Northern America, Australia, New Zealand and Japan. Countries in the more developed regions are denominated as developed countries. The less developed regions comprise all regions of Africa, Asia (excluding Japan), Latin America and the Caribbean. Countries in the less developed regions are denominated as developing countries.

The world's two most populated countries China and India, together constitute about 37% of the world's population. Africa is the second most populated continent comprising 15% of the world's population. Europe consisting 12% while the Latin America and Caribbean regions are home to 9% of the World population. It is followed by Northern America and Oceania with their share of 5% and 0.5% respectively.

### **Growth of Population in Developing Countries**

Population growth in developing countries is already greater than in developed countries. The world's developing regions will see 1.2 billion people added, a 20.7% increase; while the population of developed countries will increase a mere 3.3% adding 41 million to the current 1.3 billion people.

Virtually all future population growth will be in developing countries, the poorest of these countries will see the greatest percentage increase. As defined by the United Nations, these countries have especially low incomes, high economic vulnerability, and poor human development indicators such as low life expectancy at birth, very low per capita income, and low levels of

education. They are growing at 2.4 percent per year and are projected to reach at least 2 billion by 2050.

### **Causes for High Population Growth in Developing Countries**

The rapid growth of the world's population over the past one hundred years results from a difference between the rate of birth and the rate of death. Main causes of high population growth are:

1. **Decline in the Death Rate:**

The fall in death rates that is decline in mortality rate is one fundamental cause of overpopulation. Owing to the advancements in medicine, man has found cures to the previously fatal diseases. This has resulted in an increase in the life expectancy of individuals. Mortality rate has declined leading to an increase in population.

2. **Rise in the Birth Rate:**

Due to the new discoveries in nutritional science, we have been able to bring an increase in the fertility rates of human beings. Medicines of today can boost the reproductive rate in human beings. Thus, science has led to an increase in birth rate.

3. **Migration:**

Immigration is a problem in some parts of the world. If the rates of emigration from a certain nation do not match the rates of immigration to that country, overpopulation makes its way. The country becomes overly populated.

4. **Lack of Education:**

Illiteracy is another important cause of overpopulation. Those lacking education fail to understand the need to prevent excessive growth of population. They are unable to understand the harmful effects that overpopulation has.

5. **Traditional view towards Big Families:** The traditional social attitude of having many children is considered a benefit as it would mean more hands to

help on the field. This type of social attitude of the people also contributes toward large size of family.

#### **6. Lack of Family Planning:**

Many developing countries are unaware of the ways to control population. This is one of the major factors leading to overpopulation. Due to ignorance, they do not take to family planning measures, thus contributing to a rise in population.

#### **Consequences of Population Growth**

Rapid human population growth has a variety of consequences.

#### **Natural Disaster and Health Problems:**

Population grows fastest in the world's poorest countries. High fertility rates have historically been strongly correlated with poverty and high childhood mortality rates. Overpopulation and poverty have long been associated with increased death and disease.

#### **1. More Poverty:**

Most of the world's 1.2 billion desperately poor people live in less developed countries. The rapid expansion of population size observed since the end of World War II in the world's poorest nations has been a cause of their poverty.

#### **2. Lack of Access to enough Land and Income:**

Poverty is a condition of chronic deprivation of basic needs. Poor people lack access to enough land and income to meet basic needs. A lack of basic needs results in physical weakness and poor health. Poor health decreases the ability of the poor to work and put them deeper into poverty.

#### **3. No Proper Education or Employment:**

It is important to limit our number because in dense populations too many lack adequate food, water, shelter, education and employment. High fertility which has been traditionally associated with prosperity and security for the future now reduces chances to achieve health and security.

#### **4. Overall Quality of Life and the Degree of Human Suffering:**

The world's current and projected population growth calls for an increase in efforts to meet the needs for food, water, health care, technology and education. Many countries lack adequate supplies of basic materials needed to support their current population. Rapid population growth can affect both the overall quality of life and the degree of human suffering on Earth.

#### **4. Government Policies in Developing Countries**

Continued high rates of population growth remain an issue of policy concern for many countries of the developing world. About half of the countries in the less developed regions consider their rate of population growth to be too high. Governments of developing countries had adopted various population policies between 1976 and 2013 covering different areas relating to population size, growth, age structure, fertility, reproductive health and family planning etc.

#### **1. Policies Relating to Population Size, Growth and Age Structure:**

Governments in developing countries have realized the importance of reducing high rates of population growth in order to ease pressures on resources, combat climate change, prevent food shortages and provide decent employment to all their inhabitants. The governments in developing countries have adopted measures to reduce population growth rates and adopted some policies in this regard.

- I. **Policies to Influence the Rate of Population Growth:** The concerns about the consequences of high population growth have been translated into policy interventions by the developing countries. In 2013, 37 per cent of governments worldwide had policies to lower the rate of population growth.
- II. **Policies Relating to Population Ageing:** some developing countries with low fertility face significant population ageing.

However, in absolute numbers, the majority of older persons live in developing countries. In 2013, 66 per cent of the world's population aged 60 years or over lived in countries in less developed regions, and by 2050 this proportion is projected to increase to 79 per cent.

## **2. Policies Relating to Fertility, Reproductive Health and Family Planning:**

- I. **Policy Relating to Fertility:** In developing countries, 43 per cent governments had policies to lower fertility rate. The percentage of governments with policies to lower fertility increased from 27 per cent in 1976 to 42 per cent in 1996, and then remained at 43 per cent in 2013.
- II. **Policy Relating to Family Planning:** The information and access to safe and effective methods of family planning is part of reproductive rights. Therefore, most governments have been involved directly or indirectly in supporting family planning programmes. Since the mid-1970s, the percentage of governments providing direct support for family planning has continued to increase in less developed regions, from 64 per cent in 1976 to 93 per cent in 2013.
- III. **Policy Relating to Abortion:** The abortion is permitted by almost all countries to save the life of a pregnant woman. However, abortion laws and policies continue to be much more restrictive in countries in less developed regions than in more developed regions except to save a woman's life.

