



RESEARCH ARTICLE

ENVIRONMENTAL COST AND HEALTH CONSEQUENCES OF INADEQUATE PUBLIC  
CONVENIENCE IN MODERN CITIES OF DEVELOPING WORLD.(A CASE STUDY OF FEDERAL  
CAPITAL CITY TERRITORY ABUJA, NIGERIA)

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ARTICLE INFO

Received 24th February, 2018  
Received in revised form 8th  
March, 2018 Accepted 20th April, 2018  
Published online 28th May, 2018

**Keywords:**

Public convenience, inadequate,  
environmental cost and health consequences,  
diseases

ABSTRACT

Inadequate public convenience have several adverse and cost effects ranging from environmental pollution, disruption of city aesthetics, pathogens transmission, creation of conditions for spread of disease and breeding ground for disease vectors. This studies examined the environmental cost and health consequences of inadequate public convenience facilities in phase I, Federal Capital City Abuja. The objectives of this study are; to assess the sufficiency of public toilet facilities within the phase I of (FCC) Abuja, to find out the level of accessibility of available public toilet facilities and sanitary conditions, to find out the alternatives to public toilet facilities where they are not available, to assess the environmental health implications or cost of inadequate public toilet facilities and to find out the level of willingness of the people to use paid or commercial public conveniences. The study area was divided into three Zones which are; Asokoro, Garki and Central Area. Structured questionnaires were used to collect data which were analyzed. The study revealed that 92.3% do not have public convenience in their Neighborhood and the available few are inaccessible to member of the public causing indiscriminate street urination and defecation at certain spots of the City Centre. The alternatives to these public conveniences are open spaces, gutters, uncompleted buildings among others; the environmental cost and health implication of inadequate public conveniences are indiscriminate street urination and defecation, foul smell and disease outbreak. The beauty of any environment lies in its good sanitary conditions and the practice of good environmental maintenance culture. Therefore this study recommends, the provision of adequate and well kempt public conveniences at strategic spots that usually attracts large member of the public.

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INTRODUCTION

**Background to the study**

Lack of adequate public convenience in most cities of developing countries have led to a number of environmental problems such as; street urination and defecation which has given rise to disgusting sights and smells at certain spots within the City Centre's. These has created habitat for disease vectors, giving rise to incidences of several ill-health conditions among the population within the City. Okebukola, (2001) stated that lack of proper disposal of human waste is a major factor in the spread of gastrointestinal conditions, diarrhea, cholera and typhoid fever which are among the major killer diseases in some urban centers of developing world. The consequences or cost of inadequate public convenience in most cities of developing world includes pollution, disruption of city

aesthetics, spread of diseases and breeding ground for disease vectors etc. Thousands of lives are lost every year to poorly managed environmental-related diseases such as cholera, diarrhea, malaria fever, typhoid fever, river blindness (WHO, 2009). Most people live in an unkempt and filthy environment heavily polluted with human waste within urban centers in developing countries. Air and water are polluted by pathogens and offensive odor resulting from human urination and defecation in open spaces within the city.

Globally, about 43% of those living in rural areas do not have access to improved sanitation as compared to 27% of those in urban areas (Elisa and Isabelle, 2012). The health implications of poor sanitation falls disproportionately on the poorest households and particularly on children under the age of five. There are evidences that lack of toilets in schools may affect the concentration of learners because of walking for a long distance

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away from the school premises before they can ease themselves. The need for public convenience is often necessary to satisfy the urban dwellers who are always on the move as they engage in different activities. United Nation (2011) reported that urban areas are home to 3.5 billion representing 50.5% of world population and cities population is expected to increase to 7.2 billion in 2050 (Olayiwola, 2011). Population will be faced with inadequate toilet facilities (public convenience). Despite the high level of health issues arising from poor sanitation, government's efforts still fall short of what is required. Progress can only be made with adequate investment and collaborative efforts across developing countries, donor agencies, civil society, academia and the private sector. All parties have much role to play in supporting national efforts to improve sanitation for all.

Diarrhea related diseases are the second cause of child death in the world. Every year about 850 thousand children die from diarrhea. 88% of these death occur because of poor sanitary conditions. (Elisa and Isabelle 2012). Studies have shown that improved environmental sanitation can contribute to an approximate one third reduction in diarrhea diseases (Elisa and Isabelle 2012).

