CHAPTER ONE
INTRODUCTION

1.1 Statement of the Problem

Agriculture and human development linkage is a vital issue and involves huge importance. Both include a lot of dimensions. Both disciplines are of profound importance in a developing country like India and their relationship has wider implications.

Agricultural economics deals with the economic variables that influence agrarian set up. In India, nearly 70% people are linked with agriculture while rural India still keeps the bulk of our population. Obviously it goes without saying that most of the rural population is poor or having little access to better amenities of life. In short, quality of life in rural India is very low in relation to other fast growing countries or even urban India. The reason which accounts the most is poor agricultural productivity.

Human development is defined as the expansion of choice set which is over and above the per capita GDP measure. It includes income, health, education, better nutrition, political and cultural freedoms, security, self esteem and dignity etc. The agriculture and human development are closely interlinked as human development or expansions of choices promote quality of life parameters which lead to rise in productivity of farmers. On the other hand agricultural development will lead to expansion of income of the rural people making more access to other amenities of life which add to quality of life. In a developing country like India, to improve human development index ranking as well as economic growth rate, faster rate of agricultural development is necessary.

Agricultural development can promote human development by –

1. Raising the food production and assuring food security for the sustainable development of different sectors of the economy.

2. Raising the per capita income in the rural base leading to economic equity and poverty reduction so that position of the country or a state or a region improves in both Human Development and Poverty reduction.
3. Improving the nutritional level and health status of the people.
4. Raising the environmental sustainability with agricultural growth.

Agricultural development is the most crucial part of the rural development while human development largely depends on the increase in income of the rural mass. Income is one of the most important dimensions of the quality of life of the population. Various other dimensions of quality of life as access to education, health, nutrition, better accommodation, freedom of more choices etc directly depend on income.

On the other hand, human development expands the productivity of the farmers in the form of raising the skill of farming, giving access to modern technology, more market information, extension services etc. Thus both issues are interlinked heavily to raise the growth rate, reduce the poverty and improve the human development condition. Economic development in true sense of the term requires the reinforcing effect of both agrarian and human development policies.

1.2 Theoretical and Conceptual Framework

Agricultural Performance

Agricultural performance is a measure of the changes (positive or negative) in the principal variables that constitute the agricultural sector. A highly simplified agricultural system which depicts three basic subsystems of the sector: (a) a production system that encompasses crop, animal and forestry production; (b) a supporting system that comprises markets, inputs and equipment and infrastructure on the one hand, and research, technical and financial services on the other; and (c) a legal and institutional system that provides the policy framework for regulation, coordination and management of the sector.

Agricultural performance is defined as results/achievements in the field of agriculture. The level of agricultural productivity that is achieved by producers, however, depends on the effectiveness and efficiency in the operation of markets for both inputs and outputs and the adequacy of infrastructure, research, technical and financial services. These constitute the cornerstone for analyzing agricultural performance and its link to rural and human development. Similar to the HDI, one could suggest the construction of an Agricultural Performance Index (API) using these variables, that would demand a complex set of data and a measurement technique that would need to be nationally defined and agreed upon and would require international harmonization and approval. The API would assist governments and implementers of agricultural programs and projects to assess their contribution to rural development and poverty reduction. The study has attempted to make such a composite index which covers different facets of agricultural performance.

