Strategic Environmental Assessment of the Transport Integration Plan of Ghana

Environmental Report

June 2010

Government of Ghana
Ministry of Finance and Economic Planning and the European Commission

Mott MacDonald

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Executive Summary

Introduction

The purpose of the Transport Sector Planning and Integration Programme (TSPIP) was to help achieve equitable economic growth and accelerated poverty reduction by providing a sound planning framework for the transport sector. The programme had five components, including preparation of an Integrated Transport Plan (ITP); a Strategic Environmental Assessment (SEA) of the ITP; a set of monitoring indicators; technical assistance in public finance management; and technical assistance in transport policy implementation and planning. This report is the final reporting document to be produced by the SEA.

The National Transport Policy (NTP) of 2008 requires that SEAs must be carried out on all transport policies, plans and programmes, ensuring environmental and cost benefits and risks are considered for each transport mode. Ghana's Environmental Protection Agency (EPA) also promotes the use of SEA as a means of mainstreaming environment in the national development agenda in order to achieve sustainable development. The requirement for SEAs of transport plans is also a mandate of Directive 2001/42/EC of the European Parliament and of the Council on the Assessment of the Effects of Certain Plans and Programmes on the Environment (referred to as the EU SEA Directive).

Therefore, the overall objective of this SEA is to mainstream environmental considerations into the Integrated Transport Plan for Ghana to ensure acceptability as well as sustainability of the Plan.

The SEA study covered three main phases, namely:

- The Scoping Phase, May-July 2009, leading to a Scoping Report;
- The Analysis Phase, September 2009-April 2010, leading to an Analysis Report;
- The Environmental Strategy Phase, April-June 2010, leading to the present Draft Final Environmental Report.

It was originally expected that the ITP transport planning process would generate several scenarios or plan alternatives, which are normally required inputs for SEAs of transport plans. In practice, however, only one plan option was developed for the ITP.

Legal and Institutional Framework for Environmental Management

National legislation affecting environmental management of the transport sector includes the Constitution of Ghana of 1992, the EPA Act of 1994, and various specific Acts relating for instance to ports and shipping, free trade zones, forestry, lands and labour regulations.

Important relevant national policies include the National Environmental Policy of 1991, the Forest and Wildlife Policy (1994), the National Energy Policy (now under review), Gender Policy (still to be developed), the National Food and Agricultural Sector Development Policy (2007), the National Employment Policy (2008), and the National Transport Policy (NTP) of 2008.

Important relevant transport sector guidelines and frameworks include environmental assessment guidelines developed over many years by EPA for transport infrastructure and transport services; the

Environmental and Social Management Framework (ESMF) developed by MORH in 2007 for the Transport Sector Development Programme (TSDP) of 2007; and the Road Sector Resettlement Policy Framework (RPF) developed also by MORH in 2007.

Ghana is a signatory to over 40 international conventions, treaties and protocols related to the environment, of which several are relevant to environmental management in the transport sector, including for instance conventions on wetlands, pollution and climate change.

Key agencies responsible for environmental management in the transport sector include EPA, the Forestry Commission (FC), the Water Resources Commission (WRC) and transport sector ministries, departments and agencies (MDAs). EPA is responsible for issues related to air quality, water quality, noise, pollution, land degradation, bio-diversity and loss of habitats, and for monitoring of related indicators; it is also the specifically designated authority of the National Oil Spill Contingency Plan (NOSCP). The FC is responsible for conservation of forest resources and wildlife resources, while WRC coordinates and harmonises water resource management; both agencies work closely with EPA.

Major transport sector agencies include the Ghana Highway Authority (GHA), Departments of Urban Roads and Feeder Roads (DUR and DFR), various road transport and safety agencies, Ghana Maritime Authority (GMA), Ghana Ports and Harbours Authority (GPHA), Volta Lake Transport Company (VLTC), Ghana Railway Company Ltd. (GRCL), Ghana Civil Aviation Authority (GCAA), Ghana Airports Company Ltd (GACL), and Ghana International Airlines Ltd (GIA). Several of these agencies already have some environmental or safety capacity, including GHA, DUR, GMA, GPHA, VLTC and GCAA.

Environmental Concerns in the Transport Sector

Major environmental concerns arising from the different transport modes in Ghana were identified during the Scoping Phase, drawing in particular on consultations at the Scoping Workshop. Fifteen key areas of concern were identified in terms of environmental, social and cultural, economic and institutional sustainability.

Environmental sustainability concerns identified include air pollution, land degradation, loss of bio-diversity and habitats, and quality of ground and surface water, while concerns on social and cultural sustainability included health and safety, relocation and voluntary resettlement, access to basic social and technical services, and spread of STI/HIV/AIDS. Concerns regarding economic sustainability are economic growth, job creation for local people, and poverty reduction; finally institutional concerns include good governance, inter- and cross-sectoral institutional collaboration, strengthening of institutions and capacity-building, and attraction of private sector investments.

Assessment of ITP Project Evaluation Criteria

Before the Scoping Phase had commenced, ITP had already produced first drafts of a Multi-Criteria Evaluation Manual (MCEM) to be used in evaluating and prioritising ITP infrastructure projects. The SEA assessed compatibility of the already established ITP project evaluation criteria with the objectives of the SEA sustainability criteria mentioned above, which were identified during the Scoping Phase.

Weighting allocated by the MCEM to project criteria and mode is summarised in Table 1.

Table 1: Weighting Allocated to Project Evaluation Criteria

Sector	Economic Viability	Environmental Effects	Social Effects	Strategic Access	Inter/Intra Modal Integration	Local Access
Road	50%	10%	10%	10%	10%	10%
Railways	50%	15%	15%	10%	10%	
Ports	60%	20%	20%			
Aviation		30%	30%	20%		20%

Source: EGIS BCEOM, Multi-Criteria Evaluation Manual, 1st Draft, March 2009; and 3rd Draft, November 2009.

In view of the significance of the MCEM in the ITP infrastructure prioritisation, various comments were made to the ITP Consultant on the weightings shown, including in particular a query as to why different weights had been allocated to the same criteria for the different modes. The same weightings, however, remained in place in the November 2009 updating of the MCEM, used for the ITP model runs and project evaluations. It was also noted that inland waterways and pipelines had not been included.

As regards environmental sustainability criteria, it was found that many of criteria for both the SEA and ITP were compatible. However, although air quality was highly rated by SEA stakeholders, it appears not to have been included in the MCEM, and noise pollution has been considered only for ports and airports.

Regarding social and cultural sustainability criteria, it was noted that noise and air quality should have been considered in terms of their social effect, and that public health, especially the spread of STI/HIV/AIDS, is an important social issue that should have been included in the MCEM criteria.

In terms of economic sustainability criteria, it was noted that the ITP criteria of poverty reduction was strongly supportive of all the SEA criteria, and that the ITP criteria appeared to pre-suppose that economic growth and stability would favourably influence economic viability and reaffirm project sustainability.

The project evaluation criteria had not taken into account institutional criteria, since these relate more to factors necessary for effective implementation (ie. enabling environment); however it was recommended to the ITP planners that the institutional criteria defined by the SEA be given priority in the Plan.

Baseline Data

As part of the SEA process, baseline data must be collected as a basis for forecasting and monitoring of environmental and social effects, and to help in identifying transport-related problems. Preliminary indicators were identified for selected sustainability criteria, and data have been collected to the extent possible, within constraints of availability and accessibility. Some of the available data include:

- Air quality;
- Biodiversity;
- Transportation safety for all modes of transport;
- Accessibility to basic social and technical services through transportation;

- HIV/AIDS prevalence rates;
- GDP;
- Poverty incidence.

Summary of the Draft Integrated Plan, 2011-15

Introduction

The Draft ITP covers policy and strategy, institutional and regulatory reform, and infrastructural investment for the period 2011-15. It seeks to establish a standardised planning procedure for evaluation of infrastructural investment options, using the CUBE transport planning model. The plan produced by this ITP process in Ghana covers only national highways and railways, but for future plans (after 2015) it is expected to extend the process to other highways, feeder and urban roads, and other transport modes.

Transport Policy and Strategy

Policy is currently defined by the National Transport Policy of 2008, with the following key sector goals:

- Establish Ghana as a transportation hub for West Africa;
- Create an accessible, affordable, reliable, effective and efficient transport system;
- Integrate land use, transport and development planning and transport service provision;
- Create a vibrant investment and management environment for public and private sector investors:
- Develop and implement a comprehensive and integrated policy, governance and institutional frameworks;
- Ensure sustainable development in the transport sector;
- Develop adequate human resources and apply new technology.

Measures to achieve these policy goals are being implemented through the Transport Sector Development Programme (TSDP), which will feed into the Sector Medium-Term Development Plan (SMTDP), now being finalised for 2010-13.

Sector Constraints

Identified existing constraints in the transport sector include:

- Lack of an integrated transport planning approach;
- Lack of funding for transport infrastructure provision and funding;
- Poor performance and supervision of road works contracts;

- Poor road safety levels;
- Many gaps in the road institutional and regulatory framework;
- Inadequate regulation of road passenger and freight services;
- Poor condition of the remaining operating rail network;
- Difficulty in finding potential private investors for railway rehabilitation;
- Urgent need for upgrading of Tema and Takoradi harbours to accommodate larger vessels;
- Poor road and rail links at the two ports;
- Inadequacy of many facilities at Kotoka International Airport (KIA);
- Very limited domestic aviation infrastructure and services;
- Shortage of well-trained aviation personnel;
- Poor safety levels on Volta Lake;
- Navigational difficulties on Lake Volta, exacerbated by fluctuating water levels.