People requires the use of public toilets because most people spend greater parts of their days away from home. People with health concerns (such as bladder disorder, Urinary Tract Infection, Irritable Bowel Syndrome (IBS), Ulcerative Colitis, diverticular disease, Crohn's and Colitis), pregnant women and women in general, children, elderly people, homeless people, and people using wheel chairs, walkers or crutches are highly vulnerable when toilet provision in the cities are inadequate (Greed, 2003; Solomon, 2013). These group of people have their individual and specific sensitivities, but they all need sufficient, clean, safe, and accessible public toilets. Public convenience comprise of both the traditional 'on-street' public toilets (run by the local authorities) and 'off-street' toilets (mainly run by private individuals) toilets to which the general public have right to access, such as those in shopping malls, sports centers and railway stations. It is more apt to use the term 'away from home' toilets as coined by the British Toilet Association (British Institute of Cleaning Science, 2005).

Tallon and Bromley,(2002) argued that government policies to promote evening economy, 24 hours city tourism and public transport use have all increased the need for toilet provision, whilst, paradoxically, provision is not being given the attention it deserves. In some modern cities, there are gross proliferation of bars, public houses, increased alcoholic consumption among others that could cause increased urination in an individuals. Aside alcoholic consumption, cold atmosphere, health conditions among other factors can cause excessive urination by an individuals. Inadequate public convenience will result in increased street urination and defecation. Quiet locations, open spaces, parks and flower lawns, drainages, popular wet spots in the city centers among others have been noted as suitable locations for indiscriminate urination and defecation by the people. Most of these locations are quiet serene free of the presence of security agencies couple with the fact that security agencies cannot arrest and prosecute culprits due lack of legislations to handle such arrest. Public toilets are essential

components in creating sustainable, accessible, and inclusive cities (Greed, 2006). He however, argued that public toilets should be a central component of urban policy development. Yet, there is no requirement that public toilet policy should be included in town plans, urban policy documents, or urban regeneration policy.

Greed (2004) noted that planning system is undergoing restructuring because of the defects and compulsory Purchase Act, 2004 with greater emphasis on strategic spatial aspects of planning required to create sustainable cities. Greed (2003), also noted that a couple of cities with public convenience only succeed in getting them through "planning gain"- a situation whereby a developer enters into an agreement with local planning authority to deliver community benefits such as toilets, parks, community information centers. These agreement, as good as it may be in the provision of public convenience and other facilities, only leaves the planner as an 'enabler', or even a 'negotiator' rather than a direct provider and controller of public toilet facilities.

The public toilet provision has not been dealt with by policy makers on city planning, transportation and urban policies as obtained in Far East Asian countries, for example Japan (Miyaniishi, 1996). They are neither accorded the level of attention nor the importance given to other front-line health-related facilities such as hospitals, health centers and local clinics in terms of good hygienic maintenance within the environment, rather toilets made the responsibility of operational and technical departments of the local government authority. They are usually under the control of 'parks and gardens', 'municipal services' or 'refuse disposal' or 'street cleansing'. In such departments, there are little or no strategic policies nor proactive policies to deal with issues arising from public convenience. Their approach is technically termed a 'fire-fighting' approach. They responds quickly to problems of vandalism and disrepair, often by simply closing down the toilets which will rather increase and compound the existing problems of insufficient public convenience.

In few instances departments responsible for the running of public toilets carry out their operations in response to long-term policy objectives which takes into account the user's need, as to social purpose of public toilets to meet human need. Likewise, there is little or no linkage between such departments and higher level decision-makers within local authorities. This however shows lack of awareness about the crucial roles public toilets plays in creating environmental harmony in the modern cities. Authorities do not produce any written policies, locational maps, or surveys on toilet facilities in most cities (Daniel and Greed, 2003).

In developing nations of Africa it is only recently that Company's such as DMT (Durojaye Mobile Toilets) pioneered the mobile toilets provision in Nigeria. And Ecotact Company in Kenya launched the Iko-toilet initiative in 2010 constructing 40 toilets in 20 Kenyan municipalities. These developments are solely advocated and maintained by private authorities and are only functional in few cities. In most of such provisions, planners have no say in their distribution and usage. This development, though good has not covered a reasonable number of countries and cities in Africa, including Abuja.



The climate of Abuja is largely governed by the inter-tropical convergence zone (ITCZ). This zone of convergence is normally defined by both the moisture laden south west trade winds and the north east trade winds. The total annual rainfall ranges from 1,145mm to 1,631mm. There are high rainfall in the months of July, August and September, during these months about 57% of the annual total rainfall is received (Onokerhaye, 1995). The major water bodies found in the region are the Jabi Dam, Bwari Dam and Usman Dam.

