Factors Challenging Sustainability:

There are many factors hindering sustainability in the developing countries. These include:
1 – Government policies and national institutions.
2 – Dualism
3 – Lack of resources
4 – Population growth, and
5 – Environmental degradation

1- Government Policies and institutions:

One fact about the international development is that no government wants poverty; however, in the same time many government policies contribute to poverty. In many cases government policies and national institutions were built on **biases** which exclude the rural poor from the benefit of development. Biases that increase the impact of other poverty processes (i.e. lack of credit and land). What is given in anti-poverty programs (i.e. rural development programs) is drained away by other policies. The poor do not always come out ahead in the balance because of the political weakness of the poor. Therefore, their share is always transferred to more socially influential groups (i.e. urban people).

The poor are the first to suffer from programs involving public social expenditure cuts. For example;

1- In Thailand, small farmers' sector produce more than two-third of agricultural production and received only 10% of the total government expenditure.

2- IMF studies found that sharp cut in government expenditure (No subsides, no improved infrastructure, no transportation, etc..). In Philippines and Sri Lanka small producers were prevented from enjoying the improved prices of their products. They have to spend such good prices in other services (i.e. gas, spare parts, transport, storage etc..) and high taxes.

In many cases we can observe unsustainable forms of development such as industry based on subsidies, urban overexpansion (no city planning), high public sector expenditure. Unfortunately, the **bill** for these unsustainable forms is presented to the rural poor in the forms of :

A- Taxation of exports to sustain sectors with little export potential of their own. This, however, will discourage local production.

B- Subsidized food imports to supply urban population. Imported food is cheaper than the locally produced one. Therefore, imported food will depress the prices paid to small farmers for their food crops.

The institutional processes which tend to hinder sustainability and perpetuate rural poverty include:

1- Lack and access to land and water.
2- Inequitable sharecropping and tenancy arrangement.
3- Underdeveloped markets (uncontrolled market prices and producers do not get fair prices for their products).
4- Lack of access to credit and agricultural inputs.
5- Lack of grassroots institutions to encourage people participation.

Examples of Government Policies:

1 - Ethiopian government in a move to maximize food crop production, it diverted a large part of agricultural inputs and extension services to agro-ecologically advantaged zones (State owned large farms), depriving the arid and semi-arid areas of these vital inputs. Unfortunately, the production would not be distributed to food-deficit areas, in stead it goes to urban centers.

2 - In Nigeria , Ghana and Sudan, public expenditure favored large-scale farmers found in state plantation or irrigation projects. Also, these large-scale farmers get the benefit of agricultural research and extension.

3 - In Mexico, agrarian reforms involve the distribution of relatively unproductive lands to small-hold farmers. Also, much of government assistance goes to irrigated areas.This shows discrimination against the majority of the peasant farmers and other small-holders who are located in rain-fed areas.

4 - In Colombia, agricultural policies introduced recently favored the development of medium and large-scale producers, mainly in the northern part of the country. Modern commercial agriculture benefited from large-scale irrigation, storage facilities, no or non-existent land taxation, mechanization, agricultural input subsides, technical development, pricing policies, and generous credit subsides. On the other hand, environmental deterioration took place in the high lands and humid tropics because of uncontrolled agricultural expansion caused by demographic pressure.

In conclusion, government policies and institutional biases have short and long-term impact on the welfare of poor rural households .In the short-term, these households are unable to earn an income sufficient to meet minimum nutritional requirements or to take advantage of the market (to sell their products when prices are high).In the long-term, they continue to lag behind since they have no surplus for investment. They also, lack access to profitable investment opportunities, which might enable them to accumulate productive assets. Most important, this could be tied up with the fact that the rural poor may be forced to overuse resources without taking necessary measures to reverse potential degradation of the environment which in the long run undermine their productivity and income.

2 – <u>Dualism:</u>

One of the root causes of poverty in Africa and Central and South America is the dualistic pattern of development that has been initiated during the colonial rule and sustained by government policies aimed at generating an **"economic growth"** type of development. Dualism means also creating two groups of producers. One is producing for the world market and the other is a subsistence producer.