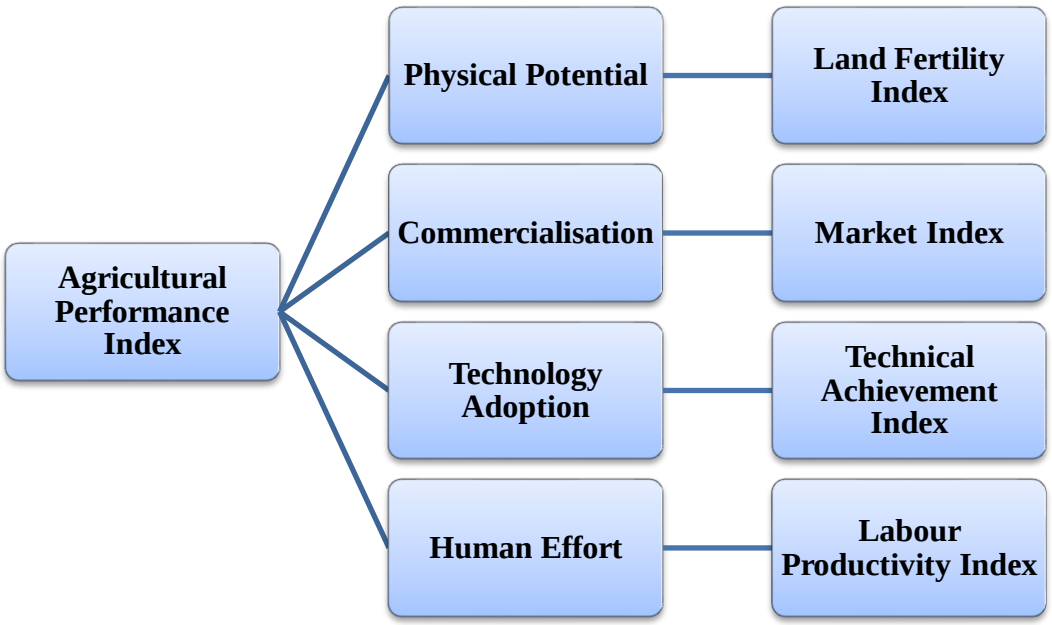
Agricultural Performance Index (API) would comprise the weighted measure of:

1. Physical potential – as measured by levels of land fertility.
2. Availability and accessibility of markets as measured by commercial sale levels of key agricultural commodities.
3. Level of technological achievements as measured by use of improved seeds and other modernizing agricultural technologies.
4. Level of human effort (output per worker).

API is a composite index of all four dimension indices having equal weights.

Each component of agricultural performance is analyzed with the help of factor indices. The factor indices assist to understand the actual scenario of agricultural situation of sample ADOs in Barak Valley. Land Fertility Index, Market Index, Technology Achievement Index and Labour Productivity Index can be prepared to analyze the components of agricultural performance.

Chart 1.1



Human Development

Amartya Sen says "The perspective of human development incorporates the need to remove the hindrances that people face through the efforts and initiatives themselves."Mahbub ul Haq defines, "The objective of development is to create an enabling environment for people to enjoy long, healthy and creative lives" (UNDP Report1990). Human development concept is inclusive of economic, political, and social parameters. UNDP report1990 systematically put forward the concept and made a revolution in the development strategy and policy implication throughout the world.

The development strategy puts human development as the ultimate indicator of poverty reduction and economic development. The strategy regards social investment spending on water, health and education sectors as pivotal in reducing mortality and morbidity as well as for increasing employment and labour productivity. Besides the health and education outcomes, human development approach, which puts the people at the centre of development, also emphasizes the need for economic growth and sustained poverty reducing employment and growth in order to eradicate extreme poverty and hunger. The human

