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Nota Penyelidikan/*Research Note*

Model of Correlation between Perceived Local Environment and Urban Poverty: An Evidence from Rajshahi City, Bangladesh

Model Korelasi antara Persekitaran Setempat yang Dipersepsikan dan Kemiskinan Bandar: Bukti daripada Bandaraya Rajshahi, Bangladesh

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ABSTRAK

Kemiskinan merupakan penyebab dan kesan utama masalah alam sekitar. Kemiskinan bersifat multi-dimensi, dan antar-kaitan alam sekitar dan kemiskinan tidak boleh diremehkan. Pembasmian kemiskinan merupakan cabaran utama proses pembangunan. Pertumbuhan ekonomi yang pesat boleh banyak menyumbang kepada pembasmian kemiskinan. Walau bagaimanapun lazimnya kepesatan pertumbuhan ekonomi diiringi kesan negatif kepada alam sekitar. Korelasi antara keadaan kemisikinan dan alam sekitar memang diketahui umum, namun korelasi kunatitatif antara dua keadaan ini jarang dikaji. Objektif utama kajian ini ialah untuk memahami hubungan antara kemiskinan dan degradasi alam sekitartempatan menerusi suatu model umum. Kajian dilakukan dengan mendapatkan data asas melalui sumber dengan menggunakan soal selidik berstruktur untuk mengumpul maklumat mengenai kemiskinan dan nexus alam sekitar dengan tumpuan kepada kemiskinan dan degradasi alam sekitar Bandaraya Rajshahi, Bangladesh dipilih sebagai kawasan kajian melalui kaedah pesampelan bertujuan, kemudian dua komuniti di bandaraya tersebut dikaji, iaitu Ramchandra Pur Shamprasharito dan Bustu Hara. Melalui pesampelan rawak berstrata seramai 50 dan 100 keluarga daripada masing-masing 100 dan 300 keluarga dipilih dengan darjah kesignifikanan 0.05. Usaha dilakukan untuk mengkorelasikan keadaan alam sekitar yang dipersepsikan oleh penduduk tempatan dan angkubah berkaitan alam sekitar. Hasil kajian menunjukkan bahawa keadaan alam sekitar dan kemiskinan mempunyai darjah korelasi yang tinggi.

Kata kunci: Kemiskinan; alam sekitar setempat, Bandaraya Rajshahi

ABSTRACT

Poverty is a major cause and effect of global environmental problems. Poverty is indeed multidimensional, and the inter-linkage between environment and poverty can hardly be over emphasised. The eradication of poverty is a major development challenge. Rapid economic growth can contribute much to poverty eradication. However, fast-paced economic growth is often accompanied by adverse environmental effects. The correlation between the state of poverty and environment has been widely known, however quantitative correlation between these two is rarely undertaken. The principal objective of this study is to understand the relationship between poverty and local environmental degradation through a general model. The study is undertaken by acquiring primary data from the field survey employing a structured questionnaire and gathering information on poverty and environment nexus with emphasis on poverty and environmental degradation. Rajshahi City of Bangladesh is selected through purposive sampling as the study area in 2004. Two underserved communities of the city were explored in the study. The investigated communities named as Ramchandra Pur Shamprasharito and Bustu Hara were selected through the same sampling method. Through the stratified random sampling 50 and 100 families out of the entire 100 and 300 families respectively were chosen from the communities with significant level at 0.05. Attempt is made to correlate perceived condition of the environment by local people and environment-related variables. The result shows that environment condition and poverty is highly correlated.

Keywords: Poverty; local environment; Rajshahi City

INTRODUCTION

Both men and women suffer from general problems of environmental overcrowding (Sen 2000). The relationship between poverty and the environment has been extensively studied by among others Agarwal (1997), Amacher (1998), Ekbom and Bojo (1999), Barbier (2000), OECD (2001). Nunan et al. (2002.) and others. In principle, they are in

agreement that poverty and environment are inextricably linked. Poverty is not a choice. However, Lipton (1977) stated that whatever social actions are taken to help the poor, they will be kept poor by their own conduct, although this conduct may be freely chosen, genetically determined or environmentally determined.

