

# GREEN ECONOMIC GROWTH: AN OPPORTUNITY FOR SUSTAINABILITY AND POVERTY ALLEVIATION, HKH REGION, PAKISTAN

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**ABSTRACT:** *Green economic development (GED) exerteda direct impact on globalization; however, it is a prominent force in global change. Protection of forests, ecosystem, biodiversity and more cultivation of crops minimized the environmental degradation impact. The present study focused on the empirical findings on the correlation between crop production and green sectors of the swat economy with focal point on the poverty alleviation. The study data used over the period of 1981-2013 to explore the contribution of kharif crop production, total area, temperature, rain and thepopulation included in this research. The data analysiscompleted using unit root test through Augmented Dickey Fuller (ADF), Error Correction Model (ECM) and JohanssonCo integration test to come across a relationship between production and growth. The data analysis point out thatproduction level of Kharif crops (maize and rice) was reliable which shows the favorable tendency of green sector development in the Swat.In contempt of the swat green economic growth, Poverty is even now on the increase trend and this command for thealteration from the economy, which is massive oil based to a further one plural with the lead sector essence the agriculture. It was suggested that alreadyimplementedpoor policies and law framework might be designed for the sustainability and poverty alleviation by increasing the employment level in green economic development by public and private sector.Thus SWOT analysis demonstrates that Green sectors play a significant role for the green economic development and growth, but their goods and services are closely interlinked with external utilization of the natural resources. The management strategies being incorporated these standards into broader policy consideration that may revitalize enhance capabilities and ensure sustainable development in rapid deteriorated mountainous green sectors.*

**Keywords:** Green Economic Development (GED), Swot analysis, ADF, ECM, HinduKushHimalya (HKH) Region, Pakistan

## INTRODUCTION

The concept of green economy sector can be sketched back as early as 1989 when Pearce, Markandya and Barbier touched upon this concept for the first time in their Blueprint for a Green Economy described this topic in Blueprinting Greening the world economy [3,12,13]. However updated concept appeared much clearer in Jacobs in the Interpretation in 1991 which identified the basic objectives of green economy known as zero growth or sustainable development [8].The research on green economy is only confined within a limited theoretical area until UNEP launched the Green Economy Initiative and Global Green New Deal for the current perspectives of the prevailing worldwide financial impact and combating climate change, aiming to help governments move towards a green economy by “reshaping and refocusing policies”[18, 19, 20].Thus a more comprehensive definition given to the green economy by UNEP is “an economy that results in improved human well-being and reduced inequalities over the long term, while not exposing future generations to significant environmental risks and ecological scarcities [17]. The concept of green economy in the perspective of sustainable development through local community and the poverty alleviation was a component for sustainable development of the local Community [15]. Provide the participation in greenprojects for the development of local communities through the greeneconomic development. Green economy facilitates plans and programmed for community development [23]. The green economy as the solution to solveproblems of climate change and global recession concept [10].Asia and Europe also took action to move towards a green economy under the EU Cohesion Policy [6, 21]. However, local and regional communities has become to see as essential and necessary building blocks in the new links and the political figures of the emerging the green sector [7].The green technologies are the basic application of the environmental science to maintain

the natural resources and to lessen the negative impacts of human movements. The Conventional agriculture technique is also referred as Green revolution approach. It is broadly believed greatest advance in agricultural expertise [4, 9]. The Farming most responsive to environment and community development. It will create need for environmental regulation and degradation. The Farming sectors that decrease dependence on the external inputs decrease the need for pirating against a future crop pattern and the land utilization. Sustainable farming sector would work best and with reliable in local community of farmers sectors who have many accept sustainable farming approaches[5]. The green mechanizations are application of environmental science have main objective to conservation of the natural resources and reduce and drain the negative impacts of human activities in the environment. The Corporation for Economic growth and Development that one of the necessary green growth approaches is the development of green technologies through apposite innovation policies [11]. TheAgricultural sector and sustainable tourism development are a process of interface among a large number of necessary and elements in green economicdevelopment.. Finally, changed from natural ecosystem services into mountain agro-ecosystem and tourism development activities [16].The Dynamic impact of Agriculture product Trade in Context of Domestic, local and Global Liberalizations that take part of three basic and reliable pillars of agriculture development aspects which are regular market assessment, export subsidy management and facilitate domestic support for achievement of welfare losses and gains. The green growth approaches are very relevant in the green economic development [14].