The colonial mode of production established plantation agriculture, especially in West Africa and exploited mineral resources. That means it has created a system of production that is commercial and alien to traditional mode of production which is basically subsistence.

This also involves establishment of large-scale commercial farms aimed at cultivating cash crops, administered by small number of farmers and depending on wage labors. In Kenya, Malawi, Mozambique, and Zambia these policies resulted in the loss or reduction of land available to peasants in some areas, and even created unemployment among peasant farmers since their land was taken away from them.

The same is true in Latin America; where policies are built on large scale production, while small-scale peasants are kept small in order not to be able to produce enough for household so as to be as a reserve labor force available for work in large scale production.

With modernization, large-and medium-sized farms in Latin America emerged. (Peru, Guatemala, El Salvador). They are producing for export and the urban markets. They are becoming highly capitalized and export-oriented modern enterprises.

Small peasant farmers produce traditional staples (food) for subsistence consumption. Also, small peasant farmers rely heavily on low-wage seasonal employment on modern farms.

Although dualism may be responsible for the mechanization of rural poverty, it can not be used to explain the roots of poverty in all Latin American countries especially in recent decades.

Other problems with dualism is that it is subjected to the prices of the international market, which in most cases is monopolized by rich institutions, organizations, and some individuals.

In general, prices of agricultural raw materials went down for the last 2 decades. Only 2 years ago cotton prices picked up. There is a high demand for wheat as well.

<u>3- Lack of Resources:</u>

In order to achieve sustainability the poor should be provided with the economic services, resources, and assists which they haven't received in the past. They should have;
1- Access to productive land and Water, 2-Commercial services 3- Credit.
In addition, the rural population who are self-employed should also be provided with education and health services to improve their life. All of these resources, assists and services should be provided within a socio-economic policy that utilizes their maximum resources.

1- Access to Land and Water:

A- Access to land could be carried out through land reforms or any other forms of land distribution. In some cases the process of land possession and land registration is so complicated that it becomes easier for the poor to lose what they have than to gain a new land. However, the problem that African people face in possessing land is less than that of South America and Asia. In Sub-Saharan Africa the type pf land tenure is a communal tribal land. This system is co-existed with the emerging private African ownership and state system. Land in Africa is inherited. This system of land ownership is threatened by the increase of population and the change in the form of land tenure. The new change is

from local communal to private or state ownership. Despite the fact that women are responsible for more than 80% of agricultural production they are not considered when land is distributed to the rural poor.

In South America, there are large-scale farms as well as small holdings. Land structure in some countries shows agrarian reforms such as that of Mexico, Cuba, Bolivia, Peru and Chile. These reforms are without strong and efficient policy in favor of small holdings. Also, because of the process of capitalization and land concentration in some Latin American countries a large number of the rural poor sold their land and migrated to urban centers looking for jobs.

B. Water (Irrigation):

The early enthusiasm for permanent irrigation through building of dams in order to irrigate large-scale farms has faded away. This is because of the environmental, social, managerial, agricultural and economic problems. In addition, the high cost of such irrigation system is becoming unaffordable by the developing countries.

Therefore, it is becoming more popular these days and for the benefit of the local communities is to built small and low cost water schemes, since it is easer to be maintained and operated by the poor themselves. In places where water harvesting is possible, a low cost technology is highly recommended for those areas. It should be noted that in Africa and Latin America the poor are increasing living in areas without adequate water resources and they depend on rainwater. In case of ground water is used the extraction should not exceeds replenishment.

2 – Commercial Services:

In the area of handling of out-puts and inputs organized services were provided to large-scale producers. The poor have to pay an extraordinary cost of handling and transporting their own goods from service points and to markets. In most cases the only choice for them was to hand over their production to intermediaries who offer very low prices which are so different from those enjoyed by large-scale producers. Therefore, the poor end up paying more for what they are buying (i.e agricultural input) and receiving less for what they are selling (their production)

3-Provision of Credit:

Extending credit to poor in the developing countries can be the most effective way of promoting grassroot development and alleviation of rural poverty.What is needed for that is to establish a viable rural credit. A saving system which should be responsive to the objective conditions of the small producers. In this respect we should begin with the informal "no union" groups. Experience tells that Africa has a long history with this kind of activity. These informal groups should be linked to the formal credit institutions (i.e. banks) which will provide new source of financing and growth to small holders.

