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URBANIZATION AND DEPLETION OF NATURAL RESOURCES: A CASE STUDY OF PAKISTAN.

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ABSTRACT*-The aim of this research paper is to examine the effects of depletion of natural resource including both renewable and nonrenewable on economic growth due to growing urbanization in Pakistan. For this purpose, we collected data time series data for the period of 20 years (1998-2018) from different sources. Depletion of Natural resources was taken as dependent variable while urbanization, water, air pollution, depletion of fertile land, migration from Rural to urban areas and Per capita income were taken as independent variables. Correlation analysis, ADF test, and Ordinary Least square (OLS) method were used to analyze data. The results of this study reveal that high population growth rate as well as urbanization have significant effect on depletion of natural resources in Pakistan. We also found that more than one third of natural resources of Pakistan i.e. water, air, land, soil, etc, have been contaminated or exhausted due to these two factors.*

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1.INTRODUCTION:

1.1. Background of study:

The combination of the urbanization process with economic development has changed society and culture beyond the landscape and the natural environment. The biggest challenge facing by the most of countries today is to "maintain" economic growth rates and minimize its impact on development and environment. With the transformation from agriculture to industry, there was a large-scale urbanization. In this process, urban areas generally grow twice as fast as total population growth. In 1950, approximately 29% of the world's population was in urban areas. According to (Rashid et al., 2018) in 1990, this number was increased to 43%, while in 2030 it will likely to increase by 61%. Urbanization is one of the most significant segment patterns of the 21st century and has grown especially rapidly in low-income nations (Parkinson and Tayler, 2003). The intensive use of natural resources to support the urban economy includes the excessive energy resources (including firewood), the exploitation of quarries and the large-scale excavation of sand, gravel and construction and overuse of water. All of this leads to the deterioration of natural support systems and the irreversible loss of important ecosystem functions such as the water cycle, the carbon cycle and biodiversity, as well as conflicts with the use of this limited resources in areas. Other impacts may be felt later, such as river pollution, human health impacts, and long-term air pollution from vegetation and soil erosion (Henderson et al., 2009).

In 1998, the share of cities with more than one million inhabitants in the total population was 50%. Today Pakistan is urbanizing at a rate of 3% per year. Urbanization in Pakistan has created horizontal development that covers

fertile land, and as a result agriculture output is exhausted. The most recent insights from the World Health Organization (WHO) show that of the 10 dirtiest urban cities in the world are five and three among them are Pakistani cities such as Karachi, Peshawar and Rawalpindi. The major causes of urbanization are the lack of employment opportunities, adequate rural education infrastructure, lack of communication infrastructure, medical facilities, business opportunities and conflicts. In all cases, poverty is the major cause (Braithwaite and Mont, 2009). According to World Development Indicators (Alkire and Santos, 2014), 60.2% of the population of the Pakistani population lives below the poverty line and their income is less than $ 2 a day, while 21% of the population lives with less than $ 1.25 per day income.

1.2 Main Research problem:

The problem of this research study is to study the impact of urbanization and depletion of natural resources on economic growth of Pakistan during 1998-2018.

1.3 Objectives of study:

- To study the causes of urbanization in Pakistan.
- To explore the impacts of urbanization on natural resources.
- To analyze the depletion of natural resources in Pakistan.
- To identify the impacts of depletion of resources on economy of Pakistan.

2. REVIEW OF LITERATTURE:

The literature review is based on previous studies conducted in different countries as well as in Pakistan. It is briefly analyzed in the following.

Ali and Khan (2013) said that livestock growth could help ensure food security for rural households. Although men can leave their body space to work elsewhere, they can be more mobile, while women may not move in the same way. This part can also be explained by the child's upbringing, one of the parents must stay at home. In this case, livestock gains can help women reduce short-term economic shocks. In addition, low and middle income migrant groups cannot compete for scarce urban housing. Outdated building regulations have hindered the growth of urban housing. These rules also forced the prices of real estate to rise artificially. The rental laws have led to predators and the development of groups of predators, and for these reasons, landlords are now concerned about the provision of rental housing. This particularly affects the poor, as they are excluded from the city due to high rent. The lack of microfinance and mortgages prevent the ability of low-income groups to participate in housing and business, which in turn results in the expansion of slums. This exclusion has led to social disadvantages and it is easy to see that crime rates have increased in Karachi, Faisalabad, Peshawar, Multan and other cities of Pakistan.