The natural resources move towards the green growth, development sectors will have the regular and accurate bases which design the large mid linkage from the green growth sector which increase and regulate the Market access which

makes sure the green economic enhancement and sustain [1]. In sustainable agriculture dissipation, therefore in-situ conservation, farmer collaboration and farmer-to-farmer expansion is encouraged and motivated, therefore producing various sorts of synergistic impact of farmer empowerment [2]. Environmental degradation, social injustice and economic instability are the basic problems for sustainable development. The green growth and development, wide range Green Growth and development [22]. Green Growth will restructure social foundation by global identification of their values and ethics of the factors that will increase the efficiency of social values by decreasing the effectiveness in the green sectors that will diminish the risk and makes sure the economic stability [24].

**MATERIALS AND METHODS**

The length of the Swat valley is 200 KM long and 75KM wide. This valley has elevation of 2800 feet approximately from the sea level in the area of 5337 sq.kms. However, it is divided into two tehsils namely Matta (683 sq. km) and Swat (4654 sq. km) which divided into different Zones of Swat (Figure 1). There are many mountain peaks have ranged from 4500 to over 6000 meters. The Physiology situation of the Swat Valley changes from south to north. River Swat creates the main source of recreation for the local community development which increase the growth and development. The present study engaged the time series data on the manifestation of Kharif crop production, Total Area, Temperature, Rain and Total Population. The period included 1981 to 2013 of the Swat district. The annual time series data of the above variables were used in this study. The main sources of data for present research were included; the Agricultural census Yearbooks of various years, KPK Development statistics of various years, Federal Bureau of statistics, Islamabad, Population Census of Pakistan, 1981, 1998 and projected 2014 and Pakistan Meteorological Department (PMD), Lahore.

**Green Econometric Model**

The relationship between green economic development, crop production, temperature, rain, area and population is expressed implicitly as

$$GED=f(TAR, TEP, RIN, TPOP)$$

GED= Total Kharif Crops production (Maize and Rice)

TAR= Total Area

TEMP= Temperature

RIN= Rain

TPOP= Total Population

The choice of temperature, rain, total area and total population, which are the descriptive variables that are rely on green economic development. Such types of variables are related to green sectors that explains the change of economic growth and development.

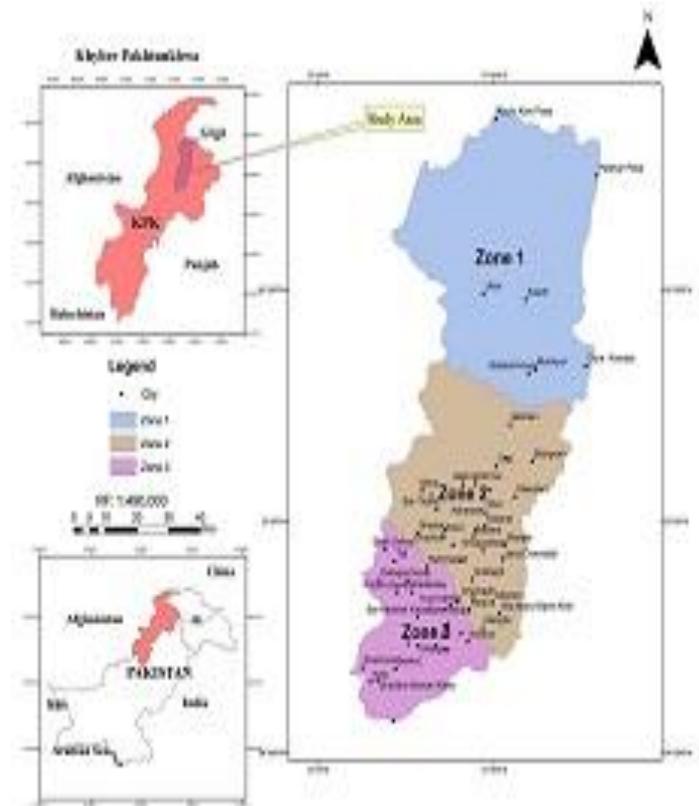


Figure -1 showing different Zones of Swat, Pakistan.

As, they have been preferred as well to the agricultural sector to describe their effect on green sectors and development for the period 1981-2013 under this present study. The tendency is not included as a descriptive variable which was not well thought of as a variable of reliable interest in the study.