**Policy Relating to Violence against Women:** Gender-based violence not only violates human rights, but also has a direct impact on the mental and physical

health of women. Many governments have been strengthening legal frameworks and adopting policies to prevent domestic violence including reinforcing efforts to provide care and support to the victims of such violence.

### **3. Policies Relating to Health and Mortality:**

- a) **Policy Relating to Child Mortality:** Under-five mortality is a closely monitored population health indicator. It is not only a strong indicator of the health and well-being of children, but also of the entire population. Overall, in countries in developing regions, the under-five mortality rate has declined from 90 deaths per 1,000 live births in 1990 to 48 deaths per 1,000 live births in 2012.
- b) **Policy Relating to Maternal Mortality:** Preventing maternal deaths requires improved coverage of antenatal care, skilled birth attendance at delivery, access to emergency care when complications arise, timely postnatal care and universal access to family planning to prevent unintended pregnancies. By development level, three out of four governments in less developed regions considered their level of maternal mortality as unacceptable compared with less than one out of four governments in more developed regions.
- c) **Policy Relating to HIV/AIDs:** After years of sustained efforts to curb the HIV/AIDS epidemic, the world has seen dramatic improvements in reducing new HIV infections and lowering mortality from AIDS-related causes in recent years. In 2013, an overwhelming majority of governments expressed a major concern about HIV/AIDS in their countries. Governments in less developed regions were somewhat more likely than in countries in more developed regions to express HIV/AIDS as a major concern.

### **4. Policies Relating to Migration:**

- a) **Policy Relating to Internal Migration:** The world urban population is projected to increase by 72 per cent by 2050, from 3.6 billion in 2011 to 6.3 billion in 2050. Almost all of this growth in urban population is expected to

occur in countries in less developed regions. Governments need to develop policies and adaptation strategies to plan for future urban growth so that countries can reap the benefits of economies of scale and greater efficiency as well as minimize the environmental and other adverse impacts of urban growth.

- b) **Policy Relating to Spatial Distribution:** In 2013, a much greater proportion of governments in less developed regions desired a major change in the spatial distribution of population than in more developed regions . The proportion of governments desiring a major change in the spatial distribution of their population was particularly high among least developed countries with 80 per cent of them desiring a major change.
- c) **Policy on Migration from Rural to Urban Areas:** Migration from rural areas to urban areas has historically represented a crucial force boosting the rapid growth of cities. In 2013, the proportion of governments that had policies to lower rural to urban migration was higher in less developed regions than in more developed regions.
- d) **Policy Relating to International Migration:** The total estimated number of international migrants in the world reached 232 million in 2013, and it is expected to continue to rise for the foreseeable future. From 1990 to 2013, the number of migrants from countries in less developed regions who were living in countries in more developed regions increased by 42 million (from 40 million in 1990 to 82 million in 2013)
- e) **Policy Relating to Overall Level of Immigration:** At the global level, in 2013, about 73 per cent of all governments either had policies to maintain the level of immigration or they were not intervening to change it, while 15 per cent had policies to lower and 11 per cent had policies to raise the level of immigration.
- f) **Policy Relating to Integrate Non-Nationals:** The successful integration of international migrants is a major challenge for countries of destination. Many countries have undertaken initiatives to make it easier for immigrants to become integrated into the host society. In 2013, out of a total of 145 countries with

available data, governments of 92 countries had policies aimed at integrating non-nationals.

- g) **Policy Relating to Emigration:** Emigration generates both opportunities and challenges for countries of origin. However, some developing countries view emigration as a strategy to boost development not only from remittances or through alleviation of labour market pressures, but also by recognizing that their diaspora can contribute to development through financial investments in home countries, as well as through transfer of knowledge and skills.

### **Challenges before Population Policies in Developing Countries**

#### **1. Improving Livelihoods in an Urbanizing World:**

The rapid pace of urbanization has strained the capacity of governments to provide adequate services to urban-dwellers and the number of persons living in slums has been rising, amounting to about 900 million today. In this light, the goal of improving the lives of 100 million slum-dwellers by 2020, one of the goals set forth in the United Nations Millennium Declaration, is a modest one. To achieve improvement of the lives of slum-dwellers, programmes aimed specifically at improving their access to basic services are necessary. It also calls upon governments to respond to the needs of all citizens, including urban squatters by facilitating their access to employment, credit, production, marketing opportunities, basic education, health services, vocational training and transportation. A full implementation of these recommendations would certainly contribute to improving the lives of slum-dwellers.

#### **2. Population Ageing:**

The number and proportion of older people are expected to continue increasing in future leading to population age distributions unprecedented in human history. Given the social and economic implications of such changes, it is essential to integrate the evolving process of global ageing within the larger

process of development. As per Population and Development organisation, the elderly people constitute a valuable and important component of a society and recommends a series of measures to ensure that elderly persons are able to work and live independently as long as possible.

## **Conclusion**

To sum up, it can be stated that humans already consume more than half of the world's renewable resources and pressure on natural resources will continue to increase. This means that by the end of the century there could be 11 billion people living on the planet. The current global population is 7 billion. The highest population growth occurs in developing countries. The jump in the projected population is due to fertility in certain countries not dropping as expected. While world population is continuing to grow, considerable diversity exists in the expected population growth of countries. The population of many countries, particularly in Africa and Asia, will increase greatly in the coming decades. Developed and developing countries differ significantly with regard to their population concerns. In sum, the current population picture is one of dynamic population change, reflected in new and diverse patterns of childbearing, mortality, migration, urbanization and ageing. The continuation and consequences of these population trends present opportunities as well as challenges for all societies in the twenty-first century. That is all for today, in next lecture we will continue with some related issue. Thank you.