Institutional and Regulatory Proposals

The Draft ITP proposes institutional and regulatory measures to:

- Strengthen existing management and supervisory measures for infrastructure projects;
- Strengthen management of public finances in the transport sector;
- Adapt and develop the transport sector institutional framework;
- Implement new decision-making methods, planning tools and data collection;
- Fill skills and knowledge gaps;
- Mainstream environmental and safety issues;
- Improve maritime and inland water regulation and standards;
- Improve maritime training and education services;
- Provide institutional and capacity building measures for railways;
- Improve road safety, standards and regulations;
- Improve road transport services, including urban bus projects.

Proposed Infrastructure Works

Maintenance of all transport infrastructure has been a longstanding problem in Ghana. For roads, it is recommended that prime future attention should be paid to clearing the maintenance backlog, with the second priority being rehabilitation of existing roads, followed by construction of new capacity.

New infrastructure investments have been considered only for national highways and railways. It is assumed that certain investments currently in progress or definitely planned will be in place by 2015, to give the Base Network 2015. New investments to be started over the period 2011-15 have also been considered, being evaluated on the basis of the CUBE model results. Projects were tested on the basis of viability indicators including the ratio of Net Present Value (NPV) to discounted cost, a 'final score' taking into account non-economic criteria outlined in the Multi-Criteria Evaluation Manual, and an optimum opening year. Projects were accepted as being justified for implementation by 2015 if they showed positive NPV ratios, an adequate final score, and an optimum opening year of 2018 or earlier. Using these tests, seven road projects have been found viable, along with one railway project. The road projects, all for the addition of an additional two lanes to paved highways, were listed in the Draft ITP as follows:

N 1 Aflao-Tema	170.0 km
N 1 Tema-Accra	21.0 km
N 1 Accra-Kasoa	17.1 km
N 1 Kasoa-N 8 Junction	104.8 km
N 2 Asikuma-Hohoe	126.6 km
N 4 Accra-Kukurantumi	120.2 km
N 6 Kukurantumi-Kumasi	153.5 km

The justified railway project was for rehabilitation of the 304-km Tema-Kumasi line.

Financial Needs

A summary is made of funding requirements for existing Government of Ghana (GOG) plans and additional ITP proposals. For an identified spending requirement of US$ 5.32 billion for 2011-15, only US$ 1.60 billion has been currently secured (assuming planned increases in the road fund levy). The implication was that recourse to development partners may be the only practical funding source for clearance of the road maintenance backlog.

Stakeholder Consultations

Throughout the study, there was wide consultation with stakeholders from transport sector MDAs, EPA, other public sector ministries and agencies, and private sector operators and users. A Scoping Workshop was held in June 2009 (with 56 participants), and three Consultation Workshops on the Draft ITP of February 2010 were held in February/March 2010, attended by some 90 stakeholders.

In July 2009, the SEA Team also attended an Oil and Gas Conference hosted by the Ministry of Transport (MOT), and held two focus group discussions, firstly with development partners, transport agencies and the EPA, and secondly with gender interest groups.

The purpose of the Stakeholder Consultation Workshops was to define the main areas of focus for the subsequent analysis of sustainability of the Draft ITP, as already listed above. In the absence of alternative Plan scenarios for comparison, stakeholders were asked to evaluate three possible scenarios of the implementation of the Draft ITP in terms of infrastructure as well as regulatory and institutional proposals, by applying the three SEA tools, namely the compatibility matrix, the sustainability test and the poverty / transportation compound matrix.

The three scenarios evaluated were:

Scenario 1	Do minimum: Base Network (including already committed projects) by 2015 (in effect the "Without ITP" scenario);
Scenario 2	Base Network plus additional ITP institutional reforms by 2015; and
Scenario 3	Base Network plus additional ITP institutional reforms plus additional ITP infrastructure investments by 2015.

Scenario 3 comprises the full Draft Integrated Transport Plan, February 2010.

Major conclusions drawn from the workshops were as follows:

- The Draft ITP is in general compatible with NTP and SMTDP objectives;
- The institutional and regulatory measures of the Draft Plan will, if implemented and enforced, contribute to ensuring that the Plan is sustainable;
- The infrastructure component of the Draft Plan supports compatibility and sustainability criteria, but does not support poverty reduction, or benefit all parts of the country.

Other specific findings were that the ITP showed little coverage of inter-modal integration or interchange facilities, and in particular that integration of road and water transport services at important ferry crossings of Volta Lake was not mentioned in the Plan.

Analysis of Draft ITP Scenarios

This SEA was required to analyse various plan options proposed in the ITP. However, as no alternative plans were developed, the analysis of scenarios was confined to the "With Plan" and "Without Plan" scenarios (corresponding to Scenarios 3 and 1 respectively as defined above for the Stakeholder Consultation Workshops).

"With Plan" Scenario

Compatibility with National Transport Policy Goals

The Draft ITP states that its institutional and regulatory proposals are designed to support the goals of the NTP. Nevertheless, detailed analysis of Draft ITP compatibility with the seven policy goals of the NTP gave the following results:

Policy Goal 1 - Ghana as a West African transport hub: Although the Draft Plan concentrates on roads and railways, on the basis that separate master plans are under way for the port and air sectors, it should have discussed airports, seaports and coastal shipping more fully. It should also have paid more attention to road and rail corridors, and to ECOWAS and African Union transport plans.

Policy Goal 2 - Accessible, affordable, reliable, effective and efficient transport system: Due to the limitation of Draft ITP infrastructure proposals to national roads, and the high weighting given to economic viability in the evaluation criteria, all investment proposals are concentrated on main routes in southern Ghana. Therefore the Draft ITP does not adequately support the key national development goal of poverty alleviation.

Policy Goal 3 - Integrated land use, transport and development planning and service provision: The Draft ITP process concentrates on integrating transport and economic planning only, while its institutional proposals generally require more detailed elaboration in relation to implementation.

Policy Goal 4 - Vibrant investment and management environment for public and private investors: While the need for public-private partnership (PPP) is acknowledged, the Draft ITP should have provided guidance for developing a PPP framework for transport. With the private sector now dominant in service provision, it becomes more important to promote an attractive investment climate.

Policy Goal 5 - Comprehensive and integrated policy, governance and institutional frameworks: While this NTP goal requires transport policies and plans to show wide synergy between development needs, inter-sectoral and modal objectives, and users' needs, the Draft ITP does not analyse international and regional requirements, and pays little attention to social, livelihood and health needs.

Policy Goal 6 - Sustainable development in the transport sector: The NTP requires SEAs to be carried out on transport policies, plans and programmes. The Policy also stipulates requirements for adaptation by the transport sector to climate change, as well as general compliance with environmental, health and safety regulations. The Draft ITP needs to provide more elaboration as to how these NTP proposals can be taken further. There should also be a general integration of environmental and safety requirements into all institutional and regulatory proposals.

Policy Goal 7 - Develop adequate human resources and apply new technology: While the Draft ITP indicates support of this goal, it provides few details, for instance in the area of contractor training and capacity building.

Thus, while the Draft ITP generally attempts to meet NTP requirements, there are still significant gaps that could have been addressed.

Sustainability of the Draft ITP

Ghanaian procedures require sustainability to be examined under the four pillars of sustainability, ie. natural/biophysical resources, social/cultural conditions, economic considerations and the institutional framework. Comments under each pillar are summarised below.

Natural/Biophysical Pillar: Most issues under this pillar are related largely to construction activities rather than operations, and should be alleviated by the proposals for improving contract management. Air quality, relating to both construction and operations, has scarcely been mentioned in the Draft ITP. Recommendations from the SEA of the NTP (2007) for fuel efficiency and emissions control should have been incorporated, and proposals made for developing them further.

Social and Cultural Pillar: Regarding transportation safety, the Draft ITP should have set targets for reduction of accident rates. The infrastructure proposals do not address accessibility to social and technical services. Road sector guidelines for raising awareness of STI/HIV/AIDS and malaria should have been extended to other transport modes.

Economic Pillar: As the Draft ITP project evaluation methodology emphasises evidence-based economic viability, the investment proposals do not take account of untapped economic potential, and do not promote a wide geographical spread of investments. Potential for job creation in road and rail construction will be limited and restricted to the south, though some new jobs could be created at toll stations. The key area of poverty reduction is hardly addressed as access to rural farms and markets is scarcely considered, and affordability of rural transport is not covered.

Institutional Pillar: The Draft ITP makes no specific related proposals that could boost good governance, especially since it does little to improve rural accessibility. As such, no strategies are put forward for capacity building. Although the Draft ITP has addressed inter- and cross-sectoral institutional collaboration, required resources and costs have not been elaborated. PPP has been recommended for rail, though without details of modality, and opportunities in ports and oil sector supply logistics have also been mentioned.

Thus, as in the sustainability assessment, it is found that detailed implementation measures are generally lacking from the Draft ITP.

Poverty–Transport Dimensions

The transport sector is identified in the Draft ITP as providing key strategic support to the national development goals of economic growth and poverty reduction. Unfortunately, and as noted above, the Draft ITP's infrastructural, institutional and regulatory proposals do not facilitate poverty reduction in any significant way. The effects on poverty-transport dimensions are considered under the headings of livelihoods, health and well-being, vulnerability and institutions.

Livelihoods: The Draft ITP does very little to improve access for farmers in remote rural areas to farm inputs and extension services, or to markets for their produce, and will thus would not make much impact in reducing rural poverty. Job creation due to transport projects will be limited, as already discussed.

Health and well-Being: There are no specific proposals on access to health facilities, or for feeder roads which lead to many of them. There are no proposals for non-motorised transport (NMT) which could help

reduce rural drudgery. More detailed proposals should have been made for measures to reduce impact of STI/HIV/AIDS associated with the non-road transport modes. Although there are measures to increase transportation safety, the Draft ITP does not address accessibility to transport for women, children, the old, and the physically challenged.