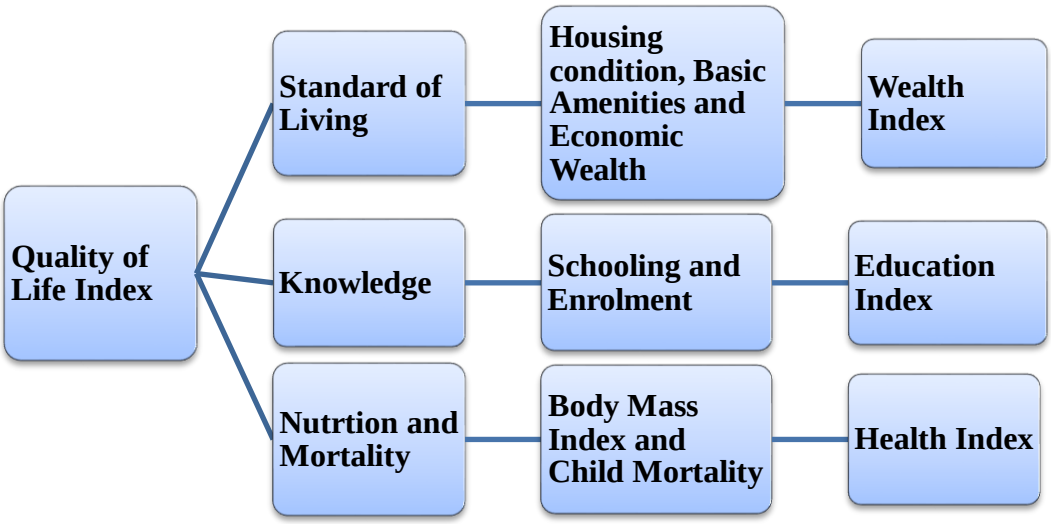
development approach borrows much from the sustainable livelihoods conceptual framework, which propounds poverty-focused development activities that are people-centered, participatory, holistic and sustainable.

In summary, human development involves the process of widening people's choices and the platform for making such choices, especially through expanded human capabilities (UNDP, 2002). The lack of opportunities to widen one's choices and increase productivity is one of the main factors retarding human development. Widening people's choices enables the development of their full potential in order to lead productive and creative lives in accordance with their needs and interests (UNDP, 2001). In measuring human development, emphasis is placed on the ends rather than the means of human progress. Consequently, human development is about people, about expanding their choices to live their lives in full and about their creative lives with freedom and dignity. The adoption by the UN General Assembly of the MDGs as a human development agenda for improving human lives underscores the fact that development is about people and the opportunities they have in life rather than just about national economies and incomes. While economic growth, increased trade and investment, technological advances, etc. are all very important, they are means and not end to human development. In fact, depending on the degree of vulnerability and deprivation, it is normal to have two different countries with the same GDP per capita, while at the same time having different levels of human development, especially if income inequalities are high. Therefore, economic growth, which is measured by such variables as per capita income, while necessary, is not sufficient to measure human development. Other factors including life expectancy, literacy and quality of life, which are the most critical ends of the development process, have to be considered.

Human Development Performance can be measured by achievement in quality of life/condition of living. A composite index can be formed to measure the progress in quality of life by 28 indicators of household- housing characteristics, quality of sanitation, electricity, drinking water, cooking fuel, a bunch of electronic goods,

essential goods, vehicles etc. Moreover education index made of literacy level and enrolment, health index made of BMI-Body Mass Index and child mortality can be prepared. Quality of life index is a composite measure of all three dimension indices having equal weights.

Chart 1.2



1.3 Rationale of the Study

The economy of the Barak Valley region of Assam is predominantly agricultural with 70.73 percent of the workforce being engaged in agricultural and other primary activities. The human resources of the Barak Valley region of Assam are underdeveloped as compared to Assam as a whole, while the state of Assam is much behind the country as a whole. The backward nature of human resources of the valley is exhibited in terms of growing unemployment, poverty, incidence of epidemics and other diseases. The disparities in the development of human resources between the region and the State as a whole is due to the fact that the

development initiative adopted by the government did not make any impact in the region which is geographically isolated from the mainstream Assam.

As such it would be interesting to study the interrelationships between performance of agriculture and human development scenario in the valley.