**Course - Bachelor of Population Studies**

**Year- IIIrd**

**Paper Name - Population, Environment and Development**

**Paper No. VII**

**Lecture No. 5**

**Lecture Title - Concepts of Population Dynamics and Climate Change Adaptation**

## **Academic Script**

### **1. Introduction**

Hello friends, today we are going to start a lecture series in Paper-V of Bachelor of Population Studies i.e. Demography of Climate Adaptation. We will start this series by understanding two important and dynamic concepts i.e. population dynamics and climate change adaptation. Both these concepts have become the subject of hot debate among the new generation of demographers, environmentalists and population experts. Human population trends are centrally important to environmental science because they help to determine the environmental impact of human activities. Rising populations put increasing demands on natural resources such as land, water, and energy supplies. As human communities use more resources, they generate contaminants, such as air and water pollution and greenhouse gas emissions, along with increasing quantities of waste. The linkage between population dynamics and climate change adaptation is to be investigated in the light of some specific key elements. These elements include: why and how population and climate change interact; the specificity of impacts in urban settings; vulnerabilities for different populations such as children, women, the elderly and the poor; and programmatic interventions including research, policies, programs, and advocacy. Research studies conducted in the last few years shows that demographic change is closely associated with greenhouse gas emissions, and that population dynamics will play a key role in attempts to mitigate and adapt to the effects of changes in the climate system in the future. There is an urgent need to create a balanced approach towards resolving the issues related to population dynamics and climate change adaptation. A better exploration of both these concepts will help us in understanding the subsequent topics comprehensively. So let's explore and understand these concepts one by one. First is population dynamics.

### **2. Population Dynamics**

A population is a group of individuals living together in a given area at a given time. Changes in populations are termed population dynamics. In other words, population dynamics is the branch of life sciences that studies short-term and long-term changes in the size and age composition of populations, and the biological and environmental processes influencing those changes. Population dynamics deals with the way populations are affected by birth and death rates, and by immigration and emigration, and studies topics such as ageing populations or population decline. Every birth and death is a part of human population dynamics. Each time a person moves from one location to another, the spatial arrangement of the population is changed, and this, too, is an element of population dynamics. While humans are unique in many ways as a species, they are subject to many of the same limiting forces and unexpected events of all populations of organisms.

## Historical Background

Population dynamics is the main branch of mathematical biology. A Malthusian Growth Model is widely regarded as the first principle of population dynamics. As the name suggests, this model is named after the great demographer, Thomas Robert Malthus, who wrote 'An Essay on the Principle of Population' in 1798, one of the earliest and most influential books on population. This model is often referred to as the exponential law or Malthusian Law. According to this law human population grows geometrically (i.e. exponentially) while the food supply grows arithmetically (i.e. linearly). Malthus observed that the growth of the human population is fundamentally different from the growth of the food supply to feed that population.

$$\frac{dN}{dt} = rN$$

Here  $N$  is population density and  $t$  is time. This is the simplest model of population growth and assumes that the per capita growth rate, i.e., the difference between per capita birth and death rates, is a constant,  $r$ , often referred to as the intrinsic (per capita) growth rate. The solution of the differential equation above is shown on screen

$$N(t) = N(0)e^{rt}$$

Where  $N(0)$  is the population density at time zero. If  $r > 0$  the population will grow to infinity, whereas if  $r < 0$  it will decline towards zero.

Benjamin Gompertz and Pierre Francois Verhulst were the other two great demographers of the 19th century, who refined and adjusted the Malthusian demographic model. Now let's move to the next important point i.e.

### 3. Elements of Population Dynamics

Population density, population and population structure are the three basic elements of population dynamics.

#### Population Density

Population density is the measure of the intensity of land use, expressed as number of people per square kilometre or square mile. Population density is an often reported and commonly compared statistic for places around the world. It is frequently applied to living organisms, and particularly to humans. It is a key geographic term. Population density is generally used to refer to the number of people in a given area. This area can be any given space, although common areas, such as provinces, countries, or states, are generally used as data points. To calculate the population density for a given area, the number of people who are full-time residents are counted, and that number is divided against the square miles or kilometres of the area that is being measured.

$$\text{Population Density} = \frac{\text{Total Population}}{\text{Total Land Area}} \\ (\text{Sq. Miles or Kms})$$

$$\text{Population Density} = \frac{40,000}{50} = 800_{(\text{per sq.mile})}$$

For example, if there is an area that is 50 square miles with 40,000 people living in it, the population density is 800 people per square mile. Density numbers generally do not include non-residents of an area unless they are living in the area for an extended time period. Next is population growth.

### Population Growth

Population growth is the increase in the number of members of a population over a given time. Have a look at the list of the most populous countries of the world. As you can see, at present China is the most populous country.

<b>2014</b>	
<b>COUNTRY</b>	<b>POPULATION (MILLIONS)</b>
<b>China</b>	<b>1,364</b>
<b>India</b>	<b>1,296</b>
<b>United States</b>	<b>318</b>
<b>Indonesia</b>	<b>251</b>
<b>Brazil</b>	<b>203</b>

**Source-World Data Sheet of 2014**

### Population Growth Rate

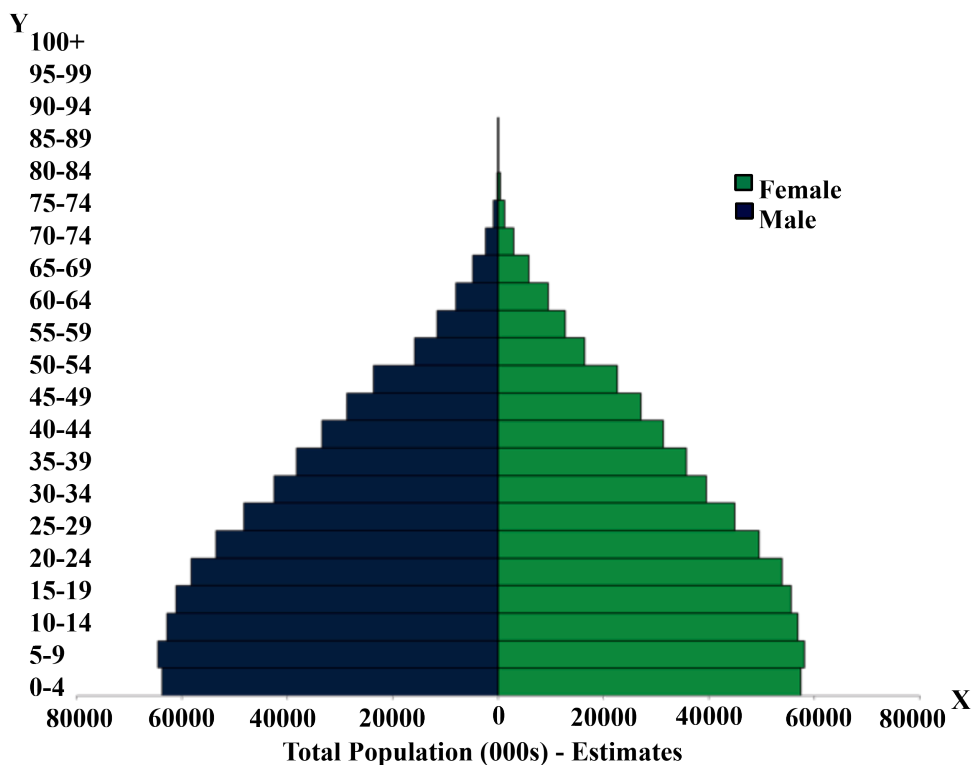
Population growth rate is defined as how quickly the members of a group increase in number over a set period of time. Such terminology is often used by social and biological scientists to discuss how fast a population of people, for instance, grows over time in a particular area. The rate of population growth is determined by a simple formula:

$$\text{Population Growth Rate} = \frac{P(t_2) - P(t_1)}{P(t_1)}$$

The population size at the beginning of the time period is subtracted from the population size at the end. That number is then divided by the population size at the beginning to yield a fractional answer, which is converted to a percentage.

### Population Structure

Population structure refers to the composition and make up of people of different gender and ages within a given area. The population structure is commonly described using a population pyramid. Population pyramids are a useful tool for understanding the structure and composition of populations because they graphically portray many aspects of a population, such as sex ratios and age structure. A population pyramid is defined as graphical illustration that shows the distribution of various age groups in a human population. The word 'pyramid' is used because it normally forms the shape. It typically consists of two back-to-back bar graphs, with the population plotted on the X-axis and age on the Y-axis, one showing the number of males and one showing females in a particular population in five-year age groups. Have a look at the population pyramid of India.



**Source-UN-Deptt.of Economic & Social Affairs-Population Division**

Now we move to second concept of today's lecture i.e. Climate Change Adaptation

## **4. Climate Change Adaptation**

Before we discuss the concept of climate change adaptation; let's know what is climate change?

### **Climate Change**

Climate change is a long-term change in the earth's climate, especially a change due to an increase in the average atmospheric temperature. It is a change in the statistical distribution of weather patterns over periods of time that range from decades to millions of years. Climate change may be limited to a specific region, or may occur across the whole Earth.

Now, what do we mean by climate change adaptation? Climate change adaptation can be referred to efforts made by society or ecosystems to prepare for or adjust to future climate change. The nature of these adjustments can be protective (i.e., guarding against negative impacts of climate change), or opportunistic (i.e., taking advantage of any beneficial effects of climate change).

Adaptation to changes in climate is nothing new. Throughout history, human societies have repeatedly demonstrated a strong capacity for adapting to different climates and environmental changes-whether by migration to new areas, changing the crops we cultivate, or building different types of shelter. However, the current rate of global climate change is unusually high compared to past changes that society has experienced. In an increasingly interdependent world, negative effects of climate change on one population or economic sector can have repercussion around the world.

### **Climate Change Adaptation Efforts**

A wide variety of steps can be taken by an individual, community, organization or government to prepare for, or respond to, climate change impacts. Some examples are as follows

#### **Agriculture and Food Supply**

Breed crop varieties that are more tolerant of heat, drought, and water logging from heavy rainfall or flooding.

Protect livestock from higher summer temperatures by providing more shade and improving air flow in barns.

#### **Coasts**

Promote shore protection techniques and open space preserves that allow beaches and coastal wetlands to gradually move inland as sea level rises.

Identify and improve evacuation routes and evacuation plans for low-lying areas, to prepare for increased storm surge and flooding.

#### **Ecosystems**

Protect and increase migration corridors to allow species to migrate as the climate changes.

Promote land and wildlife management practices that enhance ecosystem resilience.

#### **Energy**

Increase energy efficiency to help offset increases in energy consumption.

Harden energy production facilities to withstand increased flood, wind, lightning, and other storm-related stresses.

### **Human Health**

Implement early warning systems and emergency response plans to prepare for changes in the frequency, duration, and intensity of extreme weather events.

Plant trees and expand green spaces in urban settings to moderate heat increases.

### **Water Resources**

Improve water use efficiency and build additional water storage capacity.

Protect and restore stream and river banks to ensure good water quality and safe guard water quantity.

## **5. Conclusion**

Climate change is, undoubtedly, one of the biggest global health threats of the 21st century. The inevitable population growth is making it worse. While the principal cause of climate change is high consumption in the developed countries, its impact will be greatest on people in the developing world. Rapid population growth endangers human development, provision of basic services and poverty eradication and weakens the capacity of poor communities to adapt to climate change. Significant mass migration is likely to occur in response to climate change and should be regarded as a legitimate response to the effects of climate change. Linking population dynamics with climate change is a sensitive issue, but family planning programmes that respect and protect human rights can bring a remarkable range of benefits.

At the same time understanding demographic trends, including fertility, population growth, urbanization, migration from environmentally depleted areas, and growing population density in marginal and vulnerable areas, is also crucial for the world to adapt to and cope with the adverse impacts of current and projected climate change. Population dynamics has to be integrated systematically into climate change science. With this we come to the end of today's lecture. In the next episode, we will talk about population and climate change and impacts of climate change. Till then good bye.