In order to be an effective institutional credit it must be accompanied by whole package of other support services such as technological (agricultural inputs, machines, improved seeds), training, extension and marketing.(the ides of integrated rural development).

Forms of Credit:

1-Money in form of a loan from the bank.
2-Village development funds "Cooperative societies"
The opening of economic and social opportunities to the poor offers the possibility of more stable and sustainable change.

Population Growth and Sustainable Development

The relation between population growth and available natural resources has generated much discussion between scientists. One group believes that the fast growing rate of population can not keep pace with the available natural resources. That means the growing number people will consume all of the earth's natural resources in a short period of time. The other group does not agree with this theory. They believe that with the help of high technology, people can survive on earth and they can always make food available to sustain life on earth. They gave an example of the "Green Revolution", where irrigation, chemical fertilizers and an improved types of seeds have doubled the agricultural production. The Green Revolution took place since late 1960's and early 1970's in Asia. In this way the degree of famine and starvation is reduced mainly in India,. Therefore, it is becoming very important to know about population trends, distribution and factors affecting population growth in both the developed and less developed countries.

Factors Affecting Human Population Size:

There are three factors that affect the growth or the decline of the population theses are 1. Birth rate 2. Death rate 3. Migration. The birth rate or "Crude birth rate is the number of live births per 1,000 people in the society in a given year. The death rate or "crude death rate" is the number of deaths per 1,000 people in a place in a given year. However, in each second there are 3 more babies added to the world population. The annual natural population growth or the annual rate of natural population change is expressed as percentage. The world's annual population growth rate is 1.63%, and this adds 95 million people per year. "other sources said 85 million". The world population has more than doubled in only 43 years, from 2.5 billion in 1950 to 5.5 billion in 1993. Unless birth rate is reduced this may reach 11 billion by 2045 and 14 billion by 2100. The current figures show that there are more births than deaths.

Africa has the highest rate of population growth, which is around 340, but Asia has the largest increase in numbers of population. China and India alone are making up 38% of the world population (1.18 billion). One person in five is Chinese, and 60% of the world population is Asian. Although the United States has the world's fourth largest population, it has only 4.7% of the world's population.

Factors Affecting Birth Rates:

1 - Children in the developing countries are considered a very important part of the family labor force especially in the rural areas, where children help their parents in cultivation. Birth rates are lower in the more developed countries.

2 - Urbanization. People living in urban areas usually have better access to family planning services and tend to have fewer children than those living in rural areas. Again, children in the rural areas are needed to help their parents grow food collect firewood and water and perform other essential tasks.

3-Average level of education and affluence: Because both levels of education and affluence is high in the more developed countries "MDCs" birth rates are lower. Birth rates are high in the LDC, because education and affluence are low.

4 -Cost of raising and educating children. Rates of birth tend to be lower in MDC. Where raising of children is costly because they do not enter into labor force until their late teens or early twenties. On the other hand, the extended family and the community help substantially in raising kids in developing countries.

5 -Education and employment opportunities for women. BR tend to be less when women have access to both education and paid employment. (keep them busy from giving birth). Here there are differences between LDC and ADC. Also between rural and urban areas of LDC. We should differentiate between official, self and family employment women.

6-Average age at marriage. It means the age of a woman when she gives birth to her first child. People have fewer children when women's age at marriage is 25 years old or even older. In LDC, women for cultural and religious reasons get married since they are 12 years old, especially in rural areas.

7- Programs of family planning and reliable methods of birth control, tend to reduce birth rates. But many communities either don't believe on it (contraceptives) or do not find these services.

8- According to religious beliefs, traditions and cultural norms in many LDCs people favor large families. The Muslims and Roman Catholics like to multiply their numbers. In LDC, families aiming at multiplying their numbers, since large family number is viewed as a social prestige.