1. Agriculture can play the lead role in the development of those regions where most of the people earn their livelihood from primary sector activities. Similarly human development can promote the performance in agriculture.
2. If quality of life does not improve in the rural sector i.e. quality of life or standard of living should increase remaining in the agricultural sector, otherwise rural population will leave rural sector in search of better living and problems like informal unemployment, migration and urban slums will expand.
3. For the economy whose mainstay is agriculture, efforts directed at sustainable rural development contribute to four critical development goals, namely, poverty reduction; widely shared growth; household, national, and global food security and sustainable natural resource management. Globally, the majority of the rural poor depend on agriculture for most of their meager livelihoods and these rural poor live in regions where arable land is incrementally scarce, agricultural potential is low while drought, floods, and environmental degradation exist.
4. The ways in which agriculture can affect the overall poverty can be both direct and indirect. The direct way implies that agricultural growth lowers directly the degree of poverty in rural areas and the whole economy. The indirect way, however, implies that agricultural growth contributes to overall poverty reduction through the contribution of agricultural to overall growth, and through the latter's contribution to poverty reduction, and ultimately to human development.
5. There is an inextricable linkage between agricultural production, its productivity, income and the intermediary variables that are critical in

triggering human development outcomes, namely health, education, accessible safe water etc. In ideal situations, the extent to which the pivotal variables are supported (markets, inputs and equipment, infrastructure, financial services, technical services, as well as research and extension) has a direct bearing on rural development, quality of agricultural performance and ultimately the level of human development. Conversely, the lack of required support mechanisms to the pivotal variable have a corresponding negative effect to the quality of agricultural performance and ultimately the level of human development.

6. Environment and natural resources refer to those resources that are useful for human survival and are often obtained/ extracted from nature to provide for people's livelihoods. Poor people's perception of the environment is expressed in terms of their physical surroundings (sanitation, health facility, drainage, shelter/housing, and waste disposal) and the state of their environment and natural resources (land, water, forests, etc) but also in terms of environmental services. The environment provides basic needs, which contribute to human development and peoples' wellbeing in terms of food security, employment, health and safety nets.
7. Poverty eradication and economic development is not possible without good health. Likewise, the health of the population cannot be sustained without responsive health systems and a healthy environment. This close relationship between the environment and development as well as the need to improve health in order to achieve sustainable development is acknowledged by various global agendas on environment. It is therefore important that the poor have secure access to and utilization of these resources; and poor people's capacity need to be strengthened in order to sustain the ecosystem. For example, eradicating extreme poverty and hunger is linked to modernization and commercialization of agriculture, which cannot be achieved in a degraded environment. Likewise, reduction in child mortality will be more achievable if households have access to adequate clean water supply and sanitation facilities. Climate change will

lead to the spread of water born diseases and increase the likelihood of natural disasters. These disasters will, in turn, reduce income, destroy infrastructure and undermine investments in education and health.

1.4 Objectives of the Study:

The main objectives of the study are:-

1. To study the relation between agricultural performance and human development in Barak Valley.
2. To analyze the incidence of poverty in relation to agricultural performance.
3. To study the role of agriculture in the development of health, education and standard of living.
4. To identify the factors those influence the level of human development in the valley.

1.5 Hypotheses of the Study:

The hypotheses taken up in course of the study are:-

1. There exists a positive relationship between agricultural performance and human development.
2. There exists an inverse relationship between agricultural performance and incidence of poverty.
3. Performance of agriculture is directly related to development of social sector

1.6 Methodology of the Study

Data has been collected from both primary and secondary sources. Multistage sampling has been followed. In Barak Valley region there are six agricultural subdivisions—(1) Cachar district (3 subdivisions), (2) Karimganj district (2 subdivisions) and (3) Hailakandi district (1 subdivision). From each subdivision one ADO circle has been selected subject to the condition that the selected circle represents the entire subdivision. From each ADO circle two villages (one agriculturally developed having at least some marketing network and other agriculturally underdeveloped) has been selected in consultation with Agricultural Development Officer. From the selected villages, 450 sample of farming households has been selected for the study.