**METHODOLOGY**

The study area was divided into three Zones which are; Asokoro, Garki and Central Area. About 204 copies of questionnaires were administered in these three zones with Garki having 100 questionnaires, Central Area with 54 questionnaires, and Asokoro zone with 50 questionnaires. The questionnaire distribution and administration were based on the population of each zones. Random sampling technique was used during questionnaire administrations which were done in public places and on the week days when people were carrying out their daily activities. The data collected were analyzed with the use of simple tables and charts.

**RESULTS AND DISCUSSION**

*Demographic and socioeconomic characteristics*

Figure: 2 shows that 106 respondents representing 54.1% are male while, 90 respondents accounting for 45.9% are female. This shows that majority of the respondents are male.

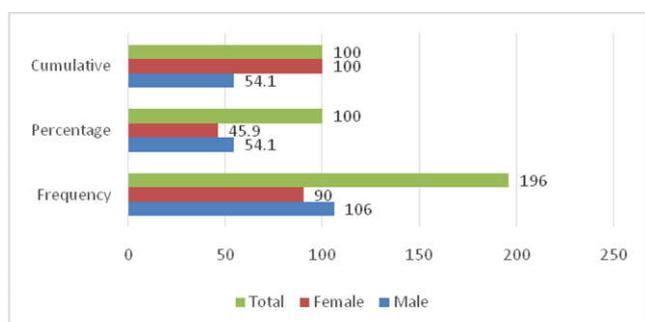


Figure 2 the sex of the respondents

Table 2 below Shows that 63 respondents representing 32.1% are between 20-29 years old, 63 respondents accounting for 32.1% are between 30-39 years old, 42 respondents representing 21.4% are 40-49 years old, 22 respondents accounting for 11.2 % are 50-59 years old while, 6 respondents representing 3.1% are 60 years and above. This shows that majority of the respondents are between 20-29 years and 30-39 years old. This result show that the youths who are deeply involved the Socio-Economic life of the city and the strength of an economy were the majority.

Table 2 age distribution of the respondents

Age of the respondents in years	Frequency	Percentage	Cumulative
20-29	63	32.1	32.1
30-39	63	32.1	64.3
40-49	42	21.4	85.7
50-59	22	11.2	96.9
60 and above	6	3.1	100

Total	196	100	100
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Source: Field Survey, 2017

Figure 3 below shows that, 75 respondents accounting for 38.3% are single, 109 of the respondents representing 55.6% are married, 9 of the respondents accounting for 4.6% are divorced and 3 respondents representing 1.5% are others.

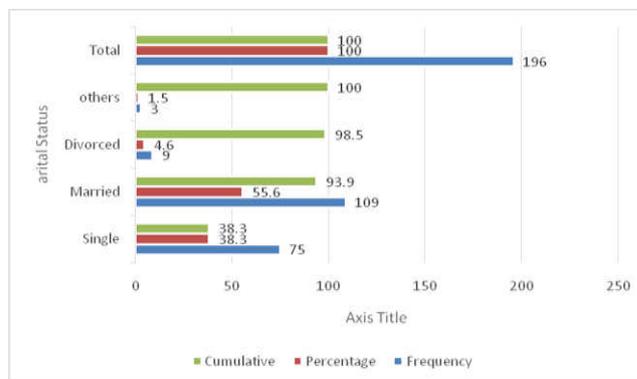


Figure 3 marital status of the respondents

Source: Field Survey, 2017

Table 3 below: Shows that 29 of the respondents representing 14.8% are uneducated, 9 of the respondents accounting for 4.6% are primary school certificate holders, 43 of the respondents representing 21.9% are secondary school holders, 105 of the respondents accounting for 53.6% are tertiary certificate holders while, 10 respondents representing 5.1% fall into the categories of informal educational qualification. This shows that majority of the respondents are graduates of various tertiary institutions.

Table 3 educational qualification of the respondents

Educational Level	Frequency	Percentage	Cumulative
Uneducated	29	14.8	14.8
Primary school	9	4.6	19.4
Secondary school	43	21.9	41.3
Tertiary Level	105	53.6	94.9
Informal education	10	5.1	100
Total	196	100	100

Source: Field Survey, 2017

Table 4 below: shows that, 10 of the respondents accounting for 5.1% are farmers, 60 respondents representing 30.6% are traders, 53 respondents representing 27% are students, 44 of the respondents accounting for 22.4% are civil servants, 21 respondents representing 10.7% are unemployed while, 8 respondents representing 4.1% of the population are employed by private firms or individuals. From the analysis above, majority of the respondents are traders.