Factors Affecting Death Rates:

The rapid world population growth in the last 100 years is not caused by the increase in birth rate, but rather by the decline in death rates, especially in the LDCs. The reasons for the drop in the death rates are

1. Better nutrition because of greater food production and better distribution.
2. Fewer infant deaths and longer average life expectancy. This is because of improved personal hygiene, sanitation and clean potable water supplies that stopped the spread of many infectious diseases.
3. Improvements in medical and public health technology, including antibiotics, immunizations and insecticides.

The overall health of the country could be known through:

1. life expectancy, which means the average number of years a new born infants can be expected to live
2. Infant mortality rate. This means the number of babies out of every 1,000 born each year that die before their first birthday.

Due to the improved health condition, life expectancy has increased since 1965. It varies sharply among the different regions. Babies born today can expect to live 75 years in MDCs and 62 years in LDCs. But it is less than that in the 41 poorest countries in Africa and Asia which his 47 years.

A high infant mortality rate give an indication of insufficient food, malnutrition "poor nutrition" and a high incidence of infectious disease mostly because of contaminating drinking water. The infant mortality rate dropped between 1956-1993 31% in MDCs and 35% in LDCs. Still there are 12 million infants die each year.

Conclusion:

In the developing countries sustainable development goes hand in hand with controlling of birth rates. This is because

1- Controlling of population growth will keep pace with the use and conservation of natural resources.

2 – Population growth will erode the resource base in which development depends. As a result, starvation and famine will occur and poverty rate will increase.

3- The slight increase in economic growth (i.e.3% in Africa) will be consumed by the increase in the population growth (i.e. 3% natural increase in Africa). Therefore, there will be no savings and no investments and eventually no any kind of development will be achieved let alone sustainable development.

4- Developing countries are characterized by young population. These are called Young dependents. Economically, they are not part of the labor force. Therefore, most of the budget will be used to cover the cost of social services for this large sector of the population (about half of the population). Hence, the money that can be used for savings and investment will not be available.

5 Population increase will force people to use marginal lands. This will result in many environmental problems such as land degradation, soil erosion, drought and desertification.

Food Production and Sustainable Development

The world produce more food today than ever before in human history. The agricultural resources and technology needed to feed the growing population are available. Agriculture does not lack resources, it lacks policies to ensure that the food is produced where it is needed and in a manner that sustains the livelihood of the rural poor.

Between 1950-1985 Cereal production outstripped population growth and increased from around 700 million tons to 1,800m.tons this increase helped meet the demand for cereal. There are different problems facing the different regions of the world (Table 1). i.e. Many sub-saharan African countries are becoming poor to the extent that they import their food. In 1984, they import an equivalent of 10% of the world grain trade.

Demand for milk and meat increased as incomes increased in societies that prefer animal protein. Much of the developed countries are involved in providing meat and milk and milk production. Meat production for export increased especially in the ranglands of Latin America and Africa. From 2 million tons in 1950-52 to over 11 m.t in 1984.

Food increased while arable lands have declined. This is because of

1. The use of new seed varieties.
2. The use of chemical fertilizers.
3. The increasing use of pesticides.
4. Increase in irrigated area.

Signs of Food Crisis:

1. The food surpluses in N. America and Europe resulted from subsidies and other incentives that stimulates production even if there is no high demand for it . But now these subsidies have become extremely expensive. In the U.S it grows from $2.7 billion in 1980 to $25 billion in 1986. It is becoming politically attractive and usually cheaper to export surpluses in a form of **food aid** rather than to store it. These heavily subsidized surpluses have negative impact on international market prices. This creates serious problems to the production and prices of crops in the developing countries.

   Heavily subsidized production has some environmental consequences.

   1. Soil quality declines due to intensive soil cultivation and overuse of chemical fertilizers. This has lowered productivity(Diminishing return).

   2. Nitrate pollution of ground water due to overuse of nitrate fertilizers.

   The financial, economics and environmental effects of current incentive systems are beginning to be questioned by many governments and groups, including farm organizations. Because they cause a lot of harm to developing countries production prices. (i.e. sugar, rice)
   2 - Small holders are neglected while large scale production farmers are

favored and government policies are biased towards them. Also women who are the main producers in Africa for example are also neglected.