Despite the agreement on the correlation between poverty and the environment, there is no agreement regarding the definition of poverty itself. United Nations as cited in Lister (2004) defines poverty as 'lack of participation in decision making', a violation in human dignity', or 'powerlessness'. These definitions are not singularly attributed to poverty rather general terms that poverty is included. This study subscribe to the definition of poverty as proposed by Ringen (1987) as 'a low standard of living because of insufficient resources to avoid the deprivation'. This definition is fit to describe the correlation since variables on resources, infrastructure and services are emphasised.

The poor have been continuously giving their share of resources for environmental and global benefits due to their lack of participation in the decision-making, but, they have not benefited because of structured societal powerlessness as perfectly depicted by the United Nations. Because of these disadvantages, the poor are unwillingly bound to inhabit vulnerable land, suffered environmental degradation, never acquire adequate access to appropriate water resources, sanitation and health services. They suffer from lack of good shelter, food, clothing, and also suffer from various diseases. The poor are often exposed to the greatest environmental risk. The fragile and limited resources, lack of property right and limited access to credit and markets prevent them from improving their livelihood in addition to make them more risk to environmental degradation. As a result, the poor fight at the edge of survival (Rahman 1998).

Complex state of poverty, as described earlier, leads to the complexity of the relationship between environment and poverty. Despite the intricacy of the correlation, this study attempts to portray the relationship in a simple manner but maintaining the truthfulness of the facts in the selected study area.

STUDY AREAS

Cities are widely known as the place that provides earning opportunities, and perhaps better living conditions in addition to the prospect of employment. The Rajshahi City in Bangladesh is not excluded from them. Due to scarcity of job and earnings opportunities, rural people in the vicinity of Rajshahi City migrate for better income and livelihood, though sometimes they migrate due to natural hazards particularly floods. At the same time, the city has limited capacity to provide jobs or income opportunities. As a consequence, migrated poor live in the vulnerable places in the squatter areas. This migration has led to the increase of intensity and quantity of urban poor. This is happening in the selected community in the study area. Rajshahi city is a divisional city in Bangladesh. Poverty is a burning issue in the city. Majority of the households (61 percent) income remains between USD 36-93 and 69.8 percent households' income remains between USD 21-64. Labour force is expected to increase from 299,890 in 2001 to 385670 in 2021 as well as around 27 percent of them will not find any job if the current trends continues (RDA 2004). Owing to the circumstances, the city was selected through purposive sampling wherever poverty is a considerable dilemma in 2004. The investigated communities named as Ramchandra Pur Shamprasharito and Bustu Hara were also been picked out through the equal selection method. Two communities known as Bustuhara (C_1) in ward number 21 and Ramchandra Pur Shamprasharitu (C_2) in ward number 23 were chosen through purposive sampling (Figure 1). There are 100 and 300 families in both communities respectively. Through the stratified random sampling 50 and 100 families were chosen from the communities C1 and C2 correspondingly which are significant at 0.05 levels.

The selected community Ramchandra Pur Shamprasharito, as shown in Figure 1, is mostly inhabited by rural to urban migrants. Majority of them shift from the countryside to the city for better income and employment. It accounts for 58 percent, while natural hazard causes account for about 23 percent. The city's major services such as water supply and other infrastructure and services do not completely reach this community. This community is located near the shorelines of the most vulnerable place of Padma River, where flood hit each year. The site of Bustu Hara that is another study community remains in the heart of the city, however its physiographic situation is in the lowland area, and thereby vulnerable to flood.

The above situation augments the severity of local environment problems in the poor community. The coincidence of local environment problems and poverty in this community seems self-enhanced. It is shown from the history of this community, which suffered from long-standing poverty and local environment downgrade overtime. The poor become poorer while local environmental condition gradually degrades. The study highlights this phenomenon particularly in the strength and importance of the inter-linkages between the environment and poverty. Field survey reveals an observable fact about the self-enhanced interconnection between poverty and local environmental condition in the community under study as shown in Figure 2.