Shah et al (2008) examined the trend of city development and urbanization in Lahore, as well as air, water pollution and changes in forest resources in Lahore. The basic goal of this study was to study whether our environmental assets (drinking water, clean air, and trees) in Lahore are declining, expanding, or staying at the same level. Rapid urbanization is associated with natural problems such as pollution, waste management, blockades and subtle environmental irregularities. Air pollution has always been a problem in Lahore. Air pollution in Lahore accounts for 2% of everything. As the report shows, 22,700 people have been displaced due to

increasing urban pollution. Poor air quality in Lahore is caused by vehicle and business emissions. With the development of the civilian population, companies based in Lahore have moved to adjoining areas of Lahore. Lahore needs drinking water. Many people in Lahore have little access to drinking water. Water pollution is mainly due to poor sanitation and solid waste in various areas of Lahore.

Khattak et al (2011) argued that Pakistan's atmosphere is starting to change because of worldwide environmental change. Investigations of chronicled temperature informational indexes show that there is a huge warming pattern in Pakistan, with normal yearly temperatures rising by 0.6 ° C somewhere in the range of 1900 and 1999 (Walter et al., 2009). Local contrasts have been watched and Northern Pakistan has seen a worldwide temperature alteration pattern in the course of recent years as parts of the lower Indus bowl have cooled. Simultaneously, the temperature in the upper areas of the Indus shows a contrary pattern during winter and summer. The normal and most extreme winter temperatures show a factually critical increment (0.1 to 0.55 ° C like clockwork). Normal and least temperatures show constant cooling. Winter warming is restricted to low-lying regions, while higher heights have a more grounded cooling impact in summer.

Hassan, et al (2019) studied the impact of globalization and Natural Resources on economic growth of Pakistan during the period of 1970 to 2014. globalization is a dynamic force behind vibrant economies around the world. Based on an auto-regressive distributive lag (ARDL) model, the researchers conclude that globalization boosts economic growth in Pakistan. Natural

resources also play an important role in economic growth. Countries should emphasize security, increase exports, encourage technological progress, and increase its intellectual management capacity for Policy implications. They suggested that with the help of globalization, the improvement of the use of the natural resource can be achieved by providing expertise and skills and encouraging the use of natural resources for the country's raw materials and energy-saving techniques. The efficiency of natural resources would be improved by globalization process.

Tareen et al (2018) stated that Pakistan has many natural energy resources but it is facing worst energy crisis of its history. They found that Pakistan has prodigious potential of energy like wind, solar, micro-hydel, fuel cell, tidal, biomass and bio gas. Sindh has great potential for wind energy. Pakistan has great solar potential and so it has 3000 hours of sunshine a year. They concluded that Pakistan possesses abundant hydropower resources, which are the most environmental friendly and cheapest source of energy. The shortage of electricity has resulted in load shedding during the summer season, costing the economy billions of rupees. In light of these facts, hydropower is the best solution to Pakistan's energy crisis.

3.RESEARCH METHODOLOGY:

This is a quantitative study in which quantitative methods have been used. In this study, some key economic indicators of Pakistan s' economy are described which provide the results of this study. The researcher has used secondary data in this study. The data has been collected from different sources such as Pakistan Economic survey, State Bank of Pakistan, World Bank, International Monetary Fund and Asian Development Bank. Time series data for the period of 20-years from 1998-2018 has been used in this study

3.1 Type of Data:

Time series data over the time period 1998 to 2018 has been used for analysis. In this research we will find out the impact of urbanization on natural resources in Pakistan.

3.2. Sampling period:

The sampling period of the study is spread over 20 years from 1998 to 2018.

3.3. Selected Variables:

Natural resources were taken as dependent variable while per capita income, population growth rate, depletion of soil fertility, air pollution, water quality and urbanization are taken as independent variables.

