Article

Impact of Trade Liberalization on the Environment: The Case of Afghanistan

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Abstract

The melting of icebergs, decomposition of the ozone layer, greenhouse gasses, nuclear wastes all together with many other environmental related disputes have turned environmental safety and protection into the priority of environmentalists' and governments in the recent decade. The earth is losing its ability to further back the future generations of living species and the human being with their immature decisions and inventions is liable for this situation of the environment. In this study, we investigated the possible impact/impacts of the trade Liberalization on the environment by employing the Ordinary Least Square (OLS) method for a data period from 2005-2017. Trade Intensity and the three effects of trade liberalization: Scale Effect, Composition Effect and the Technic Effect (Independent Variables) and pollution (Dependent Variable) are the variables under study. The findings revealed a negative relationship between pollution and trade intensity and a positive relationship between pollution and the effects of trade liberalization. Combining the estimates of all three effects yields a somewhat surprising conclusion that freer trade appears to be good for the environment. Therefore, Afghanistan government should be open to international market but accompany trade liberalization with environmental safety and protection policies in order to improve the sustainability of environment.

JEL Classification: *F1 1, Q25*

Key words: *Afghanistan, Environment, Pollution, Trade liberalization*

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Introduction

Humans with their unlimited wants and scarce resources have developed and came up with several alternatives to utilize these resources most efficiently for their maximum benefits. They produce goods and services to satisfy their own needs and to trade it with others for further mutual benefits (Dean, 1992). Trade has always been a key medium for generation of wealth and sustainability of economies. Therefore, governments and different organizations are continuously working to remove trade barriers up to a possible extent and permit it act free and boost up economies (Batra et al, 1998). Since 1980, trade liberalization turned into a hot topic in the economic world and it was during 1990's that it's favoring impacts were observed in the same ground (Beghin, 1994). Trade liberalization enhanced productivity and helped fought poverty; since more jobs were created and employment increased (Selden, 1994). According to IMF (2011) without being open to the world economy, no country has achieved economic success (in terms of increases in standards of living for its people) in the recent decades; for instance, in East Asian countries tariff fallen from 30 per cent to 10 per cent, which resulted in achievement of economic laurels (Alpay, 2000). These countries along with many other developing countries developed competitive advantage in production of certain product based on their endowed factors of production by opening their economies. Liberalization of trade eased the movement of capital, goods and services across national borders throughout the globe, which was dead impossible before, allowed producers to manage cost and prices, and positively altered the world economy (Ulph, 1994 and Lee, 1996). Likewise, trade liberalization had social reflexes, for as it brought nations close together by diffusing their cultural aspects, thereupon facilitated the process of globalization and turned the Earth into a global village (Porter, 1991 and Bhagwati, 1993). Due to such social and economic returns of trade liberalization, the concept appeared appealing until its environmental brunt caught the sight of governments and Environmental Protection Agencies (EPAs) across the globe.

Trade liberalization, with an aim to reduce trade barriers for the practice and promotion of free trade and as a sequel, certain relaxation was introduced to environmental and industrial policies and regulations that gave industries' a free hand to leak certain pollutants and harmful chemicals into environment. On the other hand, production of goods and services leads to creation of wastages thus making environment as cesspool of pollution. The worldwide expansion of economic activities further implicates the expansion of production, extraction of natural resources,

consumption of fossil fuel and trade; these factors collectively followed up highly undeserving upshots which are the vast and substantial challenges that our world is facing today. Among these challenges, Deforestation and global warming are the two weighty and more known of all challenges and yet require rapid and brisk ways for dealing, otherwise the Earth will go back beneath water and all of it becomes a home to aqueous creatures only (Copeland and Taylor, 1999). Destruction of ozone layer is another environmental and biological challenge, which is interlinked with both deforestation and carbon dioxide (co_2) formation from consumption of fossil fuel. As new issues, related to environmental degradation came into limelight like ozone-layer depletion, global warming and acid rain, loss of biodiversity, the subject matter of economics is examined thoroughly.