Vulnerability to risks: There are no proposals to address access for disaster relief or emergencies. Guidelines for STI/HIV/AIDS awareness and prevention should have been further developed. Proposals for accident reduction could be further developed. Threats to the security of transport users have not been addressed.

Institutional arrangements: The Draft ITP makes no proposals to facilitate participation in governance, for instance by access to district durbars. Since the infrastructure proposals are along main national routes, they will provide no opportunities for labour-based construction, which could boost rural employment. There could have been more detail on reducing irregularities in contract management and supervision. More specific proposals could have been made on collaboration between transport planning and poverty reduction. Also, since most public transport services are now provided by the private sector, there could have been greater attention to promotion of a vibrant climate for private sector investment.

Secondary, Synergistic and Cumulative Effects

Various secondary effects, beneficial or adverse, can result from individual measures, or from combinations of measures. For instance, rehabilitation of the Western and Eastern Lines of the railway may both lower the transport costs of transferred traffic, and reduce congestion, accidents and road deterioration on the parallel national roads. Or better control of road construction contracts may lead to better road surfaces and reduced risk of premature road failures.

In general, some beneficial effects may be experienced from the institutional and regulatory measures of the Draft ITP; however, these could have been stronger if more specific plan actions and targets had also been set.

"Without Plan" Scenario

Under the "Without Plan" scenario, the network would not be developed beyond the Base Network, 2015, and none of the proposed institutional or regulatory measures would be implemented. Compatibility with NTP goals would be seriously compromised, and effects of the institutional measures in supporting environmental sustainability would be lost, while there would be no significant impact on poverty reduction. The transport network would suffer from increasing congestion, inadequate maintenance, high accident rates, and rising costs to the transport user.

Significant Effects of the Draft ITP

A risk assessment was carried out in order to determine the significance of the potential effects of the Draft ITP. The assessment aimed to establish:

- The risks to the sustainability of the proposed Draft ITP;

- The risks posed by the Draft ITP to the four pillars of sustainability, ie. natural/biophysical resources, social/cultural conditions, economic considerations and the institutional framework.

Risk was defined as a function of the probability (or likelihood) of an adverse effect occurring and the expected severity of its consequences, where an adverse effect is any source of potential damage, harm or negative impact. Effects of the Draft ITP were assessed both qualitatively and quantitatively. Sixteen evaluation criteria were selected, being the 15 already defined at the Scoping Workshop under the environmental, socio-cultural, economic and institutional sustainability pillars, with climate change being separated from air quality as a distinct potential risk under the environmental pillar.

Effects receiving scores of 70 or more were classified as high-risk, while those scoring 31-69 were considered as medium-risk, and those scoring 30 or under as low-risk. Results of the evaluation are shown in Table 2, with eight criteria classified as high-risk and eight as medium-risk; the highest risks are found to be to poverty reduction, air quality, climate change, and public health.

Table 2: Significance of the Environmental Effects of the Draft ITP

Risks to	Risk Level	Score	Ranking
Air quality	H	90	2
Climate change	H	88	3=
Land degradation	M	48	8=
Loss of biodiversity (implies loss of habitat, flora and fauna)	M	42	9=
Water quality	H	72	6
Transportation safety	H	80	4=
Relocation and involuntary resettlement	H	76	5
Accessibility by ALL to basic social and technical services through transportation	H	80	4=
Public health, including STI/HIV/AIDS, malaria	H	88	3=
Economic growth and stability	M	51	7
Job creation and income generation through investment	M	48	8=
Poverty reduction	H	95	1
Good governance	M	48	8=
Institutional strengthening and capacity building	M	48	8=
Inter/cross-sectoral institutional collaboration and coordination of roles and mandates	M	42	9=
Private sector participation and protection of investment	M	33	10

Individual effects of the Draft ITP are described below.

Natural/Biophysical Effects

Air quality: The risk to air quality is considered high, because of the likelihood that EIA recommendations, contract requirements and Draft ITP recommendations and mitigation measures may not be adequately enforced, due partly to lack of capacity for enforcement of regulations and effective contract supervision.

Climate change: Climate change effects could be felt across the transport sector, for instance in damage to roads and railways, disruption to inland water services from changing lake levels, or flooding through sea

level rise of ports or coastal roads. Although NDPC is preparing a Policy on Climate Change, the risk level is considered high because of unpredictability of climate change effects, likely delay in implementing adaptation strategies, and imperfect disaster response systems.

Land degradation: EIAs for individual construction projects should do much to alleviate effects such as soil erosion and degradation from oil spillages. Nevertheless, the significant dangers of lack of compliance and enforcement are considered to pose a medium-level risk.

Loss of biodiversity and habitat: Widening of road reserves will be required for all seven Draft ITP road infrastructure projects, and will therefore contribute to loss of habitat and biodiversity. Project EIAs will propose conservation measures for environmentally sensitive areas, though there will then be a risk of non-compliance or lack of enforcement. Although effects on biodiversity should be minor, vegetation clearance will be inevitable, so that overall risk is considered to be medium-level.

Water quality: Road vehicles, rail wagons or vessels carrying hazardous substances are likely to suffer accidents during operation which could impact seriously on water quality. Also, construction activities will lead to risk of soil erosion and spillage of hazardous substances. Despite Draft ITP proposals for improved contract supervision, the risk of inadequate enforcement will remain, and therefore the risk to water quality is high.

Social and Cultural Effects

Transportation safety: Since 2000 there has been no substantial improvement in road accident rates, and the pattern for rail and inland water transport is similar. Inadequate infrastructure maintenance and poor enforcement of safety regulations continue to compound the problem. Full implementation of Draft ITP proposals would reduce this risk, but implementation may be slow and imperfect. The risk to transportation safety is considered to be high.

Relocation and involuntary resettlement: These effects are expected to occur as part of all the Draft ITP infrastructure proposals. Project EIAs will identify compensation needs, and define resettlement action plans (RAPs). As yet there are no RFP guidelines for modes other than roads. It may be difficult to ensure proper implementation of RAPs, and this may be compounded by lack of adequate funding. The risk of relocation and involuntary resettlement is therefore assessed as high.

Accessibility to social and technical services: The Draft ITP infrastructure proposals do very little to improve accessibility, though cross-sectoral institutional proposals may help to address this in future planning. With uncertainty as to how quickly and effectively these proposals will be implemented, the risk level is classified as high.

Public health: The Draft ITP includes proposals for awareness raising and education on STI/HIV/AIDS and malaria, and strengthened contract management may reduce risks from these diseases during construction activities. But, since measures may take time to give results, the risk factor is considered to be high.

Economic Effects

Economic growth and stability: Since the Draft ITP will not improve transport infrastructure over large areas of the country, it will not boost economic development in many areas. However, it will not have an actively negative effect on growth, The risk level is therefore considered to be medium.

Job creation and income generation through investments: New construction activities will have only limited impact on job creation, though reduced transport costs on improved major routes may boost activity along these routes to some extent. Rural economies will receive little stimulus. Since consequences are expected to be minor to intermediate, the overall risk level is considered medium.

Poverty reduction: As discussed previously, proposals in the Draft ITP do not promote poverty reduction. Since this also emerged as the most important sustainability criterion, the associated risk level has been rated as the highest of all.

Institutional Effects

Good governance: The challenge to ensuring good governance in many rural areas is the inadequate access to transportation for participation in civic processes. The absence of proposals in the Draft ITP for improving feeder and access roads means that the Plan will have little impact on good governance in rural areas. Although the consequence of this is expected to be only intermediate, the high likelihood will generate medium risk.

Institutional strengthening and capacity building: Proposals for institutional improvements in the Draft IPT may not always be implemented, especially since responsible MDAs often lack the necessary capacity or funding. The consequences are deemed intermediate, and therefore the risk level is considered medium.

Inter/cross-sectoral institutional collaboration and co-ordination: Proposals in the Draft ITP lack detail, and may take time to be implemented. Since the consequence of this is judged to be minor to intermediate, the overall risk level is considered medium.

Private sector participation: Though PPP is being promoted by government, no national PPP framework has yet been prepared. This may particularly affect the attractions of private railway investors. With the consequence rated as intermediate, the risk level is considered to be medium.

Opportunities

A review of the risks of the Draft ITP indicated a number of opportunities for ITP proposals to be developed in synergy with environmental sustainability criteria. These include the following:

- The opportunity for transport sector agencies to work closely with the Ghana Environmental Protection Agency (EPA) on issues of climate change and air quality. This could help Ghana become a leader in such inter-agency co-operation within West Africa;
- The opportunity to develop rapid response strategies to accidents endangering water quality through spillage of hazardous chemicals including oil products. This could centre on developing response capacity within the traffic police, who are usually quickly involved after such accidents;

- A drive could be made to spread knowledge and experience of the high transportation safety standards necessarily required in air and maritime transport to the other transport modes. This will in any case become more significant if Ghana is to progress towards multi-modal transport. A key issue will be to address the weak enforcement of compliance with traffic regulations;

- Incentives could be designed to support development of non-motorised transport (NMT) as a key element of providing local accessibility to social and technical services;

- There are opportunities to consider whether targeted subsidies can be directed at providing essential transport facilities for the rural and urban poor.