3.4. Specification of Model:

The econometric model of this study is engraved in the following general form:

$$Y = b_0 + b_1U_1 + b_2W_2 + b_3AP_3 + b_4DFL_4 + b_5M_5 + b_6P_6 + e$$

Where:

Y= Depletion of Natural Resources	(dependent variable)
B_0 = Constant Term	(Intercept)
U_1 = Urbanization	(independent variable)
W_2 = Water Quality	(independent variable)
AP_3 = Air Pollution	(independent variable)
DFL_4 = Depletion of Fertility Land	(independent variable)
M_5 = Migration from Rural to Urban areas	(independent variable)
P_6 = Per Capita Income	(independent variable)

e = error term

3.5 Conceptual Model:

The conceptual model of this study is given in Figure 1;

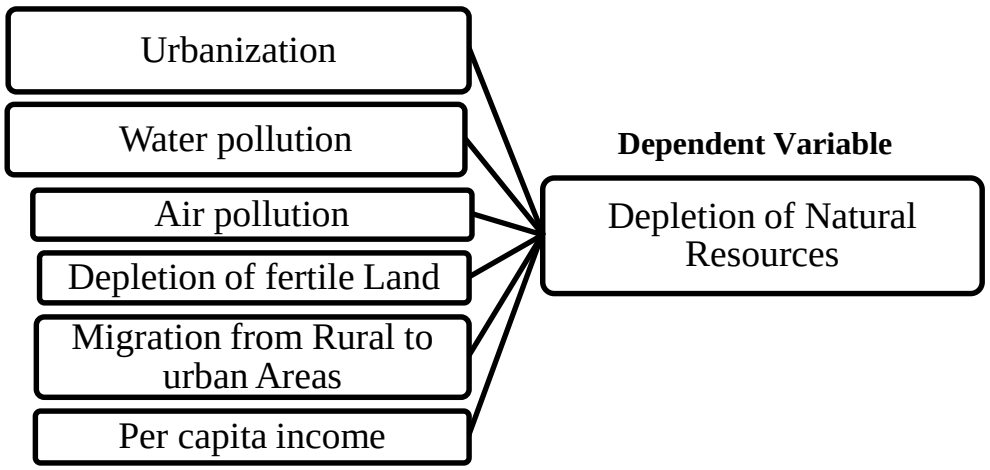


Figure1: Conceptual Model

3.6 Hypothesis of the study:

The hypothesis of this study are given below: -

H_0: There is a negative impact of urbanization and high population growth rate on of natural resources in Pakistan.

H_1: There is a positive impact of urbanization and high population growth rate on natural resources in Pakistan.

4. DATA ANALYSIS:

4.1 Descriptive Analysis:

4.1.1 Urbanization:

Table1: Annual Population Growth Rate of Major Cities of Pakistan 1998-2018

Sr. No.	Name of City	Population		Average Annual Growth Rate
		1998	**2018**	
1.	KARACHI	9,339,023	15,400,000	3.49
2.	LAHORE	5,143,495	11,738,000	3.32
3.	FAISALABAD	2,008,861	3,311,000	3.58
4.	RAWALPINDI	1,409,768	2,156,000	3.43
5.	MULTAN	1,197,384	1,931,000	2.93
6.	HYDERABAD	1,166,894	1,782,000	2.62
7.	GUJRANWALA	1,132,509	2,110,000	3.79
8.	PESHAWAR	982,816	2,065,000	3.29
9.	QUETTA	565,137	1,042,000	4.09
10.	ISLAMABAD	529,180	1,061,000	5.76

Source: Pakistan Bureau of Statistics, 2019

The data in table 1 shows that among the major cities of Pakistan, Islamabad is top of the list with rapidly growing urbanization by average annual growth rate 5.76% while Hyderabad is the lowest city by the means of population annual growth rate 2.62%.

Table 2 : Population of Pakistan (Province-wise) and its Urban Share

Admin Unit	Population (million)		Urban Share %	
	1998	2018	1998	2018
Pakistan	132.35	207.77	32.52	36.38
KP	17.74	30.52	16.87	18.77
FATA	3.18	5	2.69	2.84
Punjab	73.62	110.01	31.27	36.71
Sindh	30.44	47.89	48.75	52.02
Baluchistan	6.57	12.34	23.89	27.55
Islamabad	0.81	2	65.72	50.58

Source: Pakistan Bureau of Statistics, 2019

Table 2 shows that among four provinces of Pakistan, Sindh is top of the list with rapidly growing urbanization by average annual growth rate of 52.02% while FATA has the lowest in urbanization only by 2.84%.