With all the evidences from the literature, that trade liberalization is depreciating Earth's capacity to back future generations of terrestrial animals. Therefore, balancing the pros and cons of trade liberalization concludes that the burdens from it overshadow the gains and that trade liberalization is not a salutary concept in aggregate. This is specifically stated for the case of developing economies, while for developed economies, liberalization of trade is followed by positive and encouraging results in medium to long periods (Ekins et al, 1994 and Folmer, 1993). Developed economies enjoy such a contrast as they employ advanced and environmental friendly technology and processes as well as well-educated and skilled labor. Another reason is that they avoid inside country production and run most of their production activities in developing economies where environmental regulations are weak in response to competitive pressure inserted by globalization. These evidences altogether confirm a logical linkage between trade liberalization and environment that help in predicting the future capacity and challenges of environment as well as future trade patterns of nations individually and collectively. Many theoretical works identified several hypotheses that link liberalization of trade with environmental quality, but lack of empirical verifications is a serious challenge. In under-developed economies like Afghanistan this critical issue till this date has never been given any heed as not a single study has brought this into limelight the nature of relationship between trade liberalization and environment. In this purview, this study focuses on the same theme evaluating the empirical and theoretical linkage between trade liberalization and environment in Afghanistan context, as it will help the policy makers to address the real problem with desired and realistic solutions.

2. Literature Review

Several theoretical and empirical studies with different modeling approaches that have investigated the linkage between trade liberalization and the environmental quality provide evidences for the three possible outcomes: (i) trade liberalization leads to positive environmental side effects, (ii) trade liberalization contributes to environmental degradation and (iii) the relationship between trade liberalization and the environment is spurious. Therefore, still a universal conclusion related to the environmental impacts of trade liberalization is left dubious. In this connection some of the studies from every section is taken into consideration to provide a strong foundation for the study.

2.1 Linkage between Trade and Environment

It may seem that the work on trade and environment is very recent because of the increased public awareness of actual and potential threats to the global environment; nevertheless, pioneers of this literature began publishing their work as early as 1971 (Baumol 1971, Magee and Ford 1972, and Walter 1973).

The interest in trade and the environment goes beyond academics. The international community started to address these issues at the Stockholm Conference in 1972. In the 1980s, the world witnessed a very successful international environmental agreement: The Montreal Protocol on the substances that deplete the Ozone Layer. This protocol with its trade provisions as an enforcement tool made a prominent example for other global problems such as climate change. The Uruguay Round of the GATT included heated debates between developing and developed countries on environmental issues; however, there were no significant action plans except for the establishment of Committee on Trade and Environment (CTE) under the World Trade Organization. CTE is committed with investigating methods for how conflicts among trade liberalization, economic development and environmental protection can be resolved. Later, United Nations (UN) organized a conference on climate change in Kyoto in December 1997 to address the problem and take concrete steps.

Earlier, Dean (1992), Beghin et al. (1994), and Ulph (1994) surveyed the literature on trade and the environment. Ekins et al. (1994) edited a collection of papers on the same subject. Dean's (1992) looks at different aspects of trade and the environment literature like international competitiveness and environmental regulation. It further included subheadings such as relocation of industries to pollution havens, regulation and comparative advantage; transnational pollution and trade; product standards as non-tariff barriers; trade in hazardous substances; and (v) the

implications of trade liberalization for environmental degradation and natural resource use. Grossman and Krueger (1993) conducted a study based on Environmental Kuznets Curve and indicated that environmental conditions descends initially as per capita income rises, but as it further increases beyond a milestone, the environmental conditions improve. Ekins et al. (1994) present a critical assessment of the gains from trade argument from, mainly, an ecological perspective, and offer suggestions for ecologically accelerated trade deregulation.