**Course - Bachelor of Population Studies**

**Year- IIIrd**

**Paper Name - Population, Environment and Development**

**Paper No. VII**

**Lecture No. 6**

**Lecture Title - Population and Climate Change and Understanding Impacts of Climate Change.**

### **Introduction**

Hello friends, in the previous episode we discussed the concepts of population dynamics and climate change adaptation. I hope that the understanding of both these concepts will have created an enormous interest among you to know more about issues related to demography and climate change adaptation. In today's lecture, I shall talk about the links between population growth and climate change. I shall also throw light on the impacts of climate change. Undoubtedly, rapid population growth and fossil fuel emissions are two leading characteristics of our modern age. Since 1800, world population has grown sevenfold, while per capita CO<sub>2</sub> emissions have increased 150 times. It has taken about 200 years of carbon emissions to create our current climate crisis. Without miraculous technological breakthrough, it's going to take centuries to set things right again. Since the Industrial Revolution climate change has been dominated by humanity's use of fossil fuels and land, and the consequent emission of greenhouse gases into the atmosphere. Demographers, population scientists, policy-makers and government agencies all over the world are worried about the adverse effects of overpopulation on climate change.

Earth is a very special planet. It falls in 'goldilocks zone' or 'circumstellar habitable zone', where the conditions are just right for life as we know it. The circumstellar habitable zone or simply the habitable zone is the region around a star within which planetary-mass objects with sufficient atmospheric pressure can support liquid water at their surfaces. To help keep these conditions constant, our planet is wrapped in a layer of greenhouse gases. This layer acts like a blanket, keeping the earth warm and shielding it from the cold of universe. This is commonly referred to as the greenhouse effect. Carbon dioxide (CO<sub>2</sub>), which, while not the most potent greenhouse gas, is nevertheless the main driver of the greenhouse effect. Now let's understand the basics of climate change.

### **Basics of Climate Change**

The primary energy source for Earth's climate is served as by the Sun. Some of the incoming sunlight is reflected directly back into space, especially by bright surfaces such as ice and clouds and the rest is absorbed by the surface and the atmosphere. Much of this absorbed solar energy is re-emitted as heat (long wave or infrared radiation). The atmosphere in turn absorbs and re-radiates heat, some of which escapes to space. Any disturbance to this balance of incoming and outgoing energy will affect the climate. For example, small changes in the output of energy from the Sun will affect this balance directly. If all heat energy emitted from the surface passed through the atmosphere directly into space, Earth's average surface temperature would be tens of degrees colder

than today. Greenhouse gases in the atmosphere, including water vapour, carbon dioxide, methane, and nitrous oxide, act to make the surface much warmer than this, because they absorb and emit heat energy in all directions (including downwards), keeping Earth's surface and lower atmosphere warm. Without this greenhouse effect, life as we know it could not have evolved on our planet. Adding more greenhouse gases to the atmosphere makes it even more effective at preventing heat from escaping into space. When the energy leaving is less than the energy entering, Earth warms until a new balance is established.

Now it's very important to know the main causes of climate change

## **Causes of Climate Change**

Causes of climate change can be categorized in the following two categories:

### **I. Natural Causes**

### **II. Human Causes**

#### **I. Natural Causes**

The Earth's climate can be affected by natural factors that are external to the climate system, such as changes in volcanic activity, solar output, and the Earth's orbit around the Sun. Of these, the two factors relevant on timescales of contemporary climate change are changes in volcanic activity and changes in solar radiation. In terms of the Earth's energy balance, these factors primarily influence the amount of incoming energy.

#### **II. Human Causes**

Climate change can also be caused by human activities, such as the burning of fossil fuels and the conversion of land for forestry and agriculture. Since the beginning of the Industrial Revolution, these human influences on the climate system have increased substantially. In addition to other environmental impacts, these activities change the land surface and emit various substances to the atmosphere. These in turn can influence both the amount of incoming energy and the amount of outgoing energy and can have both warming and cooling effects on the climate. The dominant product of fossil fuel ignition is carbon dioxide, a greenhouse gas. The overall effect of human activities since the Industrial Revolution has been a warming effect, driven primarily by emissions of carbon dioxide and enhanced by emissions of other greenhouse gases.

## **Human-emitted Greenhouse Gases**

### **Carbon Dioxide**

Carbon dioxide (CO<sub>2</sub>) has both natural and human sources, but CO<sub>2</sub> levels are increasing primarily because of the ignition of fossil fuels, cement production, deforestation (which reduces the CO<sub>2</sub> taken up by trees and increases the CO<sub>2</sub> released by decomposition of

the detritus), and other land use changes. Increases in CO<sub>2</sub> are the single largest contributor to global warming.

### **Methane**

Methane (CH<sub>4</sub>) has both human and natural sources, and levels have risen significantly since pre-industrial times due to human activities such as raising livestock, growing paddy rice, filling landfills, and using natural gas (which is mostly CH<sub>4</sub>, some of which may be released when it is extracted, transported, and used).

Halocarbons, including chlorofluorocarbons (CFCs), are chemicals used as refrigerants and fire retardants. In addition to being potent greenhouse gases, CFCs also damage the ozone layer. The production of most CFCs has now some of which may have been banned, so their impact is starting to decline. However, many CFC replacements are also potent greenhouse gases and their concentrations and the concentrations of other halocarbons continue to increase.

### **Nitrous Oxide**

Nitrous oxide (N<sub>2</sub>O) concentrations have risen primarily because of agricultural activities such as the use of nitrogen-based fertilisers and land use changes.

## **Role of Climate in Environmental System**

The climate plays such a major part in our planet's environmental system that even minor changes have impacts that are large and complex. Climate change affects people and nature in countless ways, and it often increases existing threats that have already put pressure on the environment. But it is not a problem which has appeared overnight – its 30 years since scientists first alerted the world to the dangers of climate change. How much longer are we going to allow it to continue? This is the question which has to be answered sooner or later.

Changes in nature have serious implications for people and our economic system. The insurance industry estimates the potential economic damage, caused by the impacts of global warming, to be hundreds of billions of dollars each year.

## **Other Human Causes of Climate Change**

In addition to emitting greenhouse gases, human activities have also altered Earth's energy balance through some other activities. For example:

### **Changes in Land Use.**

Changes in the way people use land — for example, for forests, farms, or cities — can lead to both warming and cooling effects locally by changing the reflectivity of Earth's

surfaces (affecting how much sunlight is sent back into space) and by changing how wet a region is.