Table 3: Urban and Rural Share in Population of Pakistan

Year	**Urban**	**Rural**
1998	32.5%	67.5%
2018	38.5%	61.5%
Future Estimate		
2051	50.1%	49.9%

Source: Environmental Impact of Rapid Urbanization in Pakistan, 2018

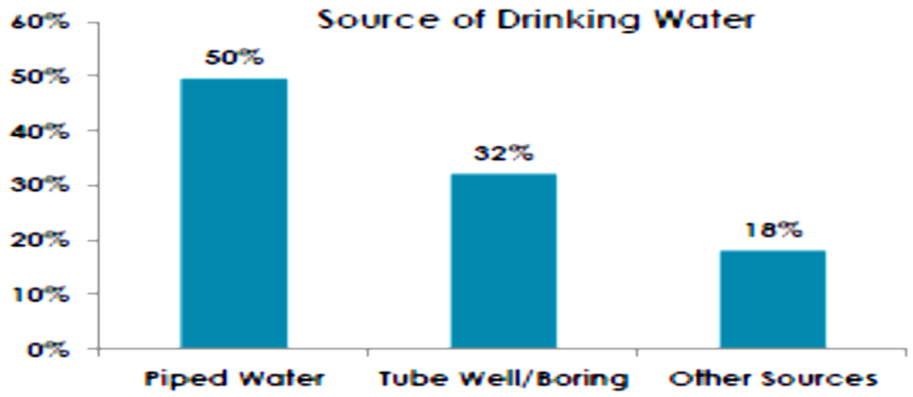
Table 3 shows that urban and rural population growth rate in Pakistan. The ratio of rural population in 1998 was 67.5 percent which was decreased to 61.5 percent in 2018 while urban population ration in 1998 was 32.5 percent which was increased to 38.5 percent in 2018. Urban population was increased six

percent during the period of 20 years. It means majority of the population is still living in the rural areas of Pakistan.

4.1.2 Drinking water:

The resources of drinking water in Pakistan is shown in Figure 2:

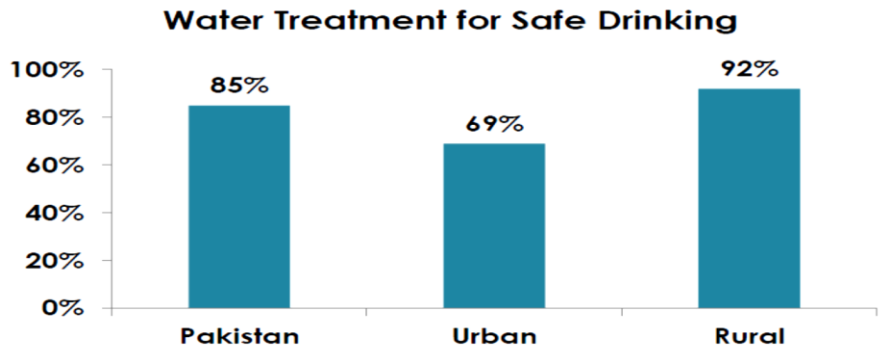
Figure 1: Source of Drinking Water



Source: National Nutritional Survey -2018

The data in figure 2 shows that 50% of Pakistanis use piped water, 32% Tube Well and 18% get drinking water through other sources.

Figure 3: Water Treatment for Safe Drinking Water



The Figure 3 shows that the use of tap water has improved: in 2018 and 41% of households are using tap water. Most of population use contaminated water because it has no resources to treat the water. However, various methods of water treatment, such as cooking (61%), filtration through a filter cloth (10%) and other methods (32%) are used for cleaning water.

Table 4: Groundwater quality data of some cities of Pakistan

City Name	**Water pH**		**WHO Standard**	
	1998	**2018**	**Min**	**Max**
Lahore	7.4–7.6	7.8–8.8	6.51	8.86
Faisalabad	8.0–8.2	8.8–9.8	6.51	8.86
Peshawar	7.3–7.6	8.5–9.8	6.51	8.86
Multan	7.3–7.8	8.5–9.1	6.51	8.86
Jhelum	7.2–8.1	8.4–9.3	6.51	8.86
Rahim Yar Khan	7.1–7.3	8.3–8.5	6.51	8.86
Mardan	7.0–7.2	8.2–9.4	6.51	8.86
Kohat	7.2–7.5	8.4–9.7	6.51	8.86
Rawalpindi	6.7–8.1	8.0–9.3	6.51	8.86
Quetta	7.4–8.4	8.6–9.6	6.51	8.86
Dera Ghazi Khan	7.5–8.1	8.7–9.0	6.51	8.86
Dera Ismail Khan	7.2–7.3	8.4–8.5	6.51	8.86
Khushab	7.2–7.4	8.4–8.6	6.51	8.86
Hyderabad	7.2–8.0	8.1–9.2	6.51	8.86
Karachi	7.1–7.4	8.3–9.6	6.51	8.86
Islamabad	7.1–8.2	8.0–9.3	6.51	8.86