2.2 Linkage between Growth, Trade Liberalization and the Environment

The argument that satiates most of the economists is free trade benefits all participants. That is why trade liberalization is considered a very important step towards development by many economists. Nevertheless, as indicated by Corden (1974), "Theory does not 'say' that 'free trade is best'. It says that given certain assumptions, it is 'best'." As environmental issues were not a big concern at the time when Samuelson's gains from trade arguments were introduced (Samuelson 1962), one such assumption was that the environmental impact of trade liberalization policies could be neglected. With the recent emergence of environmental consciousness, the gains from trade argument are being questioned deeply from this side. As Dean (1992) puts it, at the center of debate is whether the trade reforms will lead to depletion of non-renewable resources and increased environmental degradation, i.e. a type of development which cannot be sustained. Thus, it is essential to identify the environmental consequences of trade liberalization. This is a quite demanding task. Grossman and Krueger (1993) and Lopez (1994) studied the effects of economic growth, trade liberalization and foreign direct investment on the environment. According to their studies, the increase in wealth and expansion of trade's access to better technologies and environmental practices creates a tendency towards cleaner technology and production processes which in turn rise the 'technique effect'. Due to 'composition effect', the preferences are shifted towards cleaner goods; and the increase in pollution due to expanded economic activity and the greater consumption made possible by more wealth refers to 'scale effect'. These researches conclude that only through the 'scale effect' trade leaves a negative impact on the environment.

2.3 Trade Liberalization with Positive Environmental Consequences

Several studies turn green light on for those economists who advocate trade liberalization. According to Grossman and Krueger (1991) the impact of trade liberalization on environment is decomposed into three classes viz scale effect, composition effect and technique effect. The conclusion drawn

from these three effects suggests that trade liberalization creates positive environmental consequences under two conditions: i) when technique effect outweighs scale and composition effects (the case of countries with comparative advantage in dirty industries) or when a technique and composition effect outweighs the scale effect (the case of countries with comparative advantage in clean industries). Grossman and Krueger (1991 and 1995), Bhagwati (1993), Panayotou (1993), Selden and Song (1994), suggested that for income levels higher than a threshold level the positive impacts of technique and composition effects exceed that of scale effect. Lucas et al. (1992) found that lower levels of trade malformations further reduced the growth of toxic intensity in countries where GDP growth is faster and rates of increase in toxic intensity are lower for fast growing low and middle income countries. Antweiler et al (1998) set out a theory to assess the environmental sequels of international trade. Theoretical findings of the study revealed that identifying a simple correlation between trade openness and environmental quality is ineffective, and suggested that trade openness; comparative advantage and pollution must be taken under consideration. The empirical investigation of study found that higher openness leads to lower emission of noxious gases like sulphur dioxide but also lead to trade induced output and income. Regarding this, associated is scale and technique effect on pollution concentration. The overall impact of further liberalization of international trade through scale, composition and technique effects lead towards a reduced level of Sulphur dioxide concentration for an average country. They concluded the study stating that free trade is good for the environment. Ferrantino and Linkins (1999) determined the potential changes in toxic industrial emissions arising from trade liberalization. Based on their findings, trade liberalization and environmental protection are complementary on a global scale. In addition, the high income induced by open trade leads to greater demand for environmental regulations requiring greater investment in clean technologies. Copeland and Taylor (1999) provided that when dirty industries operate along with environmentally sensitive industries, the pollution arising from dirty industries lower the productivity of environmental sensitive sector and trade liberalization handles the issue by separating such incompatible industries across countries with complete specialization.

2.4 Trade Liberalization with Adverse Environmental Consequences

As elaborated earlier, there are negative environmental paybacks of trade liberalization when the scale and composition effects overshadows the technique effect in countries with comparative advantage in dirty