Table 4 occupational distribution of the respondents

Occupation	Frequency	Percentage	Cumulative
Farming	10	5.1	5.1
Trading	60	30.6	35.7
students	53	27.0	62.8
Civil servants	44	22.4	85.2
Unemployed	21	10.7	95.9
Others	8	4.1	100
Total	196	100	100

Source: Field Survey, 2017

**Accessibility to public convenience**

Table 5 below, revealed that 15 respondents representing 7.7% affirms that there are public convenience in district where they carry out their daily activities, while 179 respondents representing 92.3% affirms that there are no public convenience in their areas as they have to find alternatives. This shows that FCCT do not have enough public convenience in the various districts.

**Table 5** Accessibility to public convenience

Responses	Frequency	Percentage	Cumulative
Yes	15	7.7	7.7
No	179	92.3	100
Total	196	100	100

Source: Field Survey, 2017

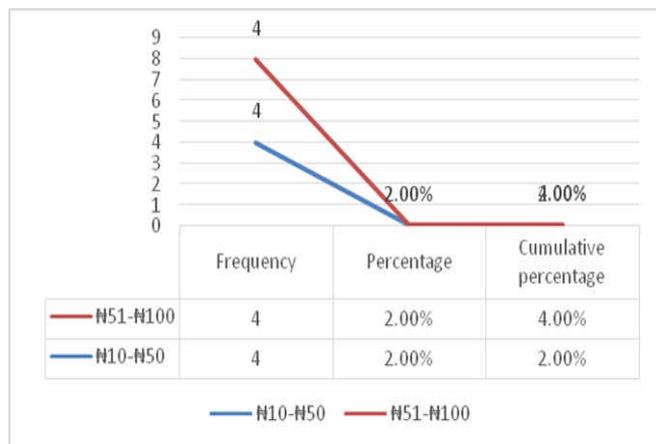
Table 6 below shows that, 8 respondents representing 4.1% pay money for using the public convenience while 7 respondents accounting for 3.6% use public convenience for free. The remaining 92.3% do not have public convenience around their neighborhood. This shows that some respondents make use of paid public convenience and are willing to pay for using public convenience if only it is made available.

**Table 6** respondents that pay for using public convenience

Payment status	Frequency	Percentage	Cumulative
Paid	8	4.1	4.1
Free	7	3.6	7.7
Those without public convenience	181	92.3	100
Total	196	100	100

Source: Field work 2017

Figure 4: below, 4 respondents representing 2.0% pay between ₦10 and ₦50 for using public convenience while, 4 respondents accounting for 2.0% pay between ₦50 and ₦100 for using public convenience. This shows that the price range for the use of public convenience is ₦10 to ₦100 depending on the neatness and the general hygienic level.



**Figure 4** showing the amount paid by those using paid public convenience

Table 7 below shows that, 120 respondents accounting for 61.2% wants private agencies to be responsible for the management of public convenience while, 76 respondents

representing 38.8% wants individuals to be responsible for the management of public convenience without any respondents making reference to government involvement in the management of public convenience. This shows that majority of respondents' wants private agencies to be responsible for the management of public convenience. Knowing fully well that when government is involved there will be no effective control and proper management of such facilities.

**Table 7** Who manages the public convenience?

Who should manage public convenience	Frequency	Percentage	Cumulative
Private Agencies	120	61.2	61.2
Individuals	76	38.8	100
Total	196	100	100

Source: Field Survey, 2017

**Alternatives to public toilet facilities**

From table 8 below, 40 respondents accounting for 20.4% make use of gutter as an alternative to public convenience, 48 respondents representing 24.5% make use of bush as an alternatives to public convenience, 8 respondents representing 4.1% use uncompleted buildings, 33 of the respondents representing 16.8% of the respondents makes use of commercial facilities, 17 respondents accounting for 8.7% use open space for public convenience, 50 respondents representing 25.5% make use of any available hidden un-used spaces as the possible alternative for public convenience. This shows that majority of the respondents make use of all possible and available open spaces as alternative for public convenience which will greatly reduce the aesthetic and beauty of the city, hence an Environmental cost that may be unquantifiable in monetary terms.