Figure 2 shows the long-standing story about the poverty and local environmental interconnection in the community. The poor people living in this community are legally and physically vulnerable people, since they

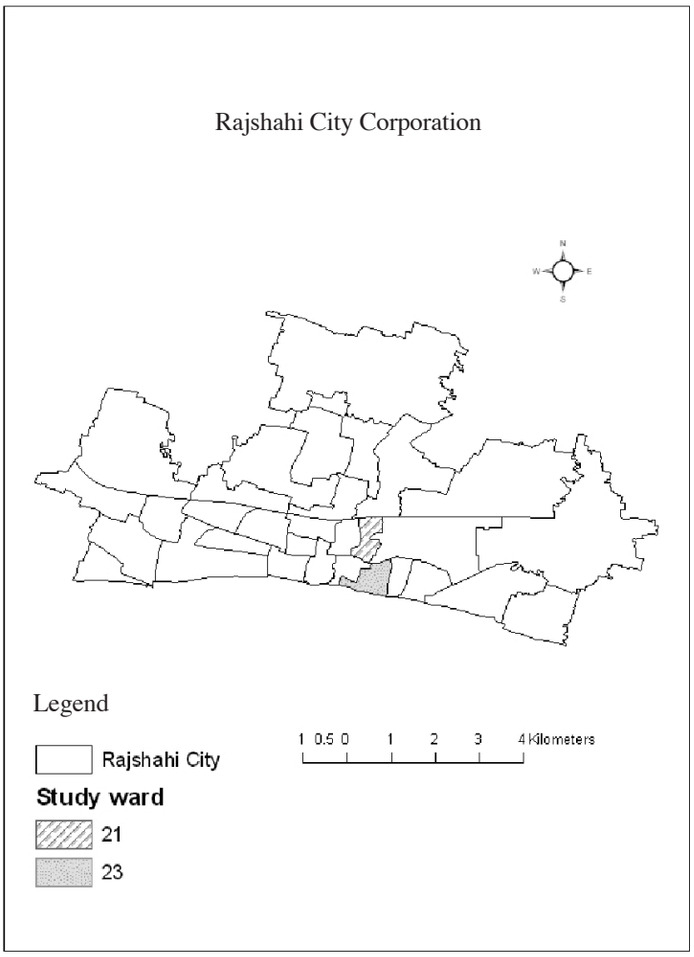

FIGURE 1. Study Areas

are migrants and illegally squat the land and this state stigmatises the poor as vulnerable people from the legal viewpoint. Their present habitation cannot evade them from vulnerability status, since the places where poor people live are flood vulnerable, and now their poverty is enhanced by the absence or lack of main infrastructure and services. Every year flood hazards hit them and they lose all or partial of their resources. The ultimate of this self-augmenting process is that their very poor health condition that makes the poor unable to earn money. The deprivation process is underway. All of these finally leads to the reduction of productivity and reduction of their saving. This is how self-enhanced of the interconnection between poverty and local environmental condition have undergone for years without sufficient efforts from the authority to cut the circle.

The circular process of self-enhanced poverty and local environment have substantiated that there is a strong negative or positive correlation between local environmental problems with the elements of the poverty. This correlation is to be modelled as discussed in the following sections.

GENERAL MODEL OF THE CORRELATION

The general model is selected due to its ability to accommodate numerous environmental variables while keeping the simplicity of the model and portray the factual state of the study area.

SELECTING THE GOVERNING VARIABLES

There are numerous elements, which are expected to associate with the poverty. Pigou (1952) defines poverty as the incapability of getting a minimum standard of living, in which conditioned people never wanted to live. The poverty is linked strongly with low income as presented by Sen (1992), Noland and Whelan (1996). This notion gives income as the paramount variable of the poverty. Other variables are explored from some studies such as 'human development', 'well-being' and 'quality of life' (UNDP 2000; and Narayan et al., 2000). The assumption of a vicious circle, the relationship between poverty and