### **Emissions of Pollutants (other than Greenhouse Gases).**

Some industrial and agricultural processes emit pollutants that produce aerosols (small droplets or particles suspended in the atmosphere). Most aerosols cool Earth by reflecting sunlight back to space. Some aerosols also affect the formation of clouds, which can have a warming or cooling effect depending on their type and location. Black carbon particles (or 'soot') produced when fossil fuels or vegetation are burned, generally have a warming effect because they absorb incoming solar radiation.

### **Impacts of Climate Change**

#### **Impacts on Water**

Rivers and lakes supply drinking water for people and animals, as well as being vital for agriculture and industry. Oceans and seas provide food for billions of people.

Climate change will have major and unpredictable effects on the world's water systems, including an increase in floods and droughts. Extremes in droughts and flooding will become more common, causing displacement and conflict. Less fresh water means less agriculture, food and income.

#### **Impacts on Forests**

Forests do so much: they purify our air, improve water quality, keep soils intact, provide us with food, wood products and medicines, and are home to many of the world's most endangered wildlife.

In fact, an estimated 1.6 billion people worldwide rely on forests for their livelihoods, including 60 million indigenous people who depend on forests for their subsistence.

Forests also help protect the planet from climate change by absorbing massive amounts of carbon dioxide (CO<sub>2</sub>), a major source of pollution that causes climate change.

Unfortunately, forests are being destroyed or damaged at an alarming rate by logging and burning to clear land for agriculture or livestock. These activities release huge amounts of carbon dioxide and other harmful greenhouse gases into the atmosphere.

Scientists estimate that up to 20 percent of global carbon emissions come from deforestation – greater than the combined emissions of every car, truck and plane on the planet. So instead of forests helping us to solve the climate crisis, deforestation is making the situation worse.

#### **Impacts on Food Security**

Climate change will have a significant impact on food availability, food accessibility, food utilization and food systems stability in many parts of the world. Climate change poses a significant risk of increased crop failure, loss of livestock and will impact on local food security.

In some areas drier and warmer conditions are predicted, elsewhere wetter and cooler conditions are expected which will negatively affect agricultural practices. It will affect human health and livelihoods, as well as people's purchasing power, food markets and food security at household levels.

### **Impacts on Agriculture**

Many people throughout the world rely on rain-fed agriculture. As a result, it is highly vulnerable to changes in climate variability, seasonal shifts, and precipitation patterns. Any amount of warming will result in increased water stress. Roughly 70 percent of the population lives by farming, and 40 percent of all exports are agricultural products. One-third of the income in Africa is generated by agriculture. Crop production and livestock husbandry account for about half of household income. The poorest members of society are those who are most dependent on agriculture for jobs and income.

### **Facts about Climate Change**

According to Intergovernmental Panel on Climate Change 2007 report, sea levels will rise by 7-23 inches by the end of this century due to global warming.

Since 1880, the average temperature has risen by 1.4-Fahrenheit degrees.

The last two decades of the 20th century have been hottest in the last 400 years, according to several climate studies.

According to the multinational Arctic Climate Impact Assessment report compiled between 2000 and 2004, the average temperature in Alaska, Western Canada and Russia has risen at twice the global average.

The Arctic ice is melting rapidly. By 2040 the region is expected to have a completely ice free summer, or even earlier.

The Montana Glacier National Park has only 25 glaciers instead of 150 that were there in the year 1910.

About 95 per cent of African agriculture depends on rainfall. In Africa alone, climate change will expose 75 million to 250 million more people to increased water stress by 2020.

Since the 1960s, the Sahel region of Africa has experienced a 25 per cent decline in rainfall.

Agriculture accounts for 14 per cent of greenhouse gas emissions, and forestry for 18 per cent.

It is calculated that the number of people affected by climate-related humanitarian crisis will rise by 54% to 375 million by 2015.

## **Conclusion**

Rapid population growth is, certainly, the principal factor behind climate change today. Human-caused climate change is fundamentally an imbalance of scale, as people release heat-trapping gases into Earth's atmosphere faster than the oceans and living things can remove them. The size of today's population and its continued growth also put at risk the social and institutional resilience needed to adapt successfully to the impacts of climate change, ranging from sea-level rise to more extreme weather events. Slower population growth followed by a gradual decline in population size would facilitate future reductions in greenhouse gas emissions and help societies adapt to the changes in climate that are now all but inevitable, since (due to the long lag times built into the climate system) they will be the product of emissions that we failed to cut in past years and decades.

Population is associated with sensitive issues including sexuality, contraception, abortion, migration, and religion. As a result, the debate on climate change also tends to focus on the role of human technologies and their economic foundations along with on critical human numbers and behaviours.

Now citizens and governments have to choose among several options in response to this information: they can change their pattern of energy production and usage in order to limit emissions of greenhouse gases and hence the magnitude of climate changes; they can wait for changes to occur and accept the losses, damage and suffering that arise; or they can adapt to actual and expected changes as much as possible. Alternative resources, conservation, improved environmental technology, and better education about global warming can ease our impact on the earth and serve as a new frontier for our future generations. Well, with this we come to the end of today's lecture. In the next episode, we shall talk about Population and Land Degradation. Till then, good - bye.

**Course Name - Bachelor of Population Studies**

**Year - IIIrd**

**Paper No. VII**

**Paper Name - Population, Environment and Development**

**Lecture No. 7**

**Lecture Title - Population and Land Degradation**

### **Introduction**

Hello Students. Today's topic is Population and Land Degradation.

Land is the foundation for all life-sustaining processes on the planet. It provides us with food and water. It helps us manage environmental risks such as floods and drought. It supports natural processes such as soil formation and nutrient cycling. In economic terms, land benefits billions of people, including a large proportion that depends entirely on farming and forest products for their livelihood. For all these reasons, it's imperative to maintain sustained and productive use of land.

Yet, globally, one-third of the Earth's land surface is degraded, affecting more than 2.6 billion people in more than 100 countries. When land is degraded, it cannot support all the processes that depend on it. Some irrigated lands, for example, have become heavily damaged from salt. Every year, this salinization causes the loss of some 1.5 million hectare of arable land and an estimated 11 billion US dollars in production.