**Equation**

$$\Delta y = \beta_0 + \beta_1 \Delta X_t + b_1 \Delta X_t + -1 - U \delta t - 1 + \epsilon t$$

$\beta$  = Shows multiplier impact that reveal how much created change in the dependent variable through one unit change in the independent variable

$\beta_1$  = Shows the short run effect

$b_1$  = Shows long run effect

$\delta$  = Error correction term or adjustment effect then

$$\Delta GED = \beta_0 + \beta_1 \Delta TAR + b_1 \Delta TEP + c_1 \Delta RIN + d_1 \Delta TPOP - 1 - U \delta t - 1 + \epsilon t$$

**Econometric Methods**

**Unit Root Test ADF**

Table 1: (Stationery at First Difference)

Variables	T-Statistics	P value
TPRO	-5.998132	0.0016
TARE	-6.294654	0.0000
RA	-7.937930	0.0000
TEMP	-8.614297	0.0000
TPOP	-5.375603	0.0178

In the context of above results TARE which is significant and reliable at the first difference where its value of p is less than its sign value which express that it rejects the null hypothesis and which prove that data is stationary. Same as results point towards for TPRO, TPOP, RA and TEMP that are significant and stationary at first difference. The results of the unit root tests lead towards the next step which is Johansson Co integration.

**Johnson Co integration:**

This test has been applied on the all variables to check and verify the relationship which is the long run nature between the variables to sustain the green economic development and growth according to production in the context of the green sector.

**Johnson Co integration Test**

**Table 2: Long Run Relationship**

<i>Unrestricted Co-integration Rank Test (Trace)</i>			
<i>Hypothesized No. of CE(s)</i>	<i>Trace Statistics</i>	<i>0.05 C.V</i>	<i>Prob.**</i>
None	66.44767	69.81889	0.0090
At most 1	40.15329	47.85613	0.0021
At most 2	20.93454	29.79707	0.0036
At most 3	8.896080	15.49471	0.0075

Trace test indicates 4 Cointegration test at first difference.\*denotes rejection of the hypothesis at the first difference\*\*MacKinnon-Haug-Michelis (1999) p-value

<i>Unrestricted Co-integration Rank Test (Maximum Eigen value)</i>			
<i>Hypothesized No. of CE(s)</i>	<i>Eigen. Statistics</i>	<i>0.05 C.V</i>	<i>Prob.**</i>
None	26.29438	33.87687	0.00031
At most 1	19.21875	27.58434	0.00978
At most 2	12.03846	21.13162	0.00543
At most 3	6.799474	14.26460	0.00513

The max-eigenvalue test indicates 4 Co integration equations at the first difference which denotes the rejection of the hypothesis at the first difference.

On the basis above results it signifies the importance of green economic development through total production. Total area, Rain, Temperature and population have a significant and positive effect on economic growth and development.

**Error Correction Model (ECM) TEST:**

ECM can be derived from the Johanson co-integration test which shows the relation of short run movement with long run which is equilibrium.

The movement of the long relationship towards short boost up and find with the error correction model throughout the Co integration test which declare the significant impact of the temp, rain, Total area and Total population with Total production of kharif crops.

According to results of ECM there is a long run and short run effects of the independent variables on green economic development. TARE,, RA,TEMP TPOP has a long run and short run relationship with GED as TPRO in the positive way neither the negative. On the other hand, TPRO has a significant effect on the green economic development.

**Table 3: Short Run and long Run Relationship on the basis of ECM**

<i>Variable</i>	<i>Coefficient</i>	<i>Prob.</i>
<i>C</i>	5.264097	0.0355
<i>D(TARA)</i>	0.769414	0.0212
<i>D(TEMP)</i>	0.213413	0.0516
<i>D(RA)</i>	0.063022	0.0021
<i>D(TPOP)</i>	359.8349	0.0475
<i>TPRO(-1)</i>	0.479099	0.0054
<i>TARA(-1)</i>	0.318266	0.0245
<i>TEMP(-1)</i>	0.034515	0.0713
<i>RA(-1)</i>	0.010805	0.0875
<i>TPOP(-1)</i>	0.068113	0.0049