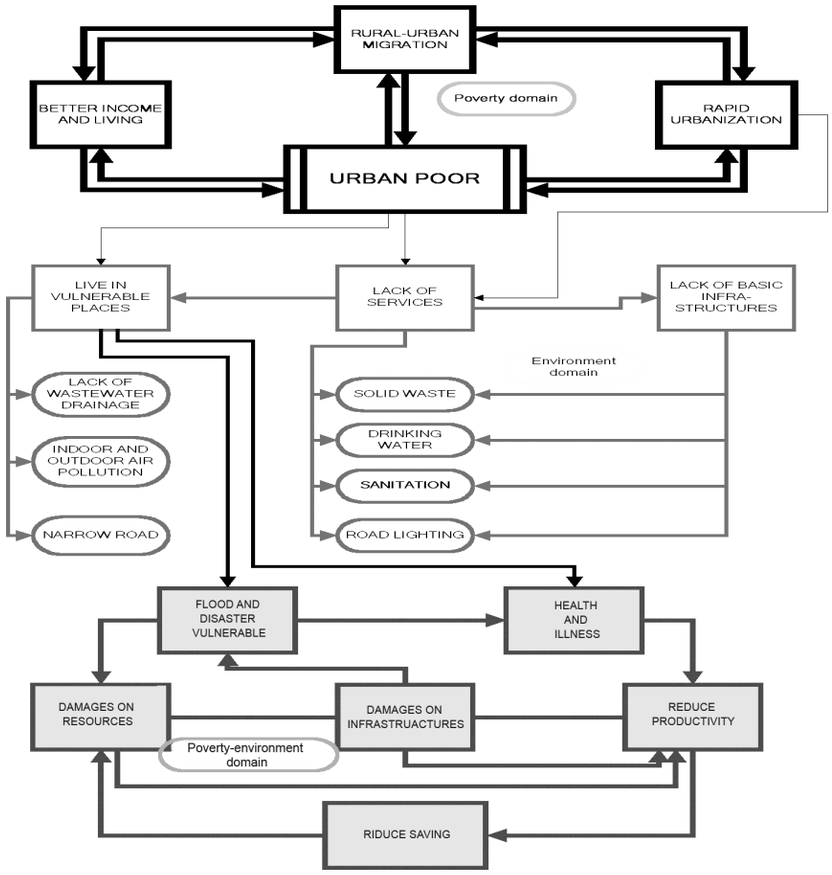

FIGURE 2. Poverty and Environment Nexus in the Study Areas

environmental degradation in developing countries has long existed in the debate. The assumptions were first commenced in the statement of the World Commission on Environment and Development (WCED 1987) but have later been repetitive by many institutions (Durning 1989; UNEP 1995; World Bank 1992). Due to lack of assets, poor people are seen as both victims and agents of environmental degradation (Ravnborg 2003). These variables are included in the model. Other basic services such as the availability of toilet, drainage system, and flood frequency are also included in the model.

Poverty is also multidimensional and therefore the inter-linkage between environment and poverty is undeniable. The more visible environmental problems are evident among the developing countries. The poor are the victims of environmental degradation but they are not necessarily the polluters. They are mostly forced to face an adverse environment (Rahman 1998). Poverty reduction and environmental management represent two most important global challenges. The poor often become the victims of environmental damage. "Environmental damage almost always hits those living in poverty the hardest (UNDP 1998)." The Linking of Poverty Reduction and Environmental Management focuses on ways to reduce poverty and sustain growth by improving environmental management (World Bank 2002).

Poverty and gender linkages have also been strengthened by some studies, among other, OECD (2001), Masika and Baden (1997). It is particularly observed from the fact that sometimes income is respectably governed by the sexual difference though all other qualities remain the same. This fact validates the inclusion of gender aspect as one of the essential variables that influence poverty. In fact, women are more vulnerable individuals for deprivation. Moreover, Amis and Kumar (2000) consider that infrastructures will enable economic activity as well as quality of life to be addressed. This validates the linkage between infrastructure and poverty, and therefore infrastructure is one of the governing variables of the poverty.

The extent of poverty varies from region to region and country to country. The policies of reducing poverty should be carefully designed from national, local, and municipal realities (World Bank 2001). Regional and international development institutions are stressing in their poverty reduction program. Currently 2.8 billion of the world's people are facing the challenge of poverty (Henninger & Snel 2002) in the developing countries. In Bangladesh,

around half of its total population (140 million) with the highest intensity of absolute poverty lives in deprivation (Shafi 1994).

Selection of the variables becomes the basis on the data acquisition in the study area. There are actually more variables gathered, however, they will not be included in the model to maintain the simplicity of the model. Data are collected through questionnaire and direct interview with the head of the households, either male or female. One hundred and fifty respondents have randomly been selected from among 42,248 people in 2004 in the study area (RDA 2004).

COLLECTING THE DATA

On the basis of theoretical background of the variables selection, seventeen variables have been included in the model. The variables are grouped thematically as the followings.