industries, similarly when the scale effect overshadows the technique and composition effects in countries with comparative advantage in clean industries. According to this view in lack of appropriate environmental measures in the current system governed by GAPP, more openness of trade follows up more environmental damages. Such damages are the result of increased production and consumption activities, overuse of fertilizers, pesticides and higher emission of carbon dioxide, sulphur dioxide and nitrogen oxide. Additionally, the increase in competition as a sequel of freer trade leads to eco dumping phenomena. Grossman and Krueger (1993) examined impact of investment liberalization on emission changes for hazardous waste in Canada, the United States and Mexico under the North American Free Trade Agreement (NAFTA). They found that trade has a negative scale and composition effects in all the three countries. Ekins et al. (1994) edited a collection of studies, which were constructively critical of the gains from trade arguments form environmental perspective. Their most revelatory arguments included like economic growth benefits environment when it directs resources toward environmental quality, not generation of additional resources and this is not observable in outward oriented economies and secondly, there are irreversible damages of economic growth to environment that the additional resources generated by free trade cannot help; increase in transportation volume caused by trade liberalization contributes heavily to energy related environmental damages. Another remarkable finding of the paper is that the traditional policies designed to overcome the common resource problem is not adequate and it is making the situation even worse. In support of this study Chichilnisky (1994) provided that the introduction of unit tax for the use of environmental resources leads to more rather than less extraction of the resource as harvesters start working harder to extract more of resources in order to keep up with their pre-tax consumption behavior. Therefore, the study suggests policies aiming at correcting the property rights problem. Real life examples of such property-rights approaches provided by Chichilnisky (1994) are agreements involving debt-for-nature swaps; allocation of a piece of the Amazon to its Indian population by the government of Ecuador; the agreement between US pharmaceutical industry and Costa Rica on the use of genetic information within its forests.

There are common issues raised from theories of relationship between trade and environment. Does trade openness enhance income level and gives developing economies access to environmental friendly technologies. How disturbing impact of trade on environment is justified? Is technique effect of trade only determined by income growth and what is the extent of this effect? How the junking of outdated and old technology in developing

countries can be justified if the technique effect of trade liberalization is real? What variables or means can decide the direction of composition and scale effects of trade and their effects on pollution? Considering such issues, the current study focuses on the impact of trade liberalization on pollution in Afghanistan.

3. Research Methodology

The model applied in this study is similar to the one employed by Folorunso et al. (2006) with the only difference that we have used only one proxy (pollution) for environmental quality instead of two (pollution and environmental degradation) due to data limitation in Afghanistan context. The data is yearly based from 2005-2017 and accessed from World Bank, Uncomtrade, UNCTAD and Central Statistical Organization of Afghanistan. The operationalization of variables is defined as follows:

- Trade intensity or 'openness' is measured by adding imports and exports in year 't' divided by GDP in year 't' (Antweiler et al., 2001 and Folorunso et al., 2006), thus: [(IMPt + EXPt) / GDPt] = Trade intensity.
- The composition effect is captured by $\mathrm{K_t}$ / $\mathrm{L_t}$ where $\mathrm{K_t}$ is capital in year 't' and $\mathrm{L_t}$ is labor in year 't'. Capital is measured as the fixed capital formation, while labor is derived as the product of total labor force and the deflated average minimum wage for all sectors of Afghanistan economy between the years 2005 and 2017. This is the same approach utilized by Fabayo (1987) where labor is derived as both production and non-production workers. The only difference in this analysis is that we moved a step further to compute the real monetary value of capital for uniformity with capital. This step is similar to the one applied by Folorunso et al. (2006).
- Scale of economic activity is measured in terms of real gross domestic product per square kilometer (i.e. real GDP/$\mathrm{km^2}$), therefore, it is represented as $\left(\frac{RGDP_t}{K}\right)$ = scale effect.
- Technique effect as per Folorunso et al. (2006), real gross national income (real GNI) has been used to capture the technique effect.

Our model is specified as:

$$POL_t = \alpha + \beta_1\left(\frac{EXP_t + IMP_t}{GDP_t}\right) + \beta_2\left(\frac{K_t}{L_t}\right) + \beta_3\left(\frac{RGDP_t}{K}\right) + \beta_4(RGNP_t) + \mu_t$$

Where pollution POL_t is the yearly quantity of carbon dioxide emission due to flaring and combustion processes in Afghanistan only.

4. Results and Findings

Based on the data and the application of the OLS model through SPSS V 24.0, the following results were achieved.