Source: Eastern Mediterranean Health Journal, Vol. 11, Nos 5/6, 2019

Table 4 shows that the concentration range for different quality parameters in groundwater is wide at different locations and often exceeds the recommendations of the WHO. Eastern Mediterranean Health recently conducted a detailed survey of groundwater in 14 major regions of Punjab. In this study, 280 water samples were taken from existing wells, pipeline wells, manual and electric pumps. The water depth in the samples taken varies between 10 and 150 meters. Since 180 samples were contaminated with bacteria, a very poor bacteriological quality of the groundwater was found.

4.1.3 Air Pollution:

Table 5: Air Pollution from Various Sectors of economy (in 1000 tons)

Sector	1998			2018		
	CO_2	SO_2	NO_x	CO_2	SO_2	NO_x
Industry	51429	882	NA	10435	982	NA
Transport	15987	95	NA	22957	105	NA
Power	51062	976	66	72075	996	76
Domestic	35098	30	NA	41048	40	NA
Agriculture	6168	30	NA	8367	40	NA
Commercial	4061	15	NA	6485	32	NA

Source: Government of Pakistan / IUCN (2019, P. 82)

Table 5 shows that in the 20 years from 1998 to 2018, air emissions increased substantially due to expansion of industry, power generation, transportation, agriculture and domestic wastes. For example, sulfur dioxide has increased on an average of 23 times in all industries in the past two decades. Similarly,

nitrogen oxide has increased 25 times, while carbon dioxide has increased four times on average in Pakistan.

Table 6: Three Pakistani cities among 10 most polluted cities of the world

Rank	**City**	**Country**
1	Delhi	India
2	Patna	India
3	Gwalior	India
4	Raipur	India
5	Karachi	Pakistan
6	Peshawar	Pakistan
7	Rawalpinidi	Pakistan
8	Khoramabad	Iran
9	Ahmedabad	India
10	Lucknow	India

Source:http://tribune.com.pk/story/926245.

4.1.4 Depletion of fertile land:

With the expanding population, the utilization of kindling by family units can increment by 3% every year. Wood biomass from Pakistan will be totally expended in the next 10 to 15 years. Deforestation for business purposes has likewise fundamentally quickened woods exhaustion. Boundless nibbling of dairy cattle is additionally a genuine danger. Prolific land is the extent of arable land that is planned for lasting harvests and perpetual fields. Developed land incorporates land that the FAO characterizes as transitory

harvests (two homesteads are tallied once), impermanent prairie for cutting or touching, land under business sectors or brief vegetables and decrepit land.

Table 7: Fertile land ratio in Pakistan

Year	Fertile Area in sq.km	Change Value %
2018	375920	1.15 %
2017	371310	1.43 %
2016	368440	1.77 %
2015	362020	-0.14 %
2014	362520	-0.08 %
2013	362800	0.60 %
2012	360630	0.35 %
2011	359360	1.97 %
2010	352420	-0.11 %
2009	352770	-0.10 %
2008	353130	-1.94 %
2007	360130	-0.34 %
2006	361350	0.47 %
2005	359650	0.33 %
2004	354578	1.44 %
2003	364840	-0.12 %
2002	358422	-0.15 %
2001	360485	-1.65 %
2000	353110	-0.44 %
1999	358899	0.43 %
1998	364065	0.37 %

Source: https://knoema.com/atlas/Pakistan/Agricultural-land-area

Table 7 shows the statistics of fertile land ratio in Pakistan from 1998 to 2018. The data reveals that the fertile land ratio, which was overall 364065sqft (0.37%) in 1998, has been changed into 375920sqft (changing ratio 1.15 %) in 2018. In 2018, agricultural land area in Pakistan was 375920sq. km.