1. Individual variables (2 variables): these variables include gender and age. Age variable is included to ensure that only mature people are legitimate respondents.
2. Well-being variables (5 variables) include education, health facilities, monthly income, monthly saving, and number of family members in the household.
3. Environmental infrastructure and services variables (9 variables) constitute source of water supply, toilet availability and type, electricity, road light, accessibility, waste collection system and its frequency, and drainage.
4. External threats variable include flood (1 variable). The flooding problems have so far been the major threats to the poor

All those variables are assigned as independent variables. To attain a perfect correlation, a dependent variable of perceived local environmental condition of the study area has also been acquired from the respondents. The perceived local environmental condition is scaled into 5 categories according to the individual perception. The scale employs five arbitrarily chosen ordinal ascending number of 1 represents very unsatisfactory perception, 2 (unsatisfactory), 3 (neither unsatisfactory nor satisfactory), 4 (satisfactory) and 5 (very satisfactory). The arbitrary scales may perhaps create bias in the model, however the quantified scaling system is the better way to depict qualitative perceptions.

The responses from the participants (N=150) are the basis of acquiring coefficient of the variables (b_i). For this purpose, the responses are quantified by employing scales which follows ascending orders. The lowest to the highest or the worst to the best are employed. In similar way, the non-negative and non-zero integers are assigned.

1. Gender variable (gender) employs the scale of 1=male, 2=female.
2. Age variable (age) employs the scale of 1=18-25, 2=26-35, 3=36-45, 4=46-55, 5=>55.
3. Education variable (education); the scales of 1=illiterate, 2=primary school, 3=secondary school, 4=high school, and 5=university are employed.
4. Health facilities (healthfa) employs the scale of 1=no facilities, 2=quack doctors, 3=private clinics, and 4=general hospital.
5. Monthly income (mincome) uses the scale of 1=<30, 2=30-35, 3=36-40, 4=40-45, and 5=>45.
6. Saving (saving) variable assigns the scale of 1=<USD1, 2=USD2, 3=USD3, 4=USD4, and 5=>USD5.
7. Number of family member variable (fmember) employs the scale of 1=<2, 2=2-4, 3=5-6, 4=7-8, and 5=>8.
8. Source of water supply (sourws) variable employs the scale of 1=river/pond, 2=tube-well, 3=public tap, and 4=house connection.
9. Toilet availability (toileta) variable employs the scale of 1=others, 2=public toilet, and 3=private toilet.
10. Toilet type variable (toiltype) employs the scale of 1=others, 2=river bank/open space, 3=slab latrine, and 4=sanitary.
11. Drainage variable (drainage) uses the scale of 1=no and 2=yes.
12. Electric grid (electric) variable uses the scale of 1=no and 2=yes.
13. Road light variable (roadligh) variable uses the scale of 1=no, and 2=yes.
14. Accessibility variable (access) is measured by the width of road using the scale of 1=<1meter, 2=1-3 meter, and 3=>3 meter. Assuming that all types of roads are passable.
15. The frequency of waste collection variable (wastco) is expressed by 1=none, 2=1, 3=2, and 4=3. Assuming that frequency larger than 3 times per day is unavailable. (The above mentioned each variable is assigned as x1, x2, x3…..up to x15respectively)
16. The waste collection system variable *(wassyst)* is scaled by 1=personal collection, 2=composting, 3=private, and 4=city corporation. This variable is assigned as *x16*.
17. Flood frequency variable (flood) employs the scale of 1=twice a year, 2=once a year, 3=more than 1-year interval, 4=never. Assuming that the maximum frequency of flood is twice a year. This variable is assigned as *x17*.

Summary of the responses from the respondents is shown in Table 1. It shows the frequency of different responses.

TABLE 1. Summary of the Responses

#	Variables (N-150)	Frequency	#	Variable (N=150)	Frequency
1	Gender	Male: 84 Female: 66	10	Toilet type	Other: 0 River Bank: 23 Slab latrine: 99 Sanitary: 28
2	Age	18-25: 22 26-35: 79 36-45: 31 46-55: 14 >55: 4	11	Drainage	No: 64 Yes: 86
3	Education	Illiterate: 59 Primary School: 55 Secondary: 33 High school: 2 University: 1	12	Electric	No: 110 Yes: 40
4	Health Facilities	No: 15 Quack Doctor: 15 Private: 0 Hospital: 120	13	Road light	No: 108 Yes: 42
5	Monthly Income (USD equivalent)	<25: 9 25-35: 108 36-45: 26 46-55: 6 >56: 1	14	Accessibility	<1 meter: 104 1-3 meter: 31 >3 meter: 15
6	Saving (USD/Mon)	1: 99 2: 10 3: 22 4: 14 5: 5	15	Waste Collection Frequency	None: 71 1: 76 2: 3 3: 0
7	Family Member	2 or less: 0 3-4: 2 5-6: 62 7-8: 53 >8: 33	16	Waste Collection System	Personal: 48 Composting: 32 Private: 52 City Corp: 18
8	Source of Water Supply	Pond:1 Tube-well: 125 Public Tap: 14 House Connection: 10	17	Flood frequency	2/1 year: 50 1/1 year: 79 <1/1 year: 4 Never: 17
9	Toilet Availability	Other: 22 Public : 67 Private: 61		Perceived Local Environment	Very Unsatisfactory: 42 Unsatisfactory: 95 Neither unsatisfactory nor satisfactory: 13 Satisfactory: 0 Very satisfactory: 0