**Table 8** Alternative Convenience for the people

Alternatives	Frequency	Percentage	Cumulative
Gutter	40	20.4	20.4
Bush	48	24.5	44.9
Uncompleted building	8	4.1	49.0
Commercial facilities	33	16.8	65.8
Open Spaces	17	8.7	74.5
All of the above	50	25.5	100
Total	196	100	100

Source: Field Survey, 2017

From table 9 below, 48 respondents representing 24.5% want public convenience located on their district so as to deal with indiscriminate street urination, 72 respondents accounting for 36.7% want public convenience located on their district so as to stop indiscriminate defecation along the streets while, 76 respondents representing 38.8% want it located on their district to enhance city aesthetics and beauty. From the result it is clear that the respondents want at least a public convenience to be located on their district so as to deal with the ever increasing population flowing into their district which is creating gravy consequences of indiscriminate public defecation and urination. These condition creates foul smell and serves as sources of potential disease outbreak.

**Table 9** reasons for providing public convenience

Perceived reasons for providing public convenience	Frequency	Percentage	Cumulative
To prevent Indiscriminate urination	48	24.5	24.5
To prevent Indiscriminate defecation	72	36.7	61.2
To enhance environmental aesthetics and beauty	76	38.8	100
Total	196	100	100

Source: Field Survey, 2017

**Health consequences of indiscriminate street urination and defecation**

Table 10 below shows that, 30 respondents representing 20.4% ascertain that indiscriminate urination and defecation affects the environment by creating foul smell, while 76 respondents accounting for 24.5% affirm that indiscriminate urination and defecation affects the environment by causing outbreak of diseases while, 90 respondents representing 55.1% uphold that indiscriminate urination and defecation has led to foul smell and disease outbreak. This result shows that majority of the respondents uphold that indiscriminate urination and defecation has led to foul smell and disease outbreak in their district.

**Table 10** Perceived Effects of Indiscriminate Urination and defecation on the Environment

Effects of indiscriminate urination and defecation	Frequency	Percentage	Cumulative
Foul smell	30	20.4	20.4
Disease outbreak	76	24.5	44.9
All of the above	90	55.1	100
Total	196	100	100

Source: Field Survey, 2017

From table 11, below, about 126 respondents accounting for 64.3% affirms that indiscriminate urination and defecation has led to disease outbreak while, 70 of the respondents representing 35.7% do not agree that indiscriminate urination and defecation lead to disease outbreak but agreed that it reduces the aesthetic value of the city which is a major Environmental cost that one may not be able to quantify in monetary terms. This shows that majority of the respondents affirms that indiscriminate urination and defecation has led to disease outbreak and reduction in the city aesthetic values.

**Table 11** Perceived reasons for diseases outbreak within the city

Indiscriminate urination and defecation	Frequency	Percentage	Cumulative
Yes	126	64.3	64.3
No	70	35.7	100
Total	196	100	100

Source: Field Survey, 2017

Table 12 shows that, 26 respondents representing 13.2% affirms that cholera is one of the diseases caused by indiscriminate urination and defecation on the street within the district, 22 respondents accounting for 11.2% ascertain that Dysentery is a disease caused by indiscriminate urination and defecation when disease vectors from faeces perched on an uncooked food or fruits to be eaten, 33 respondents accounting for 16.8% sees guinea worm as the disease caused by indiscriminate urination and defecation on the drinkable water while, 20 respondents accounting for 10.5% sees typhoid as a disease caused by indiscriminate urination and defecation which contaminates drinkable water. This shows that, the respondents agreed that indiscriminate urination and defecation in their district causes one disease or the other.

**Table 12** Types of diseases that occur due to indiscriminate urination and defecation

(The major health consequences)

Nature of diseases	Frequency	Percentage	Cumulative
Gastro-intestinal condition	70	35.7	35.7
Cholera	26	13.2	48.9
Diarrhea	25	12.6	61.5
Dysentery	22	11.2	72.7
Guinea worm	33	16.8	89.5
typhoid	20	10.5	100
Total	196	100	100

Source: Field Survey, 2017

From table 13 below shows that, 106 respondents, representing 54.1% are advocate of enacting environmental laws and regulations to control the various environmental cost and health challenges associated with inadequate public convenience especially indiscriminate urination and defecation in the open spaces at the City Centre's. 13 respondents representing 6.6% agrees that education and awareness creation can be used to correct environmental cost and health problems, 13 respondents accounting for 6.6% affirmed that general environmental sanitation should be employed to tackle environmental health problems, 13 respondents representing 6.6% agreed that maintenance of existing ones would be used to correct environmental health problems, 18 of the respondents representing 9.2% felt that more public convenience facilities should be put in place to help tackle the problems of environmental disease, 15