Figure 4: Fertile Land Ratio of Pakistan

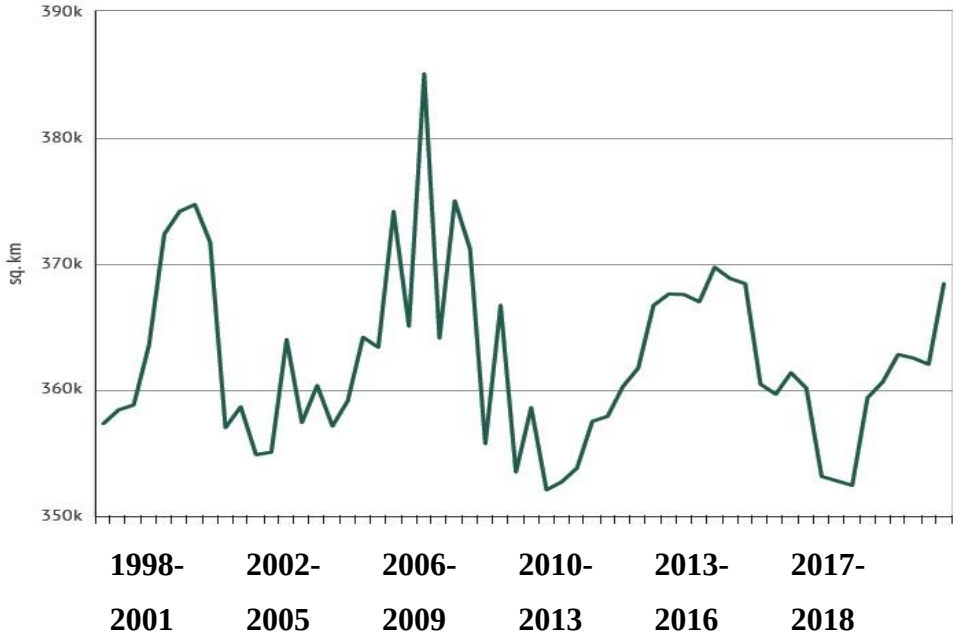


Table 8: Depletion of Soil Fertility and Negative Nutrient Balances

Province	**N (kg/ha)**		**P2O5 (kg/ha)**		**K2O (kg/ha)**	
	1998	**2018**	**1998**	**2018**	**1998**	**2018**
Punjab	-19.1	-8.5	-10.4	-10.6	-23.7	-27.4
Sindh	-5.1	-7.1	-8.4	-11.6	-7.8	-17.5
KPK	-9.5	-10.6	-8.5	-10.6	-20.8	-29.4
Baluchistan	-21.5	27.1	-7.5	-11.5	-14.1	-25.5
Pakistan	-15.5	-9.5	-9.7	-10.8	-20.1	-25.7

Source: http://www.eco-web.com/editorial/060715.html

Table 8 shows a nutrient balance for Pakistani soil that reflects serious mining developments. All provinces have negative nitrogen balances, even though the Punjab deficits are decreasing. The negative phosphorus balance in

Punjab has not changed significantly in the past ten years, but has worsened in the other three provinces. Punjab had the highest deficit from 1998 to 2018. The potash balance has deteriorated in the past ten years. Loss of productivity due to soil degradation is estimated at $ 353 million a year, and pasture productivity losses are between $9 and $160 million a year. These statistics show that environmental problems are increasing in Pakistan rapidly. According to an estimates suggest that the effects of biodiversity deterioration and loss on productivity and public health account for 3% of GDP per capita.

4.1.5 Migration from rural to urban areas:

Table 9: Rural to Urban Migrants at Provincial Level (1998-2018)

Year	Punjab	Sindh	NWFP	Balochistan	Total
1998-2000	.89	118.08	118.26	85.58	91.56
2001-2003	.32	102.20	105.34	125.74	90.25
2004-2006	.58	112.72	89.71	118.85	95.94
2007-2009	.99	126.62	103.30	104.88	104.99
2010-2012	.40	127.13	103.22	141.21	104.20
2013-2015	.10	113.49	87.93	92.77	96.49
2015-2018	.47	107.23	99.14	103.85	91.28

Source: Author's tabulation from LFS (1998-2018).

Table 9 shows the relationship between farmers and urban migrants at the provincial level. It appears that, with the exception of 2007-2009 and 2010-2012, migration was high from rural to urban areas. However, the distribution of these immigrants across the provinces at provincial level has led to surprising results. The number of immigrants in Punjab is higher than in the

other provinces. In Sindh, the opposite seems to be the case for men who dominate the migration from rural to urban areas. In all other years, men dominate migration from rural to urban areas.