Correlations between variables are shown in Table 2. It shows that a highly correlated relationship is produced between the coefficients, except *f* 'member' variable (number of family member). It seems that the number of family members within a household is not perfectly correlated with the other variables. There are two possibilities in this regard firstly, the number of family member is independent from other variables. Householders perhaps consider that whatever the number of family member the condition of poverty will not be affected. Secondly, data acquisition is perhaps inaccurate.

The poor are disproportionately affected by environmental deterioration because of locational disadvantages, higher dependence on local environment and insufficient assets for coping with environmental hazards as well as lack of income. In adopting policies and programmes to mitigate adverse environmental consequences and thereby strengthening the beneficial impact of economic growth on the poor who are extremely vulnerable to environmental changes, the study has immense consequences.

Table 2. Correlation between Variables

	gender	age	educatio	healthfa	mincome	saving	fmember	sourws	toileta	toiltype	drainage	electric	roadligh	access	wasteco	wassyst	flood
gender	1	0.900494	0.891630	0.890240	0.922882	0.934886	0.597488	0.898538	0.930445	0.91156	0.937099	0.914814	0.888635	0.920406	0.899778	0.897985	0.864885
age	0.900494	1	0.852777	0.862906	0.919322	0.917003	0.545442	0.897442	0.924844	0.901277	0.923928	0.912933	0.890617	0.887337	0.846883	0.909026	0.860396
educatio	0.891630	0.852777	1	0.798149	0.888228	0.902193	0.548080	0.891443	0.906384	0.895854	0.922943	0.897325	0.906650	0.904590	0.824706	0.877983	0.832898
healthfa	0.890240	0.862906	0.798149	1	0.888091	0.899509	0.641390	0.875169	0.896839	0.880952	0.900449	0.867774	0.822423	0.849321	0.842803	0.860349	0.844958
mincome	0.922882	0.919322	0.888228	0.888091	1	0.937672	0.628248	0.901869	0.934540	0.925213	0.943403	0.922193	0.907446	0.901571	0.850773	0.893317	0.872705
saving	0.934886	0.917003	0.902193	0.899509	0.937672	1	0.601566	0.928064	0.966582	0.959375	0.976206	0.929365	0.917644	0.921854	0.878585	0.919438	0.877238
fmember	0.597488	0.545442	0.54808	0.641390	0.628248	0.601566	1	0.601638	0.603560	0.613373	0.616760	0.566710	0.568439	0.574189	0.554915	0.574888	0.609307
sourws	0.898538	0.897442	0.891443	0.875169	0.901869	0.928064	0.601638	1	0.925823	0.910381	0.940231	0.906637	0.885965	0.891219	0.867417	0.896876	0.875146
toileta	0.930445	0.924844	0.906384	0.896839	0.934540	0.966582	0.603560	0.925823	1	0.935288	0.961154	0.922963	0.902452	0.907608	0.871857	0.915602	0.871051
toiltype	0.911560	0.901277	0.895854	0.880952	0.925213	0.959375	0.613373	0.910381	0.935288	1	0.968310	0.902449	0.899251	0.895657	0.864339	0.891940	0.865112
drainage	0.937099	0.923928	0.922943	0.900449	0.943403	0.976206	0.616760	0.940231	0.961154	0.96831	1	0.938360	0.918617	0.924489	0.8866	0.925559	0.892752
electric	0.914814	0.912933	0.897325	0.867774	0.922193	0.929365	0.566710	0.906637	0.922963	0.902449	0.938360	1	0.897851	0.911878	0.854894	0.916075	0.867592
roadligh	0.888635	0.890617	0.906650	0.822423	0.907446	0.917644	0.568439	0.885965	0.902452	0.899251	0.918617	0.897851	1	0.926796	0.830497	0.895421	0.845232
access	0.920406	0.887337	0.904590	0.849321	0.901571	0.921854	0.574189	0.891219	0.907608	0.895657	0.924489	0.911878	0.926796	1	0.846695	0.906649	0.847824
wasteco	0.899778	0.846883	0.824706	0.842803	0.850773	0.878585	0.554915	0.867417	0.871857	0.864339	0.886600	0.854894	0.830497	0.846695	1	0.882193	0.840713
wassyst	0.897985	0.909026	0.877983	0.860349	0.893317	0.919438	0.574888	0.896876	0.915602	0.891940	0.925559	0.916075	0.895421	0.906649	0.882193	1	0.945927
flood	0.864885	0.860396	0.832898	0.844958	0.872705	0.877238	0.609307	0.875146	0.871051	0.865112	0.892752	0.867592	0.845232	0.847824	0.840713	0.945927	1