Recommendations

Synopsis of SEA Findings

Key strategic environmental findings may be summarised as follows:

- While stated Draft ITP goals are largely compatible with those of NTP, these proposals are often not taken significantly forward, for instance by specification of actions, targets and budgets;

- While the Draft ITP appears in general to be environmentally sustainable, there is a major concern about its inability to address poverty reduction, as a central goal of the national development agenda;

- The poverty-transport analysis confirmed the inadequate treatment of poverty in the Draft ITP, which has not facilitated access to essential services for the rural and urban poor;

- Eight areas of high potential risk identified by the risk assessment included air quality, climate change, water quality, transportation safety, relocation and involuntary resettlement, accessibility to social and technical services, public health and poverty reduction.

The different SEA tests led inescapably to the over-riding conclusion that poverty reduction will not be facilitated by the Draft ITP.

Recommendations for Inclusion into Final ITP

Recommendations for inclusion into the Final ITP are summarised below for each sustainability pillar.

Natural and Biophysical Effects

Air quality: ITP recommendations for term- or performance-based (and other civil works) contracts should be developed to ensure that dust and air emissions are controlled as part of environmental management. Improved maintenance of roads will also reduce emission levels.

Climate change: The SEA of the NTP has recommended introduction of low-sulphur fuels, and measures to ensure that all imported vehicles are fuel-efficient, and these should be developed further in the Final ITP. Mass transit options should also be considered.

Land degradation: Comprehensive environmental auditing should be introduced for all transport modes, to include soil erosion and land degradation.

Loss of biodiversity and habitat: The comprehensive environmental auditing should also cover controlled clearance of vegetation, and avoidance of environmentally sensitive areas.

Water quality: The environmental auditing measures for land degradation will also benefit water quality; in addition transportation safety recommendations must give specific attention to accidents involving hazardous substances.

Social and Cultural Effects

Transportation safety: ITP safety proposals need to be further elaborated, and road safety proposals made by other sector agencies should also be considered.

Relocation and involuntary resettlement: The ITP should give further guidelines on how resettlement planning frameworks can be developed for all transport sub-sectors, and on departmental responsibilities for implementing resettlement action plans.

Accessibility to social and technical services: The ITP should include coverage of feeder roads and of transport services to remote areas, especially in the north and to the east of Volta Lake.

Public health: The ITP should refine STI/HIV/AIDS guidelines for the road sector, and develop parallel guidelines for the other transport modes. It should also specify environmental management measures for treatment of borrow pits to be included in all civil works contracts.

Economic Effects

Economic growth and stability: The ITP should include infrastructure provisions for feeder roads and NMT, and facilitate transport services to poorly served regions, and also to potential tourist areas. It should also include a comprehensive investment plan for the whole transport sector.

Job creation and income generation: ITP recommendations for strengthening capacity and using local contractors need to be followed through; also the Plan should cover investment opportunities.

Poverty reduction: The Plan must be revised to give greater weight to the key goal of poverty reduction.

Institutional Effects

Good governance: The ITP must develop specific proposals in relation to equity of accessibility, participation, transparency and accountability, also covering feeder roads and regional expansion of the road network.

Institutional strengthening and capacity building: The ITP proposals need to be more detailed in order to facilitate early implementation, giving guidelines on procedures and allocation of tasks.

Inter/cross-sectional institutional collaboration and coordination: Recommendations for institutional collaboration and coordination need to be developed in greater detail in the Final ITP.

Private sector participation: The ITP should include proposals for developing an attractive PPP framework.

Recommendations for Transport Sector MDAs

Natural/ Biophysical Effects

Air quality: In order to improve enforcement of air emission related regulations that already exist, the Ministry of Interior should be represented on the proposed inter-ministerial committee, and the traffic police should receive training in environmental awareness. Relevant MDAs should implement proposals for improved maintenance regimes, which can also reduce emissions.

Climate change: Since the transport sector was not included in sectors covered by a 2008 EPA report on climate change impacts and necessary adaptation measures in Ghana, the sector now needs to develop its own adaptation strategies.

Land degradation: Transport sector MDAs need to ensure that term- and performance-based (and other civil works) contracts specify the requirement for environmental management, including soil erosion and land degradation, and that the recommended environmental audits are regularly carried out.

Loss of biodiversity and habitat: MDAs must ensure that the recommended environmental management covers clearing of vegetation, avoidance of environmentally sensitive areas, and implementation of environmental management plans (EMPs).

Water quality: The environmental audits should also cover protection of water sources, including protection against pollution from hazardous substances.

Social and Cultural Effects

Relocation and involuntary resettlement: MDAs must ensure proper implementation of RAPs.

Public health: MDAs must ensure that contracts specify obligations to raise awareness on STI/HIV/AIDS, and to help control malaria by rehabilitating borrow pits and managing water discharges.

Economic Effects

Job creation and income generation: MDAs must ensure implementation of recommendations on strengthening capacity and using local contractors.

Recommendations for Improving SEA Processes in Transport Sector Planning

When terms of reference are developed for transport sector plans and programmes, the planning and associated SEA activities must be structured so as to allow constant feedback between the two related processes. The roles of EPA and the NDPC in the SEA process must also be recognised.

There must also be sufficient budgetary and time allowances for wider stakeholder participation in SEA processes, with established feedback mechanisms. Ideally the transport sector should develop a forum to deal specifically with SEAs. There is also need for the transport sector to establish a national database for key environmental data.

Monitoring Plan

The monitoring plan comprises three components to ensure that:

1. SEA recommendations are considered during the preparation and finalisation of the Final Integrated Transport Plan;

2. Recommendations for sustainability in the ITP are properly implemented by the responsible transport sector agencies;

3. Any effects on priority sustainability concerns which were identified by stakeholders, and formed the basis of the SEA analysis, can be monitored.

Monitoring measures for the SEA recommendations made for inclusion in the Final ITP are structured by environmental criteria under the four sustainability pillars of natural and biophysical resources, socio-cultural aspects, economic aspects and institutional aspects. As part of the ITP Programme, these should not incur any additional costs.

After ITP finalisation, specific items will require monitoring by the transport sector agencies. Proposed monitoring measures indicate responsibilities, timeframes and indicative budgets where required. Most of the proposals for monitoring should be part of routine operational costs. It is recommended that the police force (particularly traffic police) is trained in environmental awareness in order that they can competently recognise environmental offences, and therefore enforce regulations pertaining to environmental management. It is proposed that environmental awareness and management are included as part of the training curriculum at the Police Academy. This will cost in the region of € 4,000 in the first year, and € 1,500 in subsequent years. It has also been recommended that MORH and MOT engage a consultant to carry out a climate change risks and vulnerability assessment of transport infrastructure in Ghana, so as to enable the implementation of appropriate adaptation measures. It is envisaged that this would cost in the region of € 500,000.

The final component of the monitoring plan covers areas where indicators have been identified for priority sustainability criteria. This type of monitoring will enable improvement or decline in environmental sustainability to be determined, and establish the extent to which ITP implementation contributes to sustainability. The establishment of a transport sector environmental database to facilitate this process (recommended above) is estimated to cost € 5,000.

Acronyms and Abbreviations

BOST	Bulk Oil Storage and Transport Company
BRT	Bus Rapid Transit
DFR	Department of Feeder Roads
DUR	Department of Urban Roads
DVLA	Driver and Vehicle Licensing Authority
EA	Environmental Assessment
EAA	Environmental Assessment and Audit
EMP	Environmental Management Plan
EU	European Union
ECOWAS	Economic Commission of West African States
EIA	Environmental Impact Assessment
EPA	Environmental Protection Agency
EPC	Environmental Protection Council
ESMF	Environmental and Social Management Framework
EU	European Union
FIR	Flight Information Region
FSD	Forest Services Division
GACL	Ghana Airports Company Ltd
GCAA	Ghana Civil Aviation Authority
GEA	Ghana Employers Association
GHA	Ghana Highways Authority
GIA	Ghana International Airlines
GLSS	Ghana Living Standards Survey
GMA	Ghana Maritime Authority
GOG	Government of Ghana
GPHA	Ghana Ports and Harbours Authority
GPRS	Ghana Poverty Reduction Strategy
GPRS II	Growth and Poverty Reduction Strategy II
GPRTU	Ghana Private Road Transport Union
GRCL	Ghana Railway Company Ltd
GRDA	Ghana Railway Development Authority
GSS	Ghana Statistical Service
GTTC	Government Technical Training Centre
HIV/AIDS	Human Immuno-deficiency Virus/Acquired Immuno-deficiency Syndrome
HRD	Human Resources Development
ICT	Information Communications Technology
IMT	Intermediate Modes of Transport
IRR	Internal Rate of Return
ITP	Integrated Transport Plan
MCE	Multi Criteria Evaluation
MCEM	Multi Criteria Evaluation Manual
MDAs	Ministries, Departments and Agencies
MDG	Millennium Development Goals
MMDA	Metropolitan, Municipal and District Assemblies
MMT	Metro Mass Transit

MOFEP	Ministry of Finance and Economic Planning
MLGRD	Ministry of Local Government and Rural Development
MORH	Ministry of Roads and Highways
MOT	Ministry of Transport
MTTU	Motor Traffic and Transport Unit
NDPC	National Development Planning Commission
NEP	National Environment Policy
NMT	Non Motorised Transport
NMTDP	National Medium-Term Development Plan
NOSCP	National Oil Spill Contingency Plan
NPV	Net Present Value
NRSC	National Road Safety Commission
NTP	National Transport Policy
ODPM	Office of the Deputy Prime Minister, UK
PPP	Public Private Partnership
RPF	Resettlement Policy Framework
RSDP	Road Sector Development Programme
SADA	Savannah Accelerated Development Authority
SEA	Strategic Environmental Assessment
SCGA	Strategic Country Gender Assessment
SMTDP	Sector Medium-Term Development Plan
STC	State Transport Company
STI	Sexually Transmitted Infections
TIPG	Transport Integration Plan of Ghana
TOR	Terms of Reference
TPG	Transport Planning Group
TSDP	Transport Sector Development Programme
TSPIP	Transport Sector Planning and Integration Programme
UNFCCC	United Nations Framework Convention on Climate Change
VLTC	Volta Lake Transport Company Ltd
VRA	Volta River Authority
WB	World Bank
WRC	Water Resources Commission

1. Introduction

1.1 Background

The Transport Sector Planning and Integration Programme (TSPIP), financed under the 9th European Development Fund, aims to achieve equitable economic growth and accelerated poverty reduction within the context of a sustained democracy. The Programme is being undertaken by the Ministry of Finance and Economic Planning (the Contracting Authority), and is being supervised by the Ministry of Roads and Highways, in collaboration with the Ministry of Transport.