4.1.6 Per capita income:

Table 10: Per capita income by Type of Capital and Country Income Level

Year	GDP Per Capita (US $)	Annual Growth Rate (%)
2018	$1,473	0.41%
2017	$1,467	7.19%
2016	$1,368	0.87%
2015	$1,357	8.43%
2014	$1,251	3.50%
2013	$1,209	0.90%
2012	$1,198	2.84%
2011	$1,165	17.82%
2010	$989	3.21%
2009	$958	-3.32%
2008	$991	9.11%
2007	$908	8.51%
2006	$837	22.51%
2005	$683	9.22%
2004	$625	15.02%
2003	$544	12.46%
2002	$483	-2.39%
2001	$495	-4.66%
2000	$520	14.37%
1999	$454	-1.50%
1998	$461	-3.18%

Source: Pakistan GDP Per Capita 1960-2020 | MacroTrends

The role for migrants is that men move alone and leave behind families in rural areas. The gender ratio in Punjab has increased over time. From 1998-2000 to 2017-2018, the proportion of male immigrants increased by 2.58 percentage points. The decline in gender in Sindh and North West Frontier indicates an increase in the share of women in country-to-city migration. In Baluchistan, the proportion of male immigrants from rural to urban areas has increased over time.

4.2 Empirical Analysis:

4.2.1 Econometric Model:

The Econometric Model of this research study is given as under;

$Y = b_0 + b_1U_1 + b_2W_2 + b_3AP_3 + b_4DFL_4 + b_5M_5 + b_6P_6 + e$

Where

Y	Depletion of Natural Resources
U_1	Urbanization
W_2	Water
AP_3	Air pollution
DFL_4	Depletion of fertile land
M_5	Migration from Rural to urban areas
P_5	Per capita income
e	Error Term

Table 11: Results of descriptive Analysis of variables:

	DNR	W	AP	DFL	U	M	P
Mean	0.031548	0.091741	0.136364	6.997727	0.154059	6.997727	0.154059
Maximum	0.0896	0.2003	0.2	17.7	0.293	17.7	0.293
Minimum	0.0036	0.031	0.08	1.05	0.0431	1.05	0.0431
Std. Dev.	0.021386	0.042826	0.030945	5.916112	0.055302	5.916112	0.055302
observations	20	20	20	20	20	20	20

Source: Authors' Calculations drawn through E-Views software

Table 11 provides an overview of the statistics used in this study. The data shows that the lowest mean of the DNR (deterioration of natural resources) is 0.031548 and the standard deviation is 0.021386, while the maximum mean of the LDF is 6.99 and the deviation type is 5.91. The mean values of W (water), AP (air pollution), U (urbanization), M (migration) and P (per capita income) are 0.09, 0.13, 0.15, 6 99 and 0.15. The DNR is considered a dependent variable, while the other variables are independent variables. The least square method is used in this data contains 20 observations and data collected from 1998 to 2018.

4.2.2 Correlation Analysis:

The results of correlation analysis are shown in Table 12:

Table 12: Results of Correlation Analysis

	DNR	W	AP	DFL	U	M	P
DNR	1.0000						
W	-0.0509	1.0000					
AP	-0.2047	0.4082	1.0000				
DFL	-0.0123	0.1010	-0.6472	1.0000			
U	0.3467	-0.0592	0.1002	-0.0104	1.0000		
M	-0.0231	0.1011	0.165	-0.5452	0.5415	1.0000	
P	0.3751	-0.0443	0.172	-0.0215	-0.368	-0.0104	1.0000

Source: Authors' Calculations through E-Views software

The degree of relationship between two existing variables is called correlation. These relationships can be positive or negative. The results were calculated through E-View software. The results show that correlates positively with Depletion of Natural Resources, Water, Air Pollution, Depletion of Fertile Land, Migration and Per Capita Income are inversely related to Depletion of Natural Resources.

4.2.3 Multiple Regression:

The results of multiple regression are shown in Table 13.

Dependent Variable: DNR

Method: Least Squares

Sample (adjusted): 1998 2018.