3. Degradation of resources base. Short sighted policies are leading to degradation of the agricultural resource base such as soil erosion, deforestation and desertification and waste and pollution of water. Extension of agriculture in recent years in the marginal land increased soil erosion. For example in India it affects 25-30% of the total land under cultivation.

   Examples of degradation of resource base:

   A. Soil erosion makes soil less able to retain water, depletes it of nutrients and reduces the depth available for the roots to take hold and land productivity declines. Eroded top soil is carried to rivers, lakes and reservoirs silt up dams and reduce their storage capacity. Therefore, without careful conservation measures, the total available land especially that of rainfed cultivation will shrink in developing countries. On the other hand, poorly designed and implemented irrigation systems have caused waterlogging and salinization. According to these problems some irrigated lands are abandoned each year. The loss of crop land encourages farmers to overuse the remaining land and to move into forests and onto rangelands. Therefore, sustainable agriculture cannot be based on methods that undermine the soil.

   B. Chemical fertilizers and pesticides have increased production but through the run-off nitrogen and phosphates from excess use of fertilizer damage water resources. Overuse of pesticides threatens the health of humans and the lives of other species (i.e. fish and bird species)

   C. Deforestation. Forests are crucial for maintaining and improving the productivity of agricultural land. Yet, agricultural expansion, the growing world timber trade and demand for woodfuel have destroyed much of the forest cover.

   D. Desertification, consumes agricultural land especially in drylands of Africa, Asia and Latin America.

The Challenge of food production:

Food demand will increase as population increase and their consumption patterns change. Global food security depends on 1. Raising global production 2. Reducing distortions in the structure of the world food market and 3. Shifting the focus of food production to food-deficit countries and regions. Global food security depends on ensuring that all people should get their food.

Developing countries that import food, they also import unemployment. This marginalizes people who would destroy the resource base in order to survive.

> Shifting production to food-deficit countries and resource-poor farmers within those countries is a way of sustaining livelihood in these countries.

Strategies for sustainable food production:

1. Government should intervene in agriculture and change policies for the benefit of the majority of their population, which are the rural poor so that such a move would help sustain food production. The poor should have access to credit, water, land and other supportive commercial services like storage and marketing services. In most developing countries the incentive structure is weak, market interventions are ineffective and prices system favored urban dwellers.

2. There should be a shift in the trading pattern. Countries of food production have to begin by redesigning their trade, tax and incentive systems and they have to consider ecological and economic sustainability and international comparative advantage.

3. Agricultural production can be sustained in a long term basis if land, water and forests on which it is based are not degraded. Government interventions will provide a framework for this. More specific policies are needed to protect the resource base and enhance production and the livelihood of all rural people. For example, land titles for the poor should be managed in away to increase its productivity. Provision of low-cost water and better management of irrigation contribute positively to the process of sustainable development.

4. Natural methods that increase soil fertility should be encouraged such as using organic nutrients instead of chemical fertilizers. Chemical fertilizers and pesticides are heavily subsidized in many countries.

5. Undisturbed Forests and protected watersheds reduce erosion and offer habitats for wild species and play key role in climate system. Programs to preserve forest resources must start with local people who are both victim and agents of destruction. They should be at the center of integrated forest management which is the basis of sustainability of forest exploitation and overall environment and ecosystem conservation. Forestry can also be extended into agriculture. Farmers can use agroforestry systems to produce food and fuel. Agroforestry is practiced by traditional farmers every where in the developing countries.

6. Fisheries and aquaculture (fish farming) are critical to food security because they provide both protein and employment. In many areas today much of the fresh water fish stocks are fully exploited or damaged by pollution. Agriculture can help meet future need.

7. To improve agricultural productivity traditional and modern technologies should be blended together because this will offer possibilities for improving nutrition and increasing rural employment on a sustainable basis. Researchers must learn from and develop the innovations of farmers. More research is needed on farm. Research priorities should coincide with farmers' priorities.

Puri, H., and Leiva-Roesch, J. 2016. Leaps of Faith?: Addressing the Challenges of Sustainable Development and Climate Change. *Horizons: Journal of International Relations and Sustainable Development* Vol. 6: 48-57.