**Table 13** Suggested ways of maintaining Environmental health Problems

Solutions	Frequency	Percentage	cumulative
Environmental laws and regulations	106	54.1	54.1
Awareness creation	13	6.6	60.7
Environmental Sanitation	13	6.6	67.3
Maintaining Existing toilets	13	6.6	74.0
Build more public convenience	18	9.2	83.2
Paid public toilets	15	7.7	90.8
Enact laws and punishment for offenders	18	9.2	100
total	196	100	100

Field survey 2017

respondents accounting for 7.7% view paid public toilets as solution to environmental disease outbreak while 18 of the respondents representing 9.2% view strict laws and punishment of offenders as means of solving the problems of environmental diseases. This shows that the majority of the respondents approves the construction of more public convenience with strict laws and punishment of offenders as the solution for environmental disease outbreak.



Plate 1: Indiscriminate Street Urination and Defecation in the Study Area

Source: Authors field survey, 2017

## CONCLUSION

The study reveals that most public convenience users are within the age range of 20-39 years with male accounting for 54.1%. The study also revealed that 55.6% of the users are married, 38.3% are singles and 4.6% are divorced. The study showed that 53.6% are tertiary certificate holders while 21.9% are secondary school certificate holders. It was also discovered that traders representing 30.6% are the majority users of public convenience, followed by students representing 27.9%, civil servant 22.4%, unemployed 10.7% and others 4.1%. The study also revealed that 92.3% do not have any public convenience around their neighborhood, making public convenience unavailable to a large number of people. This situation has led to indiscriminate street urination and defecation in the gutters along major and popular roads, open spaces and drainages, parks and uncompleted building and structures around the neighborhoods.

Alternatives to the inadequate public convenience as revealed by this study are; gutters, bushes, uncompleted building, open spaces, green parks within the city and under the bridges etc. this has led to the occurrence of diseases such as cholera, typhoid, dysentery diarrhea, infestation of hookworm, round worm, guinea worm and the host of others at one time or the other within the city. A large number of respondents are aware of the environmental and health implications of inadequate public conveniences. 55.1% agreed that indiscriminate urination and defecation has created foul smell and causing disease outbreak around the city. This showed that provision

of standard public convenience will help resolve the issue of disease outbreak. 92.3% are willing to pay for the use of public convenience when it is provided. 61.2% respondents want private individuals to be encouraged to invest in this sector. This showed that the general public will patronize the facility if provided. This will on the long run provide employment opportunity for some people and also serve as revenue generation for the city administration.

## Recommendation

- Well kept On-street public conveniences which could be mobile or stationary should be provided by government and lease out to private companies to handle, with health officers mandated to monitor the maintenance of such facilities to ensure high operational standard.
- Public toilets should be provided at strategic locations or busy spots that attract large number of people within the city, for example, Banex Junction, Eagle Square, area 11 junction, AYA/Asokoro Junction along deeper life Junction which currently do not have any.
- Policies should be made to include the provision of public conveniences in every neighborhood to be located at strategic points that attract high number of people on daily activities. Such locations should include, neighborhood Centre's, parks, Commercial Centre's among others.
- The Urban and Regional planning department should be made to monitor the locational and operational efficiency of public convenience, since they are directly involved in city structure planning to enhance free flow of events, economic activities, convenience and beauty of the city.
- Legislations should be made to prosecute offenders, this should include those caught in the act of street urination and defecation, misuse of the facility as well as vandalism of available public conveniences. The offenders should be made to pay fine or held in detentions for days, weeks, or months depending on the gravity of the offence. This will help to ensure adherence and proper usage of public convenience.
- Organizations such as hotels, filling stations, and restaurants among others should be mandated to provide public conveniences beside their structures or around their business premises as part of their corporate social responsibilities.
- Public institutions should be mandated to provide efficient and sufficient public convenience and make them available for the general public conveniences.

This study has shown that, there is high need for public convenience in urban areas due to high population growth and inadequate urban planning and lack of urban policies implementation. These have affected city aesthetics, convenience and economy of city space. The results are increased level of street urination and defecation at busy spots within the FCC. Hence, there is a need to provide adequate public conveniences within the FCC to meet the need of the growing population, in order to achieve the objectives of the master plan and to ensure sustainable development within the city.

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### How to cite this article:

Abu, Onimisi Hassan (2018) 'Environmental cost and health consequences of inadequate public convenience in modern cities of developing world. (a case study of federal capital city territory abuja, nigeria)', *International Journal of Current Multidisciplinary Studies*, 04(5), pp. 876-883.

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