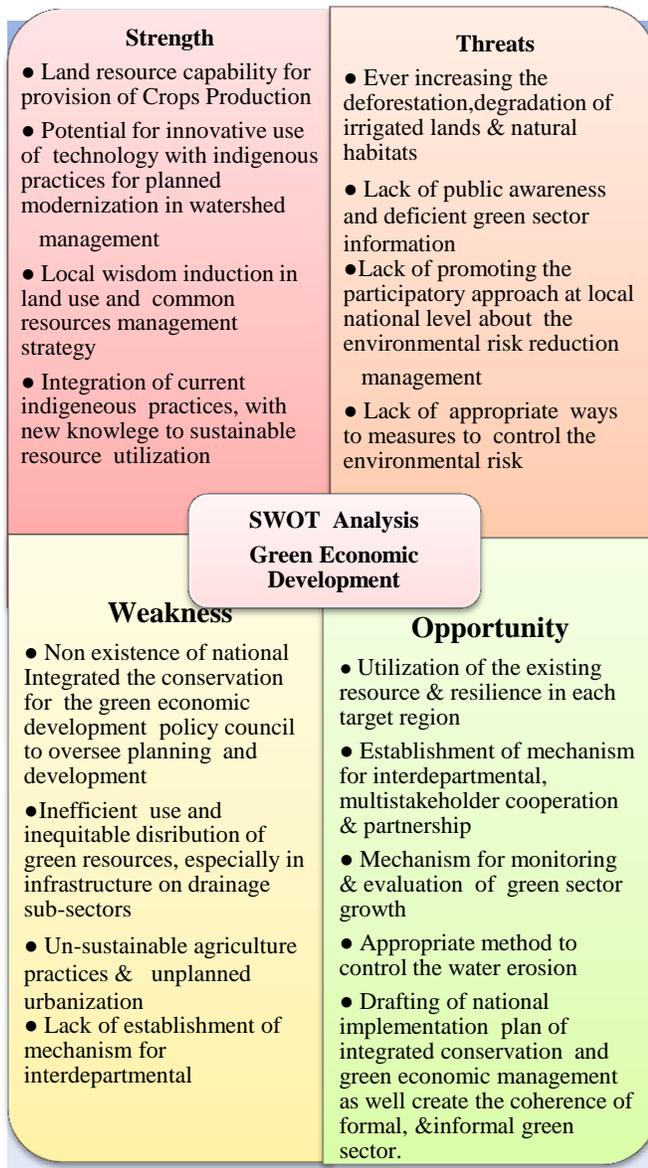
<i>R-squared</i>	<b>0.713154</b>
<i>Adjusted R-squared</i>	0.590220
<i>S.E. of regression</i>	2.029071
<i>Mean dependent var</i>	-0.003410
<i>S.D. dependent var</i>	0.045413
<i>Durbin-Watson stat</i>	2.403683
<i>Sum square resided</i>	0.017747
<i>Long-run variance</i>	0.000166

**DISCUSSION**

According to above the results, that is there is a positive or negative effect of TARE, RA, TEMP and TPOP on the green economy development. However, climatic factors have the significant and positive effect on the development through total production. The impact on the green economic growth and development varies from area to area and location to location because climatic variability, which have the direct impact on the growth of the total production. The temperature and rain change pattern effect is a serious matter which was associated to district Swat, other than succeeding role of the anthropogenic activity that are reliable to varying the climatic situations which cannot be negligible, therefore, inappropriate and unreliable land use practices are harmfully disturbing the environmental surroundings, foremost to the climatic variation like rain patterns, extended dry and wet periods and extreme temperature situation. Climate variation can powerfully change agriculture sector. However, variation of land use change in Swat agriculture pattern interlinked with the impacts of climate change. Climate change can strongly affect the crops pattern and production. The climatic variation is very composite as it included temperature and rain. The result showed the positive impact and declared that most of the farmers were practiced mixed cropping system in the mountain area Swat have better benefit from their products than mono cropping system and that also maintains the life of the soil which farmer conducts different agricultural practice together to increase soil fertility and create the opportunity for the income through different sources and to complement and fulfillment land and labor demands about the production across the year. Opportunities for organic agriculture, according to population have been forecasted in various ways. Organic agriculture could apply particularly in the future its innovative ideas and excellent marketing, for instance, in the area of organic wellness and health but also in further development of organic agriculture regions. Lack of

funding threat organic agriculture practices because funds as a vehicle for financing agricultural projects and agricultural investment growth and development have not only been spurred by increase agricultural prices of food security concerns but also importantly innovation and experience in climate risk mitigation of investment.

### Green Economic Development through Agricultural Sector (SWOT Analysis)



**Figure 2 -Shows Strength, Weaknesses, Opportunities and Threats (SWOT) Model for Green Economic Development**

A migration trend towards cities is increasing day by day due to non-cyclic use of the natural resources, poor basic facilities and unplanned urban growth because non availability, facilities of drinking water, educational institutions, employment opportunities and training institutes for agriculture sectors.

### CONCLUSION

The present study investigates that there is a lack of the participatory approach among various owners of land uses and government in addition. However, Due to lack of communal collaboration and participation approach, then such issues of which are related to green economic development are the similar as they were included in the past decades. More area of swat land is being converted and rehabilitated into the agricultural land which causes serious soil erosion hurdles as the topography of the swat district area is not stable..SWOT analysis (Figure-2) indicates that resource capacity is not compatible with existing availability and threats are quite visible. However, opportunities are available and can be worked out by Co management practice and community participation. The wide ranges of swat areas are flat to the always increased erosion, which is caused by water and wind. Wind erosion is very prominent which is active in the dry, loose and bare soils.

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