A number of indices have been constructed to address the objectives of the study which includes: (a) Agricultural Performance Index (API), (b) Human development by Quality of Life Index, (c) Human deprivation by Multidimensional Poverty Index, (d) Wealth Index, (e) Health Index and (f) Education Index. All these indices have been constructed at the household level. Moreover, suitable statistical and regression techniques have been used to analyze the relationship among concerned variables of the study.

Agricultural Performance Index

The computation of API would comprise the weighted measure of:

i) Physical potential - as measured by levels of land fertility.

ii) Availability and accessibility of markets- as measured by commercial sale levels of key agricultural commodities.

iii) Level of technological achievements as measured by use of improved seeds (HYV Seeds) and other modernizing agricultural technologies like fertilizers, pesticides, tractors, power tillers etc.

iv) Level of human effort (output per worker).

Factor Indices or dimension indices will be prepared

$$\text{FI} = \frac{\text{Actual value of the factor} - \text{Minimum value of the factor}}{\text{Maximum vaule} - \text{Minimum value}}$$

Agricultural Performance Index= 1/4(Land fertility index) + 1/4(Market index) + 1/4(Technical achievement index) + 1/4(Workers productivity index)

Equal weights have been assigned to each of the variables to compute API since all of them play vital role in the determination of agricultural performance. All four aspects of land fertility, marketing, technology adoption and worker's productivity are having equal importance in agricultural development.

Wealth Index

Wealth Index has been measured at the household level-

Wealth index does not mean that it has been calculated by only property and income of the farmers, rather wealth index is a composite measure of 28 all such indicators which include every facets of human life and his/her different choices. They are 1) House type 2)Separate room for cooking/Kitchen 3) Ownership of house 4) Flooring 5) Toilet facility 6) Source of Electricity/Lighting 7) Main fuel for cooking 8) Source of Drinking Water 5) Car or Tractor 9) Moped or Scooter 10) Telephone 11) Refrigerator 12) Colour TV 13) Black and white TV 14) Bicycle 15) Electric fan 16) Radio 17) Sewing machine 18) Mattress 20) Pressure cooker 21) Chair 22) Cot or bed 23) Table 24) Clock or watch 25) Ownership of livestock 26) Water pump 27) Bullock cart 28) Harvester/Thresher. These indicators have been given weights and scores. On the basis of individual scores of 450 samples, dimension index or wealth index has been made.

$$\text{The Wealth Index} = \frac{\text{Actual score of the sample} - \text{Minimum score of the sample}}{\text{Maximum score} - \text{Minimum score}}$$

Education index

Education index is calculated by taking equal weights of the two indicators- literacy level and child enrolment.

$$\text{The Literacy Index} = \frac{\text{Actual value of the factor} - \text{Minimum value of the factor}}{\text{Maximum vaule} - \text{Minimum value}}$$

Therefore the Education Index = 50% × Literacy Index + 50% × Child Enrolment

Health Index

Health is an important parameter of Human Development. Health Index is prepared with the help of two sub dimensions- Body Mass Index and Child Mortality, giving them equal weights.

Now Factor Index for BMI and child mortality has been calculated by-

$$\text{FI} = \frac{\text{Actual value of the factor} - \text{Minimum value of the factor}}{\text{Maximum vaule} - \text{Minimum value}}$$

Therefore Health Index = 50% × BMI + 50% × Child Mortality

Here two important issues should be noted. Since mortality is inversly related to health index and nutrition is positively related, the mortality scores have been

reciprocated before calculating the dimension index so that both variables move in the same direction.

Secondly BMI scores in between 18.5 kg/m^2- 25.5 kg/m^2 is normal. Any score below 18.5 kg/m^2 is a poor performer as well as any score above 25.5 kg/m^2 shows obesity. To calculate composite health index, the values above 25.5 kg/m^2 has been deducted equally as from 18.5 kg/m^2. Say a score is 27.5 kg/m^2 i.e. 2 points higher than normal level. He has been assigned 16.5 kg/m^2. Otherwise values above 25.5 kg/m^2 shows better BMI.