Table 1: Descriptive Statistics

	Mean	Std. Deviation	N
Pollution	0.2493223	0.1196693	13
Trade Intensity	2.3809509	2.3836234	13
Composition Effect	351.29142	42.761362	13
Scale Effect	57.483639	48.366142	13
Technic Effect	1.675E+10	4.565109	13

Source: Data output from SPSS

Table 1 displays descriptive statistics for the variables of the study. In order to apply linear regression though Ordinary Least Square; the data needs to be in consensus with the assumptions of OLS, only then the model can generate valid results.

Table 2: Correlations

		Pollution	Trade Intensity	Composition Effect	Scale Effect	Technic Effect
Pearson Correlation	Pollution	1	-0.022	0.662	-0.354	0.869
	Trade Intensity	-0.022	1	-0.194	-0.498	0.234
	Composition Effect	0.662	-0.194	1	-0.28	0.78
	Scale Effect	-0.354	-0.498	-0.28	1	-0.531
	Technic Effect	0.869	0.234	0.78	-0.531	1
Sig.(1-tailed)	Pollution	0	0.472	0	0.117	0
	Trade Intensity	0.472	0	0.262	0.042	0.221
	Composition Effect	0	0.262	0	0.177	0.001
	Scale Effect	0.117	0.042	0.177	0	0.031
	Technic Effect	0	0.221	0.001	0.031	0
N	Pollution	13	13	13	13	13
	Trade Intensity	13	13	13	13	13
	Composition Effect	13	13	13	13	13
	Scale Effect	13	13	13	13	13
	Technic Effect	13	13	13	13	13

Source: Data output from SPSS

Table 2 shows the correlations among the variables. None of the variables shows serious correlation as the values are well below 0.8. The highest value is 0.66 which indicates that the variables are not closely related to each other. Furthermore, the VIF and Tolerance Statistics as presented in table 5, which enables us to determine the correlation existing among the independent variables. The VIF and tolerance values are below

10 and above 0.2 respectively as presented in table 5 below, which indicates an acceptable degree of correlations among the independent variables.

Table 3: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.920[a]	0.846	0.769	0.057546907	1.383

a. Predictors: (Constant), Technic Effect, Trade Intensity, Scale Effect, Composition Effect, Technic Effect,
b. Dependent Variable: Pollution

Source: Data output from SPSS

Table 3 represents the model summary of the applied regression analysis that reveals an R square value of 0.84, which in turn indicates an 84 per cent variance between the independent variables of the model (Trade Intensity, Scale Effect, Composition Effect, Technique Effect) and the dependent variable (pollution). The adjusted R square tells that 77 per cent of the variability on pollution is explained by the model.

Table 4: ANOVA

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	0.145	4	0.036	10.973	.002[b]
	Residual	0.026	8	0.003		
	Total	0.172	12			

a. Dependent Variable: Pollution
b. Predictors: (Constant), Technic Effect, Trade Intensity, Scale Effect, Composition Effect

Source: Data output from SPSS

The ANOVA results displayed in table 4 indicate a significance level of less than 0.05 which confirms that the adjusted R square is Valid.

Table 5: Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-0.41	0.21	-	-1.91	0.092	-	-
	Trade Intensity	-0.02	0.01	-0.06	-0.33	0.753	0.494	2.024
	Composition Effect	0.03	0.03	0.39	1.391	0.202	0.241	4.157
	Scale Effect	0.06	0.21	0.04	0.228	0.825	0.569	1.756
	Technic Effect	1.57	0.31	0.6	2.036	0.076	0.223	4.488

Source: Data output from SPSS

The coefficient result of the regression model is displayed table 5 indicates that pollution is negatively related to trade intensity and positively related to Scale Effect (real GDP per square kilometer); Composition effect (capital to labor ratio) and the Technique Effect (Real GNP).