The purpose of the TSPIP is to provide a sound planning framework for the Transport Sector, informing the sector's service and investment priorities, meeting the needs stemming from economic development, regional integration and social cohesion, as defined in the national development agenda and at Economic Commission of West African States (ECOWAS) level.

The TSPIP was designed to result in:

An Integrated Transport Plan (ITP)[1], that is intended to provide a sound planning framework for evaluating the performance of the Transport Sector, by providing the strategic framework and action plans to support the process of transport integration in Ghana over the short, medium and long-term (provisionally 5, 10 and 20 years);

- Strategic Environmental Assessment (SEA) of the relevant components of the plan and the alternative options, to ensure that environmental considerations are mainstreamed into Transport Sector planning;
- A set of indicators enabling the sector to monitor its performance;
- Technical assistance to improve sector public finance management;
- Technical assistance to support policy implementation and planning in the sector;
- Capacity building at the Ministry of Transportation.

On 22nd December 2008, M/s Mott MacDonald Ltd, in association with Municipal Development Collaborative Ltd, was awarded the contract to carry out the Strategic Environmental Assessment of the Transport Integration Plan.

[1] The Integrated Transport Plan (ITP) is referred to as the Transport Integration Plan (TIP) in the SEA Terms of Reference. However, EGIS BCEOM, the Consultant developing the Plan refers to it as the ITP, and we have chosen to do the same for the sake of consistency.

1.2 Purpose and Objectives of the SEA of the ITP

The Growth and Poverty Reduction Strategy (GPRS II) demonstrated that environmental[2] considerations can be integrated into national development planning and strategies. Moreover, it set a precedent for the need for extensive consultation in the development of sustainable planning. As a result SEA tools have been incorporated into the National Development Planning Commission's (NDPC) Planning Guidelines for both Sectors and Districts.

Goal 6 of the National Transport Policy (NTP) stresses the need for sustainable development in the Transport Sector, and requires that SEAs will be carried out on all transport policies, plans and programmes, ensuring environmental and cost benefits and risks are considered for each transport mode.

The SEA of the National Transport Policy (Strategic Environmental Assessment of the Transport Sector, Ghana, June 2007) reaffirms the need for SEAs to be conducted for all transport sector plans and programmes in order that environmental considerations may be mainstreamed into these plans and programmes. With regard to the Integrated Transport Plan, the reasoning was that one plan option is to be selected from various proposed options, and one of the criteria for selecting a preferred option will be its environmental effects.

The objective of the Directive 2001/42/EC of the European Parliament and of the Council on the Assessment of the Effects of Certain Plans and Programmes on the Environment (referred to as the EU SEA Directive) as stated in Article 1, is: "to provide for a high level of protection of the environment and to contribute to the integration of environmental considerations into the preparation and adoption of plans and programmes with a view to promoting sustainable development". This is in line with Ghana Environmental Protection Agency's (EPA) drive to use SEA a means of mainstreaming environment in the national development agenda in order to achieve sustainable development.

The SEA of the ITP was therefore included as a component of the Transport Sector Planning and Integration Programme.

Thus, the overall objective of the SEA is to mainstream environmental considerations into the Integrated Transport Plan for Ghana to ensure acceptability as well as sustainability of the Plan.

1.3 Scope of the SEA

In defining the scope of the SEA, EPA guidelines as well as EU SEA guidelines[3] were drawn upon. The following types of objectives were distinguished:

- The objectives of the Integrated Transport Plan;

[2] The term 'environment' in relation to this SEA covers the biophysical, socio-economic, socio-cultural and institutional environments in which decisions are made (SEA of the GPRS, 2004).

[3] ODPM, A Practical Guide to Strategic Environmental Assessment Directive, 2005

- External objectives, including those that need to be considered independently of the SEA process, for example national and international objectives for environmental sustainability;
- The objectives of the SEA derived from extensive stakeholder consultations in the SEA scoping process.

The objectives of the Integrated Transport Plan are to provide a "sound planning framework for the transport sector, informing the sector's service and investment priorities, meeting the needs stemming from economic development, regional integration and social cohesion".

External objectives influencing the SEA include national policies and legislation, transport sector environmental assessment guidelines, environmental and social management frameworks, and resettlement policy frameworks. International level objectives are based on conventions, treaties and protocols to which Ghana has acceded. These are discussed in detail in Chapter 2.

Environmental sustainability criteria were identified at the SEA Scoping Workshop vis a vis the four pillars of sustainability as defined in the Ghanaian context and which cover natural and biophysical resources, social and cultural aspects, economic aspects and institutional aspects.

Based on these concerns, the scope of the SEA was defined as being to ensure that transport infrastructure facilities and services, and other related activities, emanating from the Integrated Transport Plan will satisfy environmental, social and cultural, economic and institutional sustainability criteria objectives, as described in detail in Section 3.3 of this report.

1.4 Study Approach and Methodology

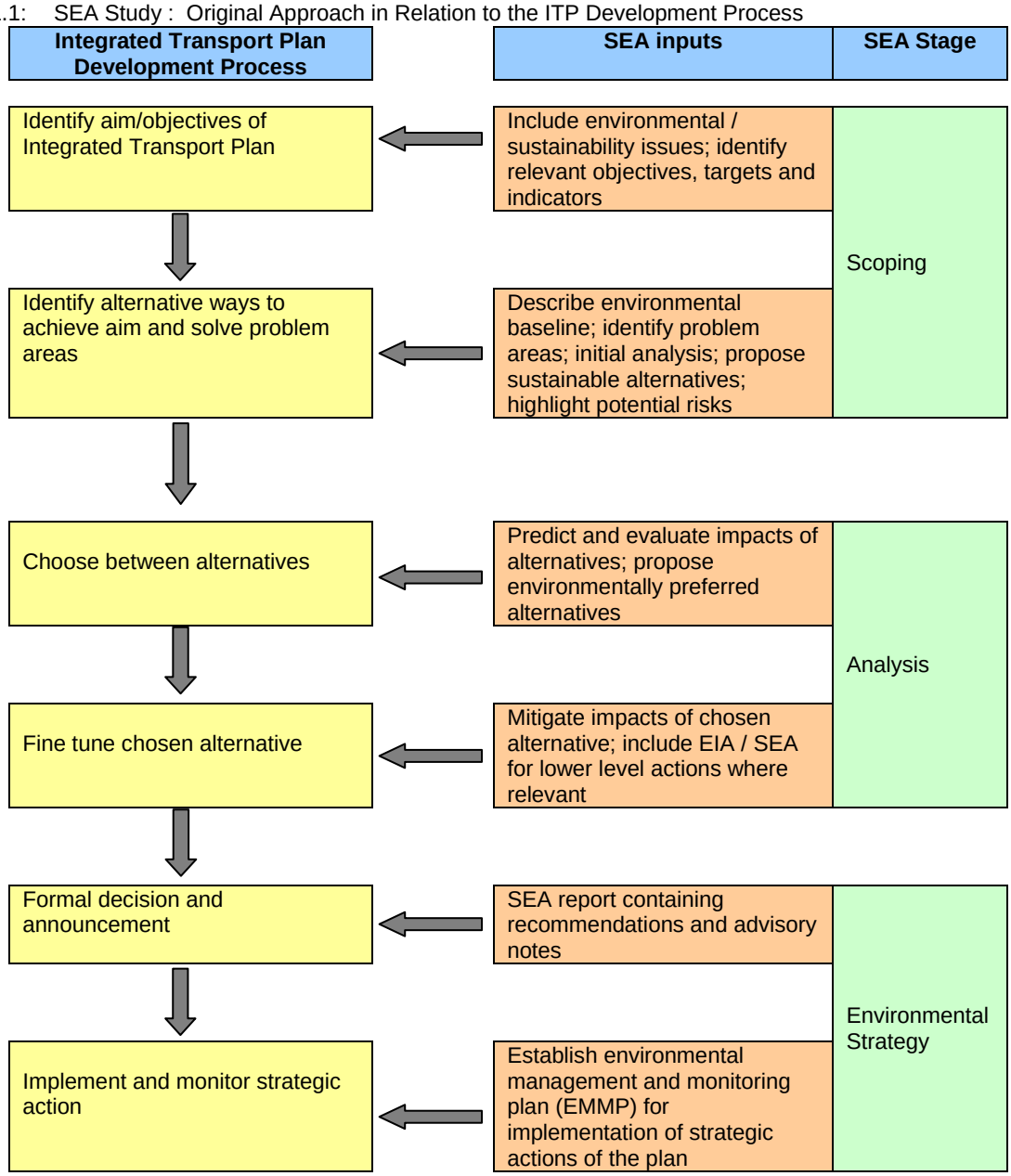
1.4.1 Approach

The SEA approach has involved significant stakeholder consultation, including workshops, where the SEA facilitated the process of identifying problems, issues and alternatives, as well as mitigation measures. It was envisaged that an added benefit of this approach would be the provision of an element of capacity building among all the stakeholders involved and would contribute to inter-ministerial and inter-departmental cooperation.