Quality of Life Index

Quality of Life Index is calculated by three equally weighted dimension indices- wealth index, education index and health index-

Quality of Life Index = 1/3 (wealth index) + 1/3 (education index) + 1/3 (health index)

Deprivation Index

Poverty or deprivation can be measured by different methods. But consideration of income or wealth cannot be enough for a proper deprivation index. Deprivation on the basis of calorie intake or consumption expenditure does not always show a true picture since data is inadequate for farm households. They don't keep proper records of their consumption expenditure. Thus it is better to make an index which cover different facets of human life as well as proper data is available.

Deprivation has been calculated with the help of Multidimensional Poverty Index following the methodology of Sabina Alkire and Maria Ema Santos.

Dimension	Indicator	Deprived if	Related to	Relative weight
Education	a) Years of schooling b)Child school attendance	a) No household member has completed five years of schooling. b) Any school-aged child is not attending school up to class 8.	a) MDG2 b) MDG2	a) 1/6 b) 1/6
Health	a)Child mortality b) Nutrition	a) Any child has died in the family. b) Any adult for whom there is nutritional information is malnourished.	a) MDG 4 b) MDG 1	a) 1/6 b) 1/6
Living standard	a)Electricity b)Improved sanitation c)Safe drinking water d) Flooring e)Cooking fuel f)Assets ownership	a) The household has no electricity. b) The household's sanitation facility is not improved (according to MDG guidelines), or it is improved but shared with other households. c) The household does not have access to safe drinking water (according to MDG guidelines) or safe drinking water is more than a 30-minute walk from home roundtrip. d) The household has a dirt, sand or dung floor. e) The household cooks with dung, wood or charcoal. f) The household does not own more than one radio, TV, telephone, bike, motorbike or refrigerator and does not own a car or truck.	a) MDG 7 b) MDG 7 c) MDG 7 d) MDG 7 e) MDG 7 f) MDG7	a) 1/18 b) 1/18 c) 1/18 d) 1/18 e) 1/18 f) 1/18

If the answer is Yes-1 & No-0

Note: MDG1 is to Eradicate Extreme Poverty and Hunger; MDG2 is to Achieve Universal Primary Education; MDG4 is to Reduce Child Mortality; MDG7 is to Ensure Environmental Sustainability.

1) Adults are considered malnourished if their BMI is below 18.5 kg/m^2.

∴ BMI = weight (kg) / height (m) ^{2}

2) A household is considered to have access to improved sanitation if it has some type of flush toilet or latrine, or ventilated improved pit or composting toilet, provided that they are not shared.

3) A household has access to clean drinking water if the water source is any of the following types: piped water, public tap, borehole or pump, protected well, protected spring or rainwater, and it is within a distance of 30 minutes' walk (roundtrip).

A household is identified as multidimensionally poor if, and only if, it is deprived in some combination of indicators whose weighted sum exceeds 30 percent of deprivations.

1.7 Organization of Chapters

The study has altogether six chapters:

Chapter One: Introduction

Chapter Two: Review of Literature

Chapter Three: Barak Valley: Profile of the Study Area

Chapter Four: Data Interpretation and Analysis

Chapter Five: Results and Findings

Chapter Six: Summary, Conclusion and Suggestions

References

1. Alkire, Sabina & Santos, M.E. (2010), 'Human Development: Defi nitions, Critiques and Related Concepts', Human Development Research Paper No. 2010/11, UNDP.
2. Haq, Mehbub ul (1995), .The Human Development Paradigm., "Haq.s Reflections on Human Development", Oxford University Press
3. Sen, A K (1981): Poverty and Famines: An Essay on Entitlement and Deprivation, Clarendon Press, Oxford.
4. UNDP (1990), Human Development Report. New York: Oxford University Press.
5. UNDP (2001), Human Development Report. New York: Oxford University Press.
6. UNDP (2002), Human Development Report. New York: Oxford University Press.