JIGAWA STATE GOVERNMENT OF NIGERIA

WORLD BANK ASSISTED COMMUNITY BASED URBAN UPGRADE PROJECT HADEJIA

FINAL REPORT
VOLUME 3
ENVIRONMENTAL IMPACT ASSESSMENT

Integrated Engineering Associates
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Kaduna

AUGUST 2001
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1.0 INTRODUCTION

1.1 The Government of Jigawa State with support from the World Bank through the Federal Ministry of Finance, is undertaking a Community Based Urban Upgrading Project in Hadejia. The Project is aimed at reducing poverty by providing access to basic services and infrastructure for the poor settlements.

1.2 As set out in the terms of reference, one of the specific tasks to be accomplished by our consultancy, Integrated Engineering Associates (IEA) is to prepare detailed Environmental Impact Assessment (EIA) for the highest priority sub-project.

1.3 It is globally accepted that the natural environment is the main life support system, which must be wisely utilized and protected for sustainable development and indeed future generations. In order to achieve this, the concept of EIA is incorporated into the developmental activities by providing policy framework in tackling the problem.

1.4 EIA is specifically designed to assess in advance the likely negative / positive impact of a developmental project on the environment before the project is executed. In the event that a planned project could pose a serious negative impact on the environment, the project may well be discarded in favour of the well being of the generality of the people. However, on the alternative, the negative aspect can be greatly modified to reduced its impact on the environment.

1.5 This EIA Draft Final Report describes the project, its justification and identifies the physical and social impacts of the community based upgrading scheme in Hadejia town. It also formulates necessary mitigation action for inclusion in the implementation of the project.
2.0 Methodology

2.1 The project team had discussions with community members on likely impacts of the project. Inventory of the nature and physical conditions of the sites as well as the relevant data were acquired and subjected to detailed analysis.

2.2 Identified impacts on the projects were based on checklist / leopard matrix technique. This consists of the comprehensive list of all environmental effects and impact indicators designed to stimulate the analyst to think broadly about possible consequences and contemplated actions on the site.

3.0 Policy, Legal and Administrative Framework

3.1 This draft EIA report is prepared in compliance with the following:

3.1.1 World Bank Operational Directives on Environmental Assessment (OD 1.00) on new projects.

3.1.2 Federal Government of Nigeria EIA Decree 86 of 1992 including:

(i) Procedural Guidelines and
(ii) Sectoral Guidelines

both published by Federal Environmental Projection Agency (FEPA), September 1995.

3.1.3 Jigawa State Environmental Projection Authority Law – CAP.49.

3.1.4 Jigawa State Environmental Task Force – CAP.50.
4.0 Proposed Project

4.1 The proposed project consists of 20 nos. components under 4 no. sub-projects. They are to be sited in various locations within the three wards of Yayari, Gandun, Bindingona and Chadi in Hadejia town. The project components are listed as follows, under 4 nos. (four) major headings:

4.1.1 Buildings

(a) New Buildings

(i) Provisions of 3 nos. primary schools
(ii) Provisions of skills acquisition center
(iii) Provisions of 2 nos. primary health centers
(iv) Provisions of 4 nos. public conveniences.

(b) Rehabilitation / Reconstruction

(i) Rehabilitation of 8 nos. existing primary schools.
(ii) Reconstruction of fish market.
(iii) Improvement of abattoir.

4.1.2 Roads / Civil Works

(i) Paving of footpaths
(ii) Improvement of access roads.
(iii) Rehabilitation and reconstruction of primary and secondary drains.
(iv) Reconstruction of river embankment.
(v) Provision of simple security lighting in alleys.
(vi) Provision of streets lights.
(vii) Provision of 2 nos. sumps and pumping stations.
4.1.3 Waste Management

(i) Reclamation of 3 nos. wastewater ponds.
(ii) Provision of 4 nos. dumper based skid loaders.
(iii) Provision of steel bins.
(iv) Preparation, fencing and lighting of landfill site.