Since ecosystems are so connected, land degradation can have cascading effects across the entire biosphere. Erosion, salinization and compaction of soil can reduce the soil's capacity to regulate water. Loss of biomass, through vegetation clearance

and soil erosion, produces greenhouse gases that contribute to global warming and climate change.

According to Camp, "as population pressures mount, the degradation of arable lands in wide areas of Africa, Asia and Latin America increases. These trends may threaten future food production capacity. In Africa food production has already declined 15 to 20% on a per capita basis since 1970, and at least a fifth of Africans do not have enough to eat to lead healthy productive lives. Although population growth is not the major factor behind hunger, population growth has clearly aggravated the grinding poverty and, in some cases, the environmental destruction that has kept people from growing or getting enough to eat"

### **What is Land Degradation ?**

Land degradation is a composite term; it has no single readily identifiable feature, but instead describes how one or more of the land resources (soil, water, vegetation, rocks, air, climate) has changed for the worse.

The concept of land degradation "refers to the deterioration or total loss of the productive capacity of the soils for present and future use" (Food and Agriculture Organization). Such loss occurs mainly because of various forms of erosion (by wind and water) and of chemical and physical deterioration.

Another definition describes it as, "the aggregate diminution of the productive potential of the land, including its major uses (rain-fed, arable, irrigated, rangeland, forest), its farming systems (e.g. smallholder subsistence) and its value as an economic resource" (Haigh, 2002). This link between degradation (which is often caused by land use practices) and its effect on land use is central to nearly all published definitions of land degradation. The emphasis on land, rather than soil, broadens the focus to include natural resources, such as climate, water, landforms

and vegetation. The productivity of grassland and forest resources, in addition to that of cropland, is embodied in this definition.

## **Types of Land Degradation**

### **Erosion**

The most common form of erosion is the loss of topsoil under the action of water or wind. Water runoff carries the topsoil away; this occurs under most climatic and physical conditions. Displacement of topsoil by wind action is more widespread in arid and semi-arid climates than under more humid conditions.

### **Chemical Deterioration**

Chemical deterioration may consist in:

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- c. Acidification, which may occur either because of excessive application of acidifying fertilizer or because of drainage in particular types of soil; and
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Desertification has been neatly defined in the text of the United Nations Convention to Combat Desertification (UNCCD) as “land degradation in arid, semi-arid and dry sub-humid regions resulting from various factors, including climatic variations and human activities.”

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## **Population and Land Degradation Processes**

### **Deforestation and Overexploitation of Vegetation**

Deforestation is the permanent destruction of forests in order to make the land available for other uses. According to the United Nations' Food and Agriculture Organization (FAO), an estimated 7.3 million hectares of forest, which is roughly the size of the country of Panama, are lost each year. The destruction of forests is caused for the most part by land clearance for agricultural purposes.

Land clearing in shifting cultivation is largely driven by population growth, through the growth in requirements of food and other agricultural products. Comparatively, forest clearing for pastures is a minor factor on a global scale (although it is important in certain countries). There are also examples of rapid deforestation for commercial agriculture. It is particularly occurring on a large scale in Latin America and Asia.

The other cause of destruction of the vegetation cover is its overuse by households, mainly from fuel wood collection. To cover vital energy needs, most households in developing countries resort to "free" gathered biomass fuels, including crop residues and animal dung but most of all, fuel wood. When the annual use of wood exceeds the sustainable yield of wooded areas, forests and woodlands are gradually destroyed. This in turn triggers or accelerates soil erosion.

The impact of population growth on fuel wood consumption in the vast areas concerned is direct, since energy needs are essentially proportional to population. Another feature of population dynamics plays an important role, namely urbanization. A first effect arises from population concentration, which makes the impact on resources felt acutely over a peripheral zone, which typically suffers disproportionately from deforestation. A second effect arises from changes in habits: urban dwellers frequently prefer charcoal to wood; this increases the impact on wood resources per consumption unit.

Overall, population pressure is determinant in vegetation loss, especially in areas with limited land reserves and energy sources. In the high population density areas of West Africa, for instance, "concentrations of demand for arable land and fuel wood lie at the root of resource abuse. It is in these areas that patches of desertification are the most visible" (Gorse and Steeds).

### **Overgrazing**

Overgrazing occurs when plants are exposed to intensive grazing for extended periods of time, or without sufficient recovery periods. It can be caused by either livestock in poorly managed agricultural applications, game, or nature reserves. It can also be caused by immobile, travel-restricted populations

of native or non-native wild animals. The only thing to stop overgrazing is to limit the animals' space to roam around.

Excessive pressure on the vegetal cover by animals can be a crucial problem, especially in developing countries where rangelands usually are much more crowded than in the developed world. While livestock does not necessarily cause environmental problems, overgrazing can be a major factor in land degradation, causing half of the damage assessed in Africa and one-fourth in other developing regions. Cases such as the damage caused by goats in the Mediterranean area and elsewhere are well known. In Africa, the increase in cattle numbers and the decline in the quality of rangelands have been significant during the past three decades.

### **Improper Agricultural Management**

A set of improper practices has to do with land extension, the main problem being the gradual extension of cultivation to sloping areas and, in general, to so-called "marginal" areas (previously left aside because of the fragility of soils or of other limiting factors). This is a common phenomenon in situations of "land hunger", i.e. of high population density vis-a-vis arable land.

Population growth "requires the extension of interference into new areas, and the subjection of these areas to the high levels of damage that follow initial interference. It requires the occupation of sites of lower resilience and higher sensitivity, for which existing management practices may be inadequate" (Blaikie and Brookfield)

A different set of improper practices has to do with faulty intensification: shortening fallow, insufficient fertilization, excessive fertilization, or the various forms of inadequate management of irrigated areas.