During the Inception Phase (February 2009), the understanding of the SEA Team was that the CUBE model used by the ITP planners would generate a number of projects that would be arranged in various combinations to give a number of plan alternatives or scenarios, which would reflect various priorities of the NTP. These scenarios would then provide the basis for consultations and also for analysis by the SEA Team. This broadly follows the EPA's approach to carrying out the SEA for the National Transport Policy (2007), and is also based on the EPA's Review of the Strategic Environmental Assessment (SEA) in Ghana which was launched in May 2009.

The original approach to the present SEA as proposed in the Inception Report of March 2009 is illustrated schematically in Figure 1.1 below:

Figure 1.1: SEA Study : Original Approach in Relation to the ITP Development Process



Adapted from: EPA, Strategic Environment Assessment of the Transport Sector, Ghana, June 2007.

However during the Scoping Phase it became evident that projects generated through the CUBE model, would be prioritised using the various criteria described in the Multi Criteria Evaluation Manual (MCEM). Prioritised individual projects would make up the Plan, together with recommendations for institutional and regulatory measures. No plan scenarios would be generated. This then posed a challenge for the SEA methodology, in that typically SEA methodologies require plan scenarios to be evaluated. As a result, whilst scenarios were subsequently developed solely for the purposes of stakeholder consultation, the SEA analysis could only address the “With Plan” and “Without Plan” situations.

1.4.2 SEA Study Activities

Inception Phase

The SEA commenced in February 2009. Inception Phase activities included reviewing various documentation, reports and data; reviewing the institutional, legal and regulatory framework for environmental management within Ghana; and highlighting changes to the SEA approach and methodology in view of the progress of the ITP study. The Inception Report was submitted in early March 2009.

Scoping Phase

The Scoping Phase began in mid-May 2009. Activities undertaken in the Scoping Phase included:

- A review of ITP documents and other relevant plans / programmes (including the National Transport Policy (NTP), the SEA of the NTP, the Transport Sector Development Programme, and the Sector Medium-Term Development Plan (SMTDP));
- Consultative meetings with various stakeholders, for example women's groups and vulnerable groups, as well as development partners and other individuals. The consultation process culminated in a Scoping Workshop (a requirement of the EPA), the purpose of which was to scope the SEA;
- An extensive stakeholder analysis, where transport sector stakeholders (ministries, departments and agencies (MDAs), users and beneficiaries) were listed and categorised according to the level of interaction / communication required. This stakeholder listing was presented to stakeholders at the SEA Scoping Workshop for review;
- The identification of national and international level objectives. The former consisted of the Constitution of Ghana and national sector policies (ie. Energy Policy, Agricultural Policy, Tourism Policy, Health Policy, etc), while international objectives were derived from international treaties and conventions to which Ghana has acceded, such as the Convention on Biological Diversity, the UN Framework Convention on Climate Change and the Kyoto Protocol, among others;
- The identification of SEA objectives in order to refine the scope of the SEA;
- The identification and collection of preliminary baseline data and sources;
- A further review of the institutional and legal framework for environmental management systems and governance in Ghana, which also addressed the capacity of national institutions to manage sustainability issues;
- The preparation of digitised maps to depict the impacts of the existing and baseline networks on environmental and social systems in the country;
- Provision of comments/feedback to the ITP Consultant on the Multi Criteria Evaluation Manual (MCEM) developed by them in order to assist in the prioritization of infrastructure projects for inclusion in the Plan; and
- Analysis of the compatibility of ITP project evaluation criteria with SEA objectives.

The Scoping Report was submitted at the end of July 2009.

Analysis Phase

The Analysis Phase commenced on 22nd September 2009, and an Interim Report was submitted in mid December 2009. During this phase activities included:

- Continued identification of data sources and collection of baseline data in order to identify measurable, appropriate indicators for the purposes of environmental monitoring and management, which was elaborated upon in the next stage of the SEA;
- The development of SEA Tools;
- Participation by the SEA team in weekly Transport Planning Group (TPG) meetings and providing feedback to the ITP planners as and when required;
- Continued stakeholder consultations, including three consultation workshops. The findings of the consultations were fed back to the ITP Consultant and ITP planners, as well as other relevant parties, through a Report on SEA Workshop Proceedings submitted in March 2010, as well as through presentations at the TPG meetings of 9th and 23rd March 2010;
- Testing of the Draft ITP against SEA Tools;
- A detailed review and analysis of the Draft ITP
- Recommendations for inclusion of environmental considerations into the ITP.

The Analysis Report was submitted in mid-April 2010.

Environmental Strategy Phase

The Environmental Strategy Phase began in mid-April 2010. It comprised the formulation of recommendations, a proposal for establishing a monitoring system for incorporation of SEA recommendations into the plan and its implementation, and this Environmental Report.

As a result of the SEA process, a number of recommendations were arrived at to overcome constraints and enhance opportunities, and for the development of a framework to ensure sustainable development within the transportation sector. The recommendations focus on environmental management strategies to be included in the ITP, and on institutional capacity required for implementation of certain strategies and for monitoring of environmental sustainability criteria.

Monitoring will establish the accuracy of the SEA in terms of predicted effects of the ITP, and then allow for modification of recommended strategies accordingly. For the purposes of monitoring, indicators have been identified to provide information on the performance and progress of each environmental management strategy recommended for inclusion in the ITP. The monitoring plan suggests how monitoring of these indicators should be done, how frequently, and who should be responsible for monitoring and action. The monitoring plan also provides details of institutional resource requirements and funding, as well as training.

This Environmental Report documents the entire SEA process, and covers methodologies, stakeholder consultation processes, outcomes, and recommendations.

1.5 Report Structure

Chapter 1 is the introduction, and describes the overall objectives and scope of the SEA, the SEA approach and methodology, and SEA activities. Chapter 2 describes national and international environmental legislation and policies influencing the SEA. Chapter 3 discusses existing and priority environmental concerns in the transport sector, culminating in the definition of the scope of the SEA in terms of identified environmental sustainability criteria. In Chapter 4, ITP project evaluation criteria are assessed against SEA environmental sustainability criteria. Chapter 5 defines baseline data obtained for prioritised sustainability criteria, that could be used as a benchmark for monitoring purposes.

Chapter 6 gives a summary of the Draft ITP. Chapter 7 summarises stakeholder consultations and their outcomes undertaken during the course of the SEA. Chapter 8 provides an analysis of the compatibility of the Draft ITP with the goals of the NTP, the sustainability of the Draft ITP and the Plan's ability to support poverty reduction through transportation solutions. Chapter 9 describes the significant effects of the Draft ITP proposals. In Chapter 10, recommendations are made for mitigation and management of these effects for inclusion into the Final ITP, for actions to be taken by the transport sector MDAs, and for improvements to the SEA process in transport planning.

Chapter 11 presents a monitoring plan with three separate components for monitoring, ie. to ensure that recommendations emerging from this SEA are included in the Final Integrated Transport Plan, to follow up actions required to be taken during the implementation of the ITP, and to monitor of key environmental sustainability criteria. Monitoring plans are provided for each component, listing indicators to be monitored, assigning responsibility for monitoring, and where applicable, proposing institutional and training requirements, together with associated costs.

Supporting documentation is provided in the Appendices at the end of this report.

2. Legal and Institutional Framework for Environmental Management

The consideration of national and international environmental legislation and policies within the SEA is intended to address the influence of external objectives which form part of the wider objectives of the SEA. This chapter describes national and international legislation and policies that inform the environmental objectives relevant to the transport sector. It also discusses institutional arrangements for environmental management. Full details of the legislation, regulations and policies are presented in Appendix A.

2.1 National Legislation

Constitution of Ghana

The 1992 Constitution of the Republic of Ghana is the fundamental law from which all other legislation and regulations are derived. The Constitution, among others, promotes the need for appropriate measures to protect and safeguard the national environment for posterity and to seek co-operation with other states and bodies for purposes of protecting the wider international environment for mankind. It also requires just and reasonable access by all citizens to public facilities and services in accordance with law, the integration of the peoples of Ghana and prohibit discrimination and prejudice on the grounds of place of origin, circumstances of birth, ethnic origin, gender or religion, creed or other beliefs. In order to achieve these objectives, the Constitution states that the State shall take appropriate measures to provide adequate facilities for, and encourage, free mobility of people, goods and services throughout Ghana, and that as far as practicable, a government shall continue and execute projects and programmes commenced by the previous Governments.

EPA Act, 1994 (Act 490)

The EPA Act, 1994 (Act 490) established the Environmental Protection Agency. It is the framework legislation from which subsequent environmental laws are currently derived. The Act stipulates the functions of the EPA with regard to environmental regulation, legal compliance, effective partnership with various government and non-government agencies, environmental management, training and capacity building and revenue generation.

However, until very recent times (ie. after the GPRS 2003) the main economic sectors such as Transport, Energy, Mining, Tourism, etc, did not have broad national level policies to effectively address environmental concerns directly within their sectors. In the absence of such policies, environmental considerations have been generally managed through various legal instruments such acts of incorporation of the relevant organisations.