Table 13: Results of Multiple Regressions

Variable	Coefficient	Std. Error	t-Statistic	Prob.
W	0.08003	0.0752	1.0348	0.0471
AP	0.14875	0.13481	1.05201	0.0150
DFL	-0.4447	0.23481	1.8277	0.0000
U	-0.0017	0.00148	1.2584	0.0251
M	0.15563	0.06244	1.71481	0.0301
P	0.07001	0.0824	-1.0148	0.3248
R-squared	0.58248			
F-statistic	1.24813			
Prob(F-statistic)	0.34351			

We have found, from the estimation, that Air Pollution (AP), Water (W) and migration from rural to urban areas (M) have positive and significant impact on depletion of natural resources (DNR). It is shown from the values of 1.0348, 1.05201, 1.8277, 1.2584 and 1.71481 respectively on depletion of natural resources in term of increase Urbanization rate have significant positive impact on Depletion of Natural Resources (DNR) while only Per capita income (P) has negative and insignificant impact on Depletion of Natural Resources (DNR) because its show from t-value -1.0148 and p-value 0.3248. Therefore, H_1 is rejected and the Null Hypothesis H_0 is accepted. R-squared value is 0.58, which means above 50% variation in dependent variable (depletion of resources) explained by independent variables (Urbanization, Water, Air pollution, Depletion of fertile land, Migration from Rural to urban areas, Per capita income).

5. FINDINGS OF THE STUDY:

Key findings of this research study are as follows: -

Pakistan is a rapidly urbanizing country. Population growth rate in large cities is higher than in small and medium-sized cities. Although urbanization has brought great benefits to the country's economic development, rapid and uncontrolled urbanization has the following serious consequences:

- Housing shortage leads to development of Katchi Abadis (slum areas).
- Education and health problems increase in urban areas.
- Traffic and transport problems are increased.
- Environmental pollution causes environmental damage in cities.
- Rising security problem and deterioration of law and order.
- Pollution is increasing from uncontrolled development, industrialization and increasing traffic. People, animals and plants are suffering from various types of diseases.
- Rapid consumption of natural resources (such as water, wood, fossil fuels and fertile soils), resulting in a lack of these resources for future generations.
- Global warming and climate change due to the increased use of energy and CFCs and the greenhouse effect from population explosions, the thawing of glaciers and the depletion of the ozone layer is also causing earthquakes, wind storms and ocean volcanos in Pakistan.

6.CONCLUSION:

Uncontrolled population growth rate is a major cause of the deterioration of the urban environment in Pakistan. The development of

transport sector and exponential growth rate of vehicles in Pakistan is spoiling clean environment is producing high rate of emission, resulting in the spreading of diseases, disabilities and number of deaths among children, young and old persons. Due to migration from rural to urban areas, slums are developing where no proper living facilities are available and poor people are living in very bad and unhygienic conditions. The growth of different industries such as fertilizers, cement, metals, leather, and textiles around big cities are causing huge pollution and emission level in certain cities has risen to dangerous level. It is creating health hazards and people are seriously suffering from chronicle diseases. The lack of urban planning and government legislation can lead to the growth of the toxic industry near residential areas. Improper handling of liquid and solid waste can lead to environmental damage and ultimately to the transmission of diseases.

7. POLICY RECOMMENDATIONS:

In the light of above discussion, we would like to make to the following policy recommendations: -

- The government should prepare a master plan for urban areas because provides a coherent policy framework that includes comprehensive instructions for the future development of the city or region. The entire area of the city and region should be planned to combine compatible uses and separate incompatible uses. With good building management and development, extremely low and high densities can be avoided and adequate lighting and ventilation levels guaranteed. The compact design, mixed-use zones and suitable public spaces can reduce average trips to workplaces, schools and commercial areas, thereby reducing fuel consumption and pollution.

- To control air pollution, good traffic management and the provision of suitable bus systems (bus, light rail or public transport systems for subways) may be introduced. Traffic control technology, vehicle inspections and noise and smoke protection may be ensured particularly in central urban areas
- Developing parks and open space systems in cities and planting trees on streets can help maintain high levels of oxygen in cities. New forests should be planted regionally and tree planting campaigns should be carried out in cities. Cities should promote gardening and gardening.
- Appropriate infrastructure services such as water, sewage and drainage systems, electricity and natural gas can be provided properly. Groundwater and surface water should be used after treatment to prevent the spread of waterborne diseases. Likewise, the development of appropriate wastewater treatment systems will reduce groundwater pollution and improve general environment. All cities must have adequate solid waste collection and disposal systems.

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CONTRIBUTION OF AUTHORS AND CONFLICT OF INTEREST

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