The chemical fertilizer has been used for a long time in the history of agriculture land. The impact of pesticides consists of the effects of pesticides on non-target species. Over 98% of sprayed insecticides and 95% of herbicides reach a destination other than their target species, because they are sprayed or spread across entire agricultural fields. Runoff can carry pesticides into aquatic environments while wind can carry them to other fields, grazing areas, human settlements and undeveloped areas, potentially affecting other species. Other problems emerge from poor production, transport and storage practices. Over time, repeated application increases pest resistance, while its effects on other species can facilitate the pest's resurgence.

## **Major Practices for Controlling Land Degradation**

### **Terracing**

In agriculture, a terrace is a piece of sloped plane that has been cut into a series of successively receding flat surfaces or platforms, which resemble steps, for the purposes of more effective farming. This type of landscaping, therefore, is called terracing. Terraced fields decrease both erosion and surface runoff, and may be used to support growing crops that require irrigation, such as rice.

### **Afforestation**

Afforestation is the process of planting trees, or sowing seeds, in a barren land devoid of any trees to create a forest. The term should not be confused with reforestation, which is the process of specifically planting native trees into a forest that has decreasing numbers of trees. While reforestation is increasing the number of trees of an existing forest, afforestation is the creation of a 'new' forest.

### **Prevention of Overgrazing**

To avoid overgrazing, managing livestock on grazing lands requires graziers to be flexible and understand the complex soil-plant-animal relationship involved.

To prevent overgrazing, taking plant-growth rate, natural processes of grazing lands and animal grazing behavior into consideration are essential. There are many styles of grazing management to choose from: rotational, mob, cell or holistic, for example. It is up to the grazing manager to choose which one will work best in each situation. Whatever style is chosen, a well-designed grazing plan bases rotations on changing plant-growth rates throughout the year.

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Crop rotation has many agronomic, economic and environmental benefits compared to monoculture cropping. Appropriate crop rotation increases organic matter in the soil, improves soil structure, reduces soil degradation, and can result in higher yields and greater farm profitability in the long-term. Increased levels of soil organic matter enhances water and nutrient retention, and decreases synthetic fertiliser requirements. Better soil structure in turn improves drainage, reduces risks of waterlogging during floods, and boosts the supply of soil water during droughts.

### **Conclusion**

Population growth is imposing an increasing burden on world's limited and continually degrading natural resource base. The natural resources are under increasing strain, even though the majority of people survive at subsistence level. It will increasingly difficult to satisfy the basic needs of a growing population even at present levels of consumption, and the situation will deteriorate progressively as the per capita consumption of resources increases. Population pressure on arable land contributes to the land degradation, thus affecting the productive resource

base of the economy. The increasing population numbers and growing affluence have already resulted in rapid growth of energy production and consumption and this trend can only be expected to accelerate in the future. The environmental effects like air pollution and global warming are of growing concern owing to increasing consumption levels. However, land degradation not only leads to deteriorating environmental conditions but also have adverse effects on the sustainable development and health of people. The considerable amount of both ground water and surface water contamination due to chemical fertilizers and insecticides leads to various water borne diseases. The growth of population is a fundamental factor in its relationship to natural resources, environment and technology. There is an urgent need to control population and poverty, conserve and protect natural resources and the environment for healthy human beings. With this, we come to the end of today's lecture. Thank you very much for watching.

**Course Name - Bachelor of Population Studies**

**Year - IIIrd**

**Paper No. VII**

**Paper Name - Population, Environment and Development**

**Lecture No. 7**

**Lecture Title - Population and Land Degradation**

### **Introduction**

Hello Students. Today's topic is Population and Land Degradation.

Land is the foundation for all life-sustaining processes on the planet. It provides us with food and water. It helps us manage environmental risks such as floods and drought. It supports natural processes such as soil formation and nutrient cycling. In economic terms, land benefits billions of people, including a large proportion that depends entirely on farming and forest products for their livelihood. For all these reasons, it's imperative to maintain sustained and productive use of land.

Yet, globally, one-third of the Earth's land surface is degraded, affecting more than 2.6 billion people in more than 100 countries. When land is degraded, it cannot support all the processes that depend on it. Some irrigated lands, for example, have become heavily damaged from salt. Every year, this salinization causes the loss of some 1.5 million hectare of arable land and an estimated 11 billion US dollars in production.

Since ecosystems are so connected, land degradation can have cascading effects across the entire biosphere. Erosion, salinization and compaction of soil can reduce the soil's capacity to regulate water. Loss of biomass, through vegetation clearance

and soil erosion, produces greenhouse gases that contribute to global warming and climate change.

According to Camp, "as population pressures mount, the degradation of arable lands in wide areas of Africa, Asia and Latin America increases. These trends may threaten future food production capacity. In Africa food production has already declined 15 to 20% on a per capita basis since 1970, and at least a fifth of Africans do not have enough to eat to lead healthy productive lives. Although population growth is not the major factor behind hunger, population growth has clearly aggravated the grinding poverty and, in some cases, the environmental destruction that has kept people from growing or getting enough to eat"

### **What is Land Degradation ?**

Land degradation is a composite term; it has no single readily identifiable feature, but instead describes how one or more of the land resources (soil, water, vegetation, rocks, air, climate) has changed for the worse.

The concept of land degradation "refers to the deterioration or total loss of the productive capacity of the soils for present and future use" (Food and Agriculture Organization). Such loss occurs mainly because of various forms of erosion (by wind and water) and of chemical and physical deterioration.

Another definition describes it as, "the aggregate diminution of the productive potential of the land, including its major uses (rain-fed, arable, irrigated, rangeland, forest), its farming systems (e.g. smallholder subsistence) and its value as an economic resource" (Haigh, 2002). This link between degradation (which is often caused by land use practices) and its effect on land use is central to nearly all published definitions of land degradation. The emphasis on land, rather than soil, broadens the focus to include natural resources, such as climate, water, landforms

and vegetation. The productivity of grassland and forest resources, in addition to that of cropland, is embodied in this definition.

## **Types of Land Degradation**

### **Erosion**

The most common form of erosion is the loss of topsoil under the action of water or wind. Water runoff carries the topsoil away; this occurs under most climatic and physical conditions. Displacement of topsoil by wind action is more widespread in arid and semi-arid climates than under more humid conditions.

### **Chemical Deterioration**

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