Other Relevant Legislation

In addition to the EPA law noted above, there are a number of legal provisions that deal with the specific aspects of the broad national environmental policy objectives within the sectors. Among those that cover objectives relevant to the provision of transport infrastructure, facilities and services include:

- Forestry Commission Act, 1999 (Act 571);

- The Administration of Lands Act, 1962 (Act 123);
- State Lands Act, 1962 (Act 125);
- State Lands Regulations 1962 (LI 230);
- State Lands (Amendment) (No. 2) Regulations 1963 (LI 285);
- Lands (Statutory Way Leaves) Act, 1963 (Act 186);
- Office of the Administrator of Stool Lands Act, 1994 (Act 481);
- Water Resources Commission Act, 1996 (Act 522);
- National Development Planning Act, 1994 (Act 479);
- Ghana Ports and Harbours Authority Law, 1986 (PNDC Law 160);
- Ghana Maritime Authority Act, 2002 (Act 630);
- Ghana Shipping Act, 2003 (Act 645);
- Port Regulations, 1964 (LI 352);
- Ghana Free Zones Act (Act 504);
- Labour Act, 2003 (Act 651);
- Children's Act, 1998 (Act 560);
- Human Trafficking Act, 2005;
- Ghana AIDS Commission Act, 2002 (Act 613);
- Commission on Human Rights and Administrative Justice Act, 1993 (Act 456)
- National Vocational Training Act, 1970 (Act 351).

2.2 National Policies

National Environmental Policy

Ghana's broad national-level environmental objectives are enshrined within the National Environmental Policy (NEP), adopted in 1991 to ensure that the environment was considered as a significant component in Ghana's development. The goal of the policy is to ensure sound management of the environment and the avoidance of exploitation of resources in ways that may result in irreparable damage to the environment.

The policy objectives cover maintenance of ecosystem and ecological processes essential for the functioning of the biosphere; management of natural resources and the environment; protection of humans, animals and plants and their habitats; guidance for healthy environmental practices in the national development effort; integration of environmental considerations in sectoral, structural and socio-economic planning at all levels; and seeking common solutions to environmental problems in West Africa, Africa and the world at large.

Forest and Wildlife Policy

The Forest and Wildlife Policy (1994) is aimed at developing a national forest estate and timber industry to provide the whole range of benefits required by society in a sustainable manner including the conservation of Ghana's environmental and cultural heritage. The policy objectives include management and enhancement of Ghana's permanent estate of forest and wildlife resources; promotion of viable and efficient forest-based industries, particularly in secondary and tertiary processing; promotion of public awareness and involvement of rural people in forestry and wildlife conservation; promotion of research-based and technology-led forestry and wildlife management, utilization and development; and development of effective capability at national, regional and district levels for sustainable management of forest and wildlife resources.

National Energy Policy

The draft National Energy Policy (currently under review) is intended to provide the needed framework for the energy sector to play its critical role in Ghana's socio-economic advancement. Its proposed objectives include the rehabilitation and expansion of energy production and supply; to maintain present and secure future supply of energy to satisfy demand; increase access to high quality energy services, especially for the poor; develop and exploit indigenous energy resources; and ensure energy supply in an environmentally acceptable manner, and reduce environmental impact of energy supply and use.

Gender Policy

There is a currently a policy vacuum which has to be addressed to serve transportation related needs of Ghanaian women. The Strategic Country Gender Assessment (SCGA) (2002) indicates that gender disparities persist, and that gender inequality is costly to Ghana's economic and social development and for the realization of Ghana's growth and poverty reduction objectives. Women predominate among the core poor. Gender differences in labour force participation and earnings, in time allocation, in schooling and literacy, in health and the impact of HIV/AIDS, and in access to and control of a wide range of human, economic, and social capital facilities are impediments to growth and poverty reduction in Ghana.

The SCGA is currently being used to draft a Gender Policy document. It recommends that the policy must consider: recognising and documenting the relevant roles of men and women for poverty reduction, and for policies aimed at rapid, sustainable, and better distributed growth; the different demands on men and women by different sectoral investments; improving labour productivity and access to, and control of, economically productive assets.

National Food and Agricultural Sector Development Policy

Based on the role of agriculture in the national development framework, the objectives of the National Food and Agriculture Sector Development Policy of 2007 (FASDEP II) are: food security and emergency

preparedness; improved growth in incomes; increased competitiveness and enhanced integration into domestic and international markets; sustainable management of land and environment; and science and technology applied in food and agriculture development and improved institutional coordination. Under the policy framework there are two linked transport related policies to agriculture, namely enhanced infrastructure development and modernized agriculture based on rural development.

FASDEP II states that transport planning will be fully integrated with development planning and service provision; transport infrastructure investments will be targeted to better serve population, production and tourist centres aiming to reduce overall transport costs to the government and users; and a bulk goods transportation strategy will be developed based on specific user needs, identifying critical investments in the rehabilitation of railways and inland waterways infrastructure.

National Employment Policy

The main goal of the National Employment Policy (2008) is to promote full employment in national economic and social policy, and to enable all men and women who are available and willing to work, to attain secured and sustainable livelihood through full productive and freely chosen employment and work.

2.3 Transport Sector Guidelines and Frameworks

Transport Sector EA Guidelines

Following from nearly two decades of implementation of environmental impact assessment in Ghana, the EPA in partnership with other key stakeholders has drawn up sector-specific environmental assessment guidelines for the major development sectors such as energy, transport, agriculture, health, tourism etc. These guidelines identify the issues of environmental concern that are relevant to these sectors.

While the guidelines do not mention specific objectives these may be derived from the issues of environmental concern as identified under the different transport modes used in Ghana – road, rail, aviation and maritime (including inland water transport).

Provision of major transport infrastructure for all modes (roads, rail tracks, airports and sea ports and harbours) raise concerns related to land such as land/soil degradation, destruction of habitats, loss of productive land and resettlement and compensation issues.

In operation, the various transport modes pose concerns such as emissions to air, noise and vibration, spillage of oil/chemicals, threats to public health and safety etc.

Environmental and Social Management Framework

The Environmental and Social Management Framework for the Transport Sector Development Plan (ESMF) was developed in 2007 by the Ministry of Roads and Highways (MORH) to ensure that the implementation of the TSDP conforms to the requirements of the EPA as well as the World Bank's Environmental and Social Safeguards, ie. Environmental Assessment (OP 4.01), Involuntary Resettlement (OP/BP 4.12), Forestry (OP/BP 4.36), and Management of Cultural Property (OP 11.03).

While the TSDP covers projects and services for all transport modes, the ESMF focuses mainly on the road sub-sector. The ESMF identifies a wide range of environmental and social issues arising from road transport including HIV/AIDS along transport corridors and provides guidelines for mitigation in each case.

Resettlement Policy Framework

In order to deal comprehensively with the issues of resettlement and compensation arising from provision of transport infrastructure, in 2007 the MORH developed the Road Sector Resettlement Policy Framework (RPF) to guide the process of dealing with project affected persons. The RPF closely follows the World Bank's safeguard policy on involuntary resettlement OP/BP 4.12 and conforms to the requirements of Ghana's constitution in matters of compensation for land acquisition for development projects. The emphasis is therefore on the need to avoid resettlement where feasible (or minimise it through the identification of alternatives), to provide fair and prompt compensation, to implement the resettlement plan as a development programme, and to have a transparent public disclosure and consultation process.

2.4 International Conventions

Ghana is a signatory to over 40 international conventions, treaties and protocols related to various aspects of the environment.

A number of these have specific relevance to the provision of transport infrastructure, facilities and services. These include:

- Convention on Wetlands of International Importance Especially as Waterfowl Habitat, Ramsar, 1971;
- Convention Concerning the Protection of Workers against Occupational Hazards in the Working Environment Due to Air Pollution, Noise and Vibration, Geneva, 1977;
- Convention on Biological Diversity, Rio de Janeiro, 1992;
- International Convention for the Prevention of Pollution from Ships and Protocol (MARPOL 73/78);
- United Nations Framework Convention on Climate Change, New York, 1992, and its Kyoto Protocol, 1997;
- The Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal, Basel, 1989;
- International Covenant on Economic, Social and Cultural Rights (CESCR), 1966;
- Convention on the Elimination of All Forms of Discrimination against Women (CEDAW), 1979;
- Convention on the Rights of the Child. 1989 (New York, USA).

2.5 Institutional Arrangements for Environmental Management

During the SEA process, key agencies responsible for environmental management in the transport sector were identified as being:

i. Environmental Protection Agency (EPA):
ii. Forestry Commission (FC);
iii. Water Resources Commission (WRC);
iv. Transport sector ministries, departments and agencies.

2.5.1 Environmental Protection Agency

EPA is responsible for issues related to air quality, water quality, noise, land degradation and bio-diversity and loss of habitats, and their monitoring. The Environmental Quality Department provides guidelines and quality standards for the regulation of emissions to air, discharge of effluents into receiving media and noise levels in various classes of human settlements.

These standards and guidelines are monitored and enforced through the field operations department and the legal department provides support in situations where recalcitrant culprits are prosecuted in court.

Quality of vehicular emissions are not yet regulated by law in Ghana (cases of excessive smoke emission from vehicles are treated as public nuisance and the Police are empowered to intervene). EPA is currently supporting the Driver and Vehicle Licensing Authority (DVLA) in a pilot programme to monitor emissions from vehicles in Accra. It is expected that in due course appropriate regulatory instruments would be introduced for the control of vehicular exhaust emissions.

EPA's responsibility for issues related to land degradation and bio-diversity is exercised through the various environmental management processes such as EIA, preliminary environmental reports, environmental management plans, etc. EPA has offices in all the administrative regions in Ghana which carry out monitoring to ensure compliance with the relevant permit conditions.

Furthermore, EPA is also the designated authority of Ghana's National Oil Spill Contingency Plan (NOSCP). EPA is responsible for the management of the environment, including oil spill preparedness, response and cooperation. The EPA coordinates the development and maintenance of a national capability to respond to accidents at sea, on land, inland waterways or in connection with oil pipeline, storage, transport facilities and installations which have caused or are likely to cause any kind of oil pollution. Particularly, the EPA, as the Pollution Executive Body, in the event of a spill, is required to convene National Reporting Centre, which will receive all reports of oil spill incidents or any observed pollution inside the geographical coverage of this plan. A National Oil Spill Authority is to be established which shall take responsibility for the operational response to all oil spill incidents, which have caused or are likely to cause any kind of oil pollution or to any observed pollution.