4.1.4 Water Supply

(i) Provision of 6 nos. boreholes, overhead tanks and generators.
(ii) Replacement of pipes.

4.2 The scope of works required for the various sub-projects as well as all basic and technical design considerations are discussed in section 3.0 (proposed sub-projects) of the Main Report.

5.0 Project Identification

5.1 The following valid assertions justified the project:

5.1.1 The Project will generally improve the living conditions of the people by reducing poverty through provision of basic services and infrastructure for the poor settlements. There is therefore a genuine need for the project.

5.1.2 The Project is technically and economically viable and sustainable.

5.1.3 The Project has overriding advantages over the anticipated environmental impacts.

5.1.4 Feasible mitigation measures against negative impact can be easily procured.
5.1.5 The communities (beneficiary) are enthusiastic about the project, its associated facilities and are willing to play required role(s) in operating and maintaining the project.

6.0 Existing Condition

6.1 General Environmental Condition

6.1.1 A major part of the project area is lacking in planning. Many of the houses have been built without due regard to future development. There are many narrows roads and footpaths without adequate provision for drainage facilities. Greater percentage of the inhabitants drain their liquid waste into individual open shallow pits attached to the houses. These either soak to the ground or empty on to the road to evaporate.

6.1.2 Close inspection of the major road drains reveals that most of them are of broken walls and eroded bottom. Many of the drains are completely blocked resulting from dumping of solid waste mostly of agricultural origin. Septic water pools are common sights and they provide breeding ground for vector disease carriers. It is not surprising, therefore, that over 50% of reported cases of ill health and diseases are due to malaria fever.

6.1.3 In the education sector, classrooms are inadequate to cater for the growing pupils population. This may partly explain why many children of school age are seen roaming the streets.

6.1.4 As a result of the rapid growth in population, the existing healthcare system has become inadequate. It is therefore appropriate that construction of 2nos. new primary health centers have been proposed.

6.1.5 There are no public conveniences in Hadejia town. Failure to address the problem may lead to serious health problems within the community.
6.2 Road / Civil Works

6.2.1 We surveyed footpaths and access roads in three (3) major areas within Hadejia town, including Matsaro, Masallachi and Unguwar Goje covering a total length of 20 km.

6.2.2 The footpaths are typically alleys looping round the access roads. Shallow drains exist at the center of these alleys with lined and unlined sandcrete blocks in place.

6.2.3 The proposed work under the footpaths sub-project include:

(i) Provision of access and footpath of averagely 2m to 3m width, paved with interlocking tiles.

(ii) Pavement structure would consist of 100% compacted sub-base and 75mm free draining material.

(iii) Center drains are to be maintained where they exist but to be rehabilitated with block sidewalls, concrete base and cover. New drains are to be constructed where they do not exist.

6.2.4 Primary drain spanning from Titin Usman through alleys to Mailolo pond and the secondary drains were inspected. These stretch for a distance of about 5km. The primary drain has an average width of 1.2m and a depth of 1.5m. Over 70% of the existing side block walls are either broken or have become dilapidated as a result of ageing.

6.2.5 The Consultants propose a complete reconstruction of the dilapidated drains, to be provided with concrete slab cover at critical locations along the drain profile.
6.2.6 In order to prevent flooding, an embankment is provided on the left bank of River Hadejia. In recent time, this embankment has developed several weak points of about 2km stretch along its 17km stretch. The weak points are to be reinforced with suitable material to forestall future flood disaster.

6.2.7 The provision of streetlights may lead to reduction in crime, insecurity and increase economic activities in the night.

6.3 Rehabilitation / Reconstruction of Existing Buildings

6.3.1 Primary School

(a) The underlisted 8 nos. primary schools were selected for rehabilitation:

(i) Garko Islamiyya Primary School.
(ii) Bello Bayi Primary School
(iii) Sambo Special Primary School.
(iv) Maje Primary School.
(v) Kofar Arewa Primary School.
(vi) Abdul Kadir Primary School.
(vii) Buhari Primary School.
(viii) Agumau Primary School.