The correlation among poverty and environment is a holistic manner. Isolated poverty alleviation strategies will never been effectual if they are not environmentally sound. In order to handle effectively the overwhelming global environment-poverty nexus, the poor need to be seen as part of the solution rather than part of the problem. Efforts should be made to improve environmental management in ways that contribute to sustainable growth and poverty reduction, and more particularly reflecting the priorities of the poor. Supportive policies and institutions are needed, including access to information and decisions making that expand the poor's opportunities to invest in environmental improvements that can enhance their livelihoods.

Environmental management needs to be integrated into poverty reduction and sustainable development efforts in order to achieve significant and sustainable results. Moreover, poverty-environment issues should be integrated into national development frameworks by addressing the environmental concerns of the poor in nationally owned poverty reduction strategies (PRSPs) and related macroeconomic and sectoral policy reforms, so that they can become integral parts of national sustainable development strategies. The issues should be integrated into economic policy reforms by expanding the use of strategic environmental assessment and poverty social impact analysis approaches and by strengthening environmental management standards and monitoring capabilities.

Decentralisation of environmental management should be strengthened by integrating poverty-environment issues into sub-national policy and planning processes and sectoral investment programmes. Civil society and the poor and marginalised groups should be empowered to influence environmental management policy and planning processes at all levels by expanding public access to environmental information, decision making, and justice.

Poverty environment monitoring and assessment should be improved by strengthening government and civil society capacity to monitor environmental change and how it affects the poor, by integrating poverty-environment indicators into national poverty monitoring systems, and by building capacity to apply monitoring and assessment results to poverty-environment policy formulation and implementation. Environmental vulnerability of the poor should be reduced by strengthening participatory disaster preparedness and risk reduction and mitigation capacity, by supporting the formal and informal coping strategies of vulnerable groups, and by expanding access to insurance and other risk management mechanisms.

CONCLUSION

Poverty is a great problem. Lack of employments, poor income generation, and the absence or limited loan to encourage economic activities of the urban poor along with the inadequacy of environmental infrastructure and basic services will obviously increase the intensity of poverty. Working capacity is the most visible basic resources of the poor. How it is possible to solve the poverty problem by using this resource. Since income is the most essential variable as shown in the model, income generation through employment opportunities, is therefore, seen as a fundamental tool that can be used for poverty reduction. There is little chance to build high technological industries in developing countries. Under this circumstance a broad-based industry, which labour intensive is more desirable. Home-based cottage industries and labour-intensive industries can create employment prospects. The poor people can therefore make home goods easily in their houses. For this a big amount of fund is not required. There is another option for employment opportunities among the poor and that is by establishing labour-intensive industries into the local areas. Except job creation, there is another option for income generation by doing business.

Another approach to improve local environmental condition, according to the model is the adequate provision of environmental infrastructure. They are presently having problems regarding infrastructure and services, housing, drinking water, and land titles. For these problems, community-based management can be proposed for the management of these issues. People should participate in the decision making process, not just be passive spectators. There is positive scenario of the poverty and environment nexus. Providing jobs for the poor through the management of environment problems such as solid waste collection, drinking water supply then the entire negative side will turn into positive side that will reduce poverty and, in turn, improve the environment. However, this scenario will not be perfectly workable without active participation from the poor themselves.

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