Only trade intensity is negatively related to pollution in a sense that 1% change in trade intensity brings about an opposite change of 0.064% in the level of pollution and moreover; suggesting that total effects of trade intensity are not detrimental to the environment. This implies that more openness and integration to the world economy is environmental friendly for Afghanistan. Our result is in line with the empirical findings of Alam et al. (2011) and Tariku (2018) hence: leading us to reject the pollution haven hypothesis while confirming the factor endowment hypothesis, which states that differences in factor endowment and technologies determine the patterns of trade in a region. This infers that with more liberalization of trade; the level of pollution would fall in capital scarce countries like Afghanistan and rise in capital-intensive countries.

The model results further indicate that Real GDP per square kilometer (scale effect); Real GNP (technic effect) and capital to labor ratio (composition effect) are positively related to pollution, thus, indicating that the Scale, Technique and Composition effect are detrimental to the environment.

The scale effect (GDP/square kilo meter) is positive yet very small (0.04%) on the pollution because of low GDP and no production base in Afghanistan. The existence of a positive relation between scale effect and pollution implies that the scale effect of trade liberalization supports theory in the context of Afghanistan and that trade liberalization is not a happy fit for this country- as the expansion in the scale of economic activity has negative effect on the environment and positively contributes to carbon emission. The result is conformable with the empirical findings of Grossman and Krueger (1991, 1993, and 1995); Antweiler et al (2001); Tariku (2018) and is in accordance with theoretical expectations- the increase in scale of economic activity as measured by growth in output claim more consumption of environmental resources which leads to more pollution emissions. Likewise; the composition effect of free trade is an evidence for theory as it is positively related to emission of pollution and has serious impacts on the environment. The composition effects of trade liberalization on natural resource utilization are thus making freer trade feasible to natural resource utilization and hence negative to the environment. Trade intensity and the technique effects of liberalization do however significantly explain resource utilization. Since the technic effect of trade liberalization is

strong (0.59%) and positive on pollution: it serves as an argument against the pollution haven hypothesis which states that pollution intensive industries shift from their home countries where environmental regulations are stringent to countries where these regulations are relaxing. Such a positive and strong relation between technic effect and pollution creates a propensity towards cleaner technology; production processes and techniques. The result of coefficient of regression are in accordance to Grossman and Krueger (1993) and Lopez (1994) studies on the effects of trade liberalization, foreign direct investment and economic growth on the environment. From other side, the coefficient results reflect that the technic effect is producing the most impact on the pollution level while the scale effect possesses the least impact on it. In Afghanistan context, the technic effect alone outweighs the scale and composition effects with a difference of 0.16%, which implies that free trade is good for environment from pollution aspect for Afghanistan.

5. Recommendation and Policy Implication

Many researchers by employing different approaches, conducted several studies to give a clear answer for the long time argument between economists and environmentalists on the matter of trade liberalization and as a result some supported this concept, some rejected it, while others came up with no link between trade liberalization and the environment and ultimately all the studies and researches on the linkage between trade and environment concluded to an ambiguity. In this study simple linear regression model is employed to measure the degradation of environment caused by liberalization of trade and 'pollution' used as a proxy for environmental degradation against four independent variables to estimate the pollution: trade intensity, scale effect, composition effect and the technic effect. The availability of data has been the major obstacle for accomplishment of this study and a reason for having only one proxy (pollution) for quantifying environmental degradation.

As per the findings, the relationship between independent variables (trade intensity, scale effect, composition effect and technique effect) and the dependent variable (pollution) of the study, the results disclosed a negative relationship of 0.06 per cent between trade intensity and the pollution level. This means that more liberalization of trade would result Afghanistan's integration to the world economy, thereby reducing the level of pollution and hence beneficial to environment from trade aspect. This result is confirmed by studies of Triku (2018) which were conducted in countries in same level of economic phase of transition (Tanzania) as Afghanistan. Furthermore, the existence of a negative relationship between

trade intensity and the level of pollution, rejects the pollution haven hypothesis (stating the shift of pollution intensive industries from countries with tight environmental regulations i.e. developed countries; to countries with loose regulations i.e. developing/under developed countries), for the reason that if the pollution haven hypothesis was holding right, then the pollution level would have risen with more trade; therefore, the study supports the alternative, factor endowment hypothesis (which sees the differences in the factors of production across countries as the underlying reason behind trade). The expansion of this finding proposes that the level of pollution would rise in capital-intensive countries and fall in capital scarce countries like Afghanistan.