6.3.2 The survey of the schools were conducted and the following general observations were made:

(i) Heap of rubbish are scattered around the schools premises, as there are no refuse disposal facilities.

(ii) Absence of functional drains.

(iii) Inadequate and dilapidated conveniences.

(iv) Presence of cracks
6.3.3 Fish Market

The existing fish market is located within the Hadejia central market. The facility is an open type shed with little or no facilities for proper sanitation. There is lack of public convenience, washing area and storage facility. The drainage system is generally poor, coupled with poor accessibility especially during the wet season.

6.3.4 Abattoir

There is an abattoir located at about 200m off Ringim Road. The existing building cannot be used because of its dilapidation and unhygienic nature. Presently, slaughtering is carried out on an open-air slab.

Physical inspection of the building reveals cracks wider than 5mm. No drainage facility is available for the enormous waste generated daily. There is also inadequate water supply, as only one hand pump based borehole exists.

6.4 Waste System

6.4.1 Wastewater Ponds

Three (3 no.) ponds located along Mailolo drain were identified and inspected. These ponds are Maikarago, Tagurzar Yamma and Fagen Mata ponds. The ponds are presently used as dumping sites by the neighborhood, albeit, unhygenically. They are marshy, particularly after rains. The ponds are to be reclaimed with suitable material and drained appropriately.
6.4.2 Landfill Site

A sanitary landfill is proposed along Hadejia-Nguru road on the outskirts of the town.

6.4.3 Solid Waste Disposal

Facilities for solid waste disposal system are generally inadequate. The project is providing for adequate storage, transportation and treatment of solid waste.

6.4.4 Liquid Waste Disposal

A high proportion of liquid waste is drained by gravity into ponds around the town. In order to optimize the uses of these ponds, Garko and Hospital ponds are planned under this project to be drained into the River Hadejia.

6.5 Water Supply

6.5.1 The existing water supply system comprises of 15 nos. motorized boreholes, 5 nos. pumping stations and 2 nos. overhead tanks. These facilities are capable of producing a total output of 7.35M litres per day.

Owing to irregular public power supply, ageing standby power sources, ageing and insufficient reticulation system, the present production is as low as 5.3M liters per day only.

6.5.2 The deficiencies in water supply would be addressed in order to achieve improved water supply system by provision of the following:

(i) Provision of 6 nos. motorized boreholes.
(ii) Provision of 5 nos. elevated pressed steel tank of 22,500 and 45,000 liters capacity.
(iii) Provision of Generators
7.0 Environmental Impacts of the Project

The Hadejia Urban upgrading projects will have many and varied potential impacts on the community and the environment in general. The envisaged positive and negative impacts of the project and mitigation measures are presented below.

The sub-projects have been grouped into the following components for the purpose of analysis:

(a) Health
(b) Education
(c) Roads and Drainages
(d) Security Lighting
(e) Water Supply
(f) Sanitation
(g) Fish Market and Abattoir
<table>
<thead>
<tr>
<th>S/NO.</th>
<th>PROJECT COMPONENT</th>
<th>POSITIVE IMPACT</th>
<th>NEGATIVE IMPACT</th>
<th>MITIGATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Health</td>
<td>Better healthcare delivery to the community.</td>
<td>1. Lack of qualified personnel and common drugs may lead to alternative method of medication.</td>
<td>1. Felled trees to be replanted.</td>
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<td></td>
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<td>Communities will be more accessible to healthcare delivery.</td>
<td>2. Government expenditure towards healthcare delivery will increase.</td>
<td>2. Adequate funding of the health centers by the authority concerned necessary for improved healthcare delivery.</td>
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<td>Hospital Congestion reduced. More patients are now accommodated.</td>
<td>3. Expansion may lead to destruction of natural plants.</td>
<td>3. Proper refuse disposal system should be provided.</td>
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<td>4. Community participation necessary measure to counter misuse of the health centers.</td>
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<td>2.</td>
<td>Education</td>
<td>There will be a substantial increase in pupils' enrolment. Respondent parents show delight and readiness to enroll their children and wards as a result of the new look of the schools.</td>
<td>1. Increase in pupils' enrolment may result in more accidents, especially for those schools that are situated adjacent to major roads.</td>
<td>1. Full participation of the community is necessary. Zebra crossing to safeguard the pupils as they cross major roads.</td>
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<td>Better and more serene atmosphere of learning achieved.</td>
<td>2. The expected increase in enrolment may not be achieved if the level of unemployment rate continues to rise. Parents are likely to prefer their children assisting them in the farms than to go to schools.</td>
<td>2. Lessons on sanitary condition of premises and healthcare to be encouraged.</td>
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<td>Improved sanitary condition with the provision of latrine to the schools.</td>
<td>3. Close proximity of the schools to residential houses can cause a lot of discomfort to learning due to noise pollution.</td>
<td>3. Pupils should be encouraged to stay within the school boundary till closing hours.</td>
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<td>Wall Fence will prevent trespassing unto the schools premises. Less distraction to pupils by intruders.</td>
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<td>4. Signs to be posted at close proximity of the schools to reduce automobiles noises.</td>
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<td>S/N.</td>
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<td>3.</td>
<td>ROAD AND DRAINAGES</td>
<td>1. Improvement of accessibility to remote areas of the town.</td>
<td>1. Noise pollution by plants during the construction stage likely to increase.</td>
<td>1. Intensive awareness campaign to prevent refuse dumping along the open channels of the drains.</td>
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<td></td>
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<td>2. Proper channeling of liquid waste and floods during the rainy season.</td>
<td>2. Dumping of refuse in the open channels.</td>
<td>2. Community participation is a necessary measure to avoid misuse of improved structures.</td>
</tr>
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<td>4. Rate of accidents will be reduced with better pavement condition.</td>
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<td>S/No.</td>
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<td>4.</td>
<td>SECURITY LIGHTING</td>
<td>1. Community’s premises better brightened up at nights</td>
<td>1. Use of high wattage lamps in the areas may have some radiation effects on the people especially children.</td>
<td>1. Proper screening of the materials to be used to ensure compliance with quality requirements</td>
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<td>2. The residents will feel more comfortable and secured about at night</td>
<td>2. The brightness of these lamps can attract all sorts of insects. This may lead to insect stings on residents causing unusual ailments</td>
<td>2. Intensive awareness campaigns to encourage proper usage and non-removal of facilities provided.</td>
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<td>3. Defecating and refuse dumping at open places will be minimised during night times.</td>
<td>3. Security lighting may have a slight effect on the social and cultural set up of the people, especially those who sleep outside due to heat.</td>
<td>3. Community participation and use of NGO’s will help preserve the structures</td>
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<td>4. Crime rates will reduce, as criminals that operate in dark hours will feel very un-secure to do so.</td>
<td>4. Children who normally would retire to their homes earlier may now spend more time playing outside</td>
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<td>5.</td>
<td>WATER SUPPLY</td>
<td>1. Improved access to potable water</td>
<td>1. Government expenditure in water supply will increase</td>
<td>1. Adequate funding of the entire rehabilitated water scheme by the authority.</td>
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<td>2. Reduction in water borne/related diseases.</td>
<td>2. Inadequate commitment for operation and maintenance may render the project unsustainable</td>
<td>2. Proper execution of the operation and maintenance manual must be observed</td>
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<td>3. Conservation of time and energy expended in fetching water from long distances</td>
<td>3. The use of generator and pumps will increase noise and smoke pollution</td>
<td>3. Community participation should be ensured and the formation of water users committee be made.</td>
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<td>4. Relative reduction in individual hospital bills and fiscal budget on water related diseases</td>
<td>4. Poor development of the boreholes and inadequate treatment of steel tanks may cause water contamination</td>
<td>4. Enforcement of the state environmental law should be observed.</td>
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<td>5. Project implementation should be strictly monitored to ensure that design specifications are fully observed.</td>
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<td>6.</td>
<td>SANITATION</td>
<td>1. Reclamation of wastewater ponds, provision of public conveniences sanitary landfill site provision of solid waste management, will engender cleaner and healthier environment</td>
<td>1. Inadequate operation and maintenance of the facilities can easily cause health risk and spread diseases in epidemic proportion</td>
<td>1. The Jigawa State Environmental Protection Authority Law should be fully observed.</td>
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<td>2. Improved public health will reduce incidence of diseases, epidemic and therefore reduce hospital attendance</td>
<td>2. Poorly sited landfill sites (upstream of water courses for example) can lead to water pollution as the leachate drains into watercourses and even groundwater.</td>
<td>2. Operation and maintenance manual for all the sanitation facilities must be properly observed</td>
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<td>3. Improved solid waste management will reduced or completely obliterate wastes deposited in drains and thus prevent unnecessary flooding.</td>
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<td>3. Community participation and NGO's would greatly facilitate adequate O + M of the structures</td>
</tr>
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<td>4. Possibility of groundwater contamination is reduced and may at worst only occur at poorly sited landfill sites</td>
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<td>4. Sanitary landfill should be professionally sited.</td>
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<td>5. Media houses (radio &amp; television and other forms of communication system should be used to sensitise the importance of personal hygiene and clean environment</td>
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<td>S/No</td>
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<td>7</td>
<td>FISH MARKET &amp; ABATTOIR</td>
<td>1. Acceptable quality of meat and fish is guaranteed</td>
<td>1. Large volume of water is required in effective operation of abattoir and fish market. It may be difficult to control water misuse</td>
<td>1. Intensive awareness campaign to prevent water misuse and observation of hygiene rules as it applies to abattoir and fish market</td>
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<td>2. Possibility of food poisoning as a result of contaminated fish and or meat is highly reduced</td>
<td>2. Waste generated will require effective treatment and disposal. Failure to evolve adequate treatment and disposal of abattoir and fish market (including solid, liquid and sludge's) may result to health hazards</td>
<td>2. Effective collection, treatment and disposal system of fish market and abattoir wastes should be ensured</td>
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<td>3. Organised abattoir and fish market will generate other downstream cottage industries e.g. leather (animal skin), butter, fish/animal oil, light ceramics (cow bones) etc.</td>
<td>3. Air pollution is expected as a result of animal wastes and others. This is manifested in house flies that characterise abattoirs, especially where hygiene rules are not observed</td>
<td>3. Substantial amount of the money generated from the traders (as levies, rental fees, service charges etc.) should be applied to operation and maintenance of the market.</td>
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<td>4. Enhancement of public health</td>
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<td>4. The state environmental sanitation should ensure regular environmental agency monitoring and or auditing and effect appropriate action.</td>
</tr>
</tbody>
</table>
APPENDIX I

DIGITISED MAP OF PROJECT AREA
Appendix 1: Digitized Map of the Project Area
APPENDIX II

PICTURES OF PROJECT AREA
Dilapidation at Sambo Special Primary School
Bello Bayi Islamic Primary School
Matsaro Primary School
Recommended for total demolition.

Hudu Primary School,
Toilet at Maje Primary School
Abattoir
Masallaci Footpath
Unguwar Goje Footpath
Typical Drain
River Embankment, Portion of Weak Section
Breached Section of Embankment
Garko Pond
Mailolo Pond
Tagurza Yamma Pond for Reclamation
Fagen Mata Pond for Reclamation
Proposed Landfill Site