The scale effect (GDP/square kilo meter) of trade liberalization is positively related to the emission of pollutants in the environment and is in line with the theoretical expectations- increase in the economic activities require more utilization of environmental resources that leads to accumulation of more pollutions. Grossman and Krueger (1991, 1993, and 1995), Antweiler et al (2001) and Tariku (2018) reached to a similar conclusion regarding the scale effects of trade liberalization on the environment. In this study, scale of economic activities has the least impact on the environment, as a unit per cent change (increase) in the scale effect would increase pollution level by (0.04 per cent) and such a meager effect is because of non-existence of manufacturing base in Afghanistan.

Since the composition effect of trade liberalization is 0.39 per cent and positive on the environment-contradictory to what the theory states. It demystifies that in a country like Afghanistan, which is capital scarce and labor abundant, the $\frac{K_t}{L_t}$ ratio is not detrimental to the environment. Higher value of $\frac{K_t}{L_t}$ leads to higher emission of pollution and in the context of Afghanistan (labor abundant and capital scarce) the value of $\frac{K_t}{L_t}$ will remain the same as long as the situation does not change. Both environmental regulation and capital to labor ratio determine pollution formation. The technic effect of trade liberalization is high (0.6 per cent) and positive on the pollution therefore; it serves as an argument against the Pollution Haven Hypothesis which states that with liberalization of trade the developed countries will have cleaner environment and under developed/developing countries will have more degraded environment. The result of the technic effect suggests that Afghanistan should impose strict trade barriers for polluting industries and that Trade liberalization should be accompanied by government investments in ecofriendly industries like education; training; Research & Development to equip nation to take new employment

opportunities and protect environment during period of trade liberalization so that country's employment pool increases and environment will be protected simultaneously. Pollution intensive sectors may be subject to opposing forces of comparative advantage since these sectors are also capital intensive yet rejects with low environmental regulations tend to be those that are least capital abundant.

5.1 Policy Implications

Based on the findings, the study proposes following recommendations, which are listed below:

1. Afghanistan should be ready to participate actively in future negotiations so as to ensure that decisions on areas where Afghanistan exhibits comparative advantage are not compromised
2. Afghanistan should ensure that any trade agreement does not contain provisions that jeopardize its environment. Trade liberalization should be accompanied by government investments in education, skills, research and development so as to equip people to take advantage of new employment opportunities, and to create adequate safety nets to protect the environment during the period of trade liberalization.
3. There is also an urgent need in Afghanistan for the involvement of all stakeholders in the design, implementation, monitoring and evaluation of projects and programs that are bound to affect their lives and the environment.
4. Afghanistan should enforce environmental laws at all levels of governance so as to halt the indiscriminate CO_2 emissions from the automobiles, firms and industries which emit hazardous gases into the environment.
5. The government of Afghanistan needs to review the current trade policies with a view to strengthening the positive aspects of trade and minimizing the negative environmental impact of trade.
6. Trade should be managed in such a way that the new environmental challenges are met through improved access to new, less resource-intensive and less polluting technologies.
7. In addition, Afghanistan should classify certain non-renewable resources as untradeable even under the most liberal trade regime. The main lesson of globalization is that Afghanistan must carefully choose a combination of policies that enables her to take advantage of opportunities while avoiding pitfalls. Therefore, Afghanistan must view the pros and cons of complete global integration since it may make the country more vulnerable.

8. Afghanistan should engage in a selective and strategic integration with the world market, and should decide on the extent to which it wants to open up its economy, the timing and sequence of opening it up, the form of cooperation and competition it wants between its local firms and foreign firms, the particular sectors it wants to liberalize and those sectors that need some protection for the betterment and welfare of the country.

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