A National Contingency Plan to deal with such events or incidents has been developed. The plan covers the land territory, including the coastline of the Republic of Ghana and the areas and waters as defined in the Maritime zones law and the Territorial Seas Act. The area of responsibility of the NOSCP for Ghana includes the area offshore within the 200-nautical mile Exclusive Economic zone and all the area within the interior boundaries of the country. It is also responsible for addressing oil spills emanating from across the national borders.

2.5.2 Forestry Commission

The two (2) principal agencies of relevance in the context of this SEA are the Forest Services Division (FSD) and the Wildlife Division (WD). FSD is responsible for the conservation of the various forests and forest resources spread all over the country. They provide regulations and procedures to guide the implementation of projects which may impact on these resources to ensure that activities are carried out in a sustainable manner. They work closely with EPA in providing support during the EA phase of the projects and subsequent follow-up during implementation.

Similarly the WD has responsibility for all the wildlife resources including Ramsar sites and other wetlands, bird sanctuaries, coastal resources etc. They also work with EPA to ensure that the various sensitive areas and protected areas are not adversely impacted by projects.

In terms of capacity, both organisations are legally empowered by their acts of establishment to be able to enact and enforce various regulations to conserve and protect the resources under their control. However they face challenges related to budgetary constraints which limit their ability to effectively deploy adequate staff to monitor all the various acts of encroachment and violations that occur during implementation of projects.

2.5.3 Water Resources Commission

The Water Resources Commission (WRC) was established to facilitate the coordination and harmonization of water resource management in Ghana. Among the objectives of the WRC are to propose comprehensive plans for the utilization, conservation, development and improvement of water resources; initiate, control and coordinate activities connected with the development and utilization of water resources; collect, collate, store and disseminate data or information on water resources in Ghana; monitor and evaluate programmes for the operation and maintenance of water resources; advise the Government on any matter likely to have adverse effects on the water resources of Ghana; and advise pollution control agencies in Ghana on matters concerning the management and control of pollution of water resources;

Within this mandate, WRC works closely with EPA to ensure that projects do not impact adversely on water resources including water quality preservation. As with the FSD and WD, the WRC also faces capacity constraints in relation to inadequate budgetary allocation to ensure effective monitoring and control. WRC works with various communities to implement integrated water resources management initiatives to promote sustainable use of water resources.

2.5.4 Transport Sector Agencies

The Transport Sector agencies are responsible for initiating and implementing the programmes and projects within the Sector and are therefore responsible for ensuring compliance with the measures needed to achieve sustainability of these programmes and projects. Environmental management capacity within these agencies is described here.

Road Infrastructure Agencies

Ghana Highway Authority (GHA)

GHA has a fully developed Environment and Safety Department headed by a Director, which is responsible for ensuring environmental issues related to their activities are adequately managed. However this capacity is only available at the head office in Accra from where they provide support to the regional offices.

Department of Urban Roads (DUR)

DUR has an Environmental Desk at the head office under the Directorate of Development for dealing with environmental issues arising from their activities. This capacity is limited in terms of providing support beyond the head office.

Department of Feeder Roads (DFR)

DFR currently does not have a functional environment unit.

Road Transport Services and Safety Agencies

Road safety, road traffic enforcement, driver licensing and vehicle examination as well as the training of mechanics in the industry are administrated by the National Road Safety Commission (NRSC), the Motor Traffic and Transport Unit (MTTU) of the Ghana Police Service, and the Driver and Vehicle Licensing Authority (DVLA).

The MTTU of the Ghana Police Service enforces road traffic laws and regulations.

The DVLA inspects and issues road worthiness certificates to new vehicles as well as vehicles which are already in operation. It also tests and issues licenses to drivers.

The intercity State Transport Company Ltd (STC), established by LI 681 of 1971, is a Public Private Partnership company that provides inter-regional and international road transport services for the carriage of passengers and goods. The service is complemented by the Ghana Private Transport Union (GPRTU) and other private road transport operators.

Intra city passengers service is provided by Government agencies like the Metro Mass Transit (MMT) as well as private bus operators from the GPRTU and other private transport associations.

The Government Technical Training Centre (GTTC) develops skilled artisans for the road transport industry.

Maritime and Lake Transport Agencies

Ghana Maritime Authority (GMA)

The GMA has a dedicated Directorate of Environment and Safety that oversees issues of marine pollution and safety and compliance enforcement.

Ghana Ports and Harbours Authority (GPHA)

GPHA has a functional environment unit within the department of estates and environment and is responsible for handling environmental aspects of their activities. GPHA also has a safety unit that handles all issues related to safety within the port environment. All grades of workers within the ports are trained in safety and emergency procedures as is required for such facilities.

The Volta Lake Transport Company

VRA also has a well developed and functional directorate of environment and sustainable development which is appropriately located at Akosombo. This unit provides VLTC with the needed support for dealing with environmental concerns. In addition operators of VLTC crafts and vessels are suitably trained in safety and emergency response and certified by the Regional Maritime University in Accra.

Air Transport Agencies

The Ghana Civil Aviation Authority (GCAA) is responsible for safety regulations and provision of air navigation services at all of Ghana's airports.

The Ghana Airports Company Limited (GACL) was set up to plan, develop, and manage and maintain all public airports and aerodromes in the country.

Ghana International Airlines Limited is responsible for the provision of domestic and international passenger, mail and cargo transport.

All these agencies are expected to meet the high quality in both structural and operational safety standards established worldwide for the air transport industry in order to ensure overall sustainability. These agencies are focussed on safety/security, but not on other environmental issues.

Rail Transport Agency

Ghana Railway Company Limited (GRC) is a limited liability company established to construct, operate and maintain the railway and its terminals/stations, and other facilities like level crossing, bridges, culverts, drains and other works that will ensure the efficient and effective transportation of passengers and goods by rail. The Government of Ghana is in the process of privatising railway operations and development in Ghana. The Railway Act, 2009 (Act No. 779) has recently been passed which seeks to establish Ghana Railway Development Authority (GRDA) and to regulate railway operations in the country. The GRDA shall regulate the development and operation of railway services in Ghana in accordance with the Railway Act.

3. Environmental Concerns in the Transport Sector

Transportation as a whole, comprising of infrastructure and services (roads, vehicle terminals, railway lines, railway stations and terminals, airports, sea ports and inland ports, etc) as well as the means of transport (road vehicles, trains, aircraft, ships, boats, etc), poses various concerns for the environment.

For the SEA, the concept of environment is considered more broadly in terms of environmental sustainability which covers the natural/biophysical, socio-cultural, economic and institutional components.

3.1 Existing Concerns

Table 3.1 below presents some of the main environmental sustainability concerns arising from all the various modes of transport operating in Ghana. These concerns were first identified during the Scoping Phase of the SEA, and were subjected to stakeholder consultation at a Scoping Workshop held in June 2009, and to subsequent analysis by the SEA team to determine the priorities that ultimately defined the scope of the SEA.

Table 3.1: Analysis: Environmental Sustainability Concerns

Pillars of Sustainability	Criteria	Sources / Causes / Concerns	Modes			
			Road	Rail	Aviation	Marine /Inland Water
Natural or Biophysical Resources	Air quality	Exhaust emissions Dust from roads	x x	x	x	x
	Spillage of hazardous chemicals	Accidents during road haulage	x			
	Loss of biodiversity	Construction of infrastructure	x	x	x	x
	Loss of habitat (of flora and fauna)	Construction of infrastructure	x	x	x	x
	Water quality	Construction of infrastructure Accidents during haulage	x x	X x	x	x x
	Land degradation	Construction of infrastructure	x	x	x	x
	Waste generation	Construction of infrastructure Operation of services	x x	x x	x x	x x
	Noise and vibration	Construction of infrastructure Operation of services	x x	x x	x x	x x
Social and Cultural	Accessibility by ALL to transport services	Inadequate choices due to limited supply and costs	x	x		x
	Accessibility by ALL to basic social and technical services through transportation	Limited access mainly in rural areas and the north	x	x		

Pillars of Sustainability	Criteria	Sources / Causes / Concerns	Modes			
			Road	Rail	Aviation	Marine /Inland Water
	Transportation safety	High rate of accidents	x			x
	Congestion	Mainly on roads in urban areas	x			
	Loss of land, crops, property	Construction of infrastructure	x	x	x	x
	Relocation and involuntary resettlement	Construction of infrastructure	x	x	x	x
	Gender mainstreaming with emphasis on women's participation at all levels	Construction of infrastructure Operation of services	x x	x x	x x	x x
	Public health, including STD/HIV/AIDS, noise, air quality	Construction of infrastructure Operation of services	x x	x x	x x	x x
	Poor access to information	Due to lack of adequate access to transport	x	x	x	x
	Cultural diversity and heritage	Construction of infrastructure	x	x	x	x
	Indigenous knowledge possessed by both men and women	Construction of infrastructure	x	x		x
	Livelihood strategies	Limited by inadequate transport	x	x		x
	Changes in land use	Construction of infrastructure	x	x	x	x
	Severance of communities	Construction of infrastructure	x	x	x	x
	Equity and social cohesion	Construction of infrastructure Operation of services	x x	x x	x x	x x
Economic	Economic growth and stability	Construction of infrastructure Operation of services	x x	x x	x x	x x
	Productivity / time loss	Due to poor transportation services	x	x		x
	Job creation and income generation through investment	Construction of infrastructure Operation of services	x x	x x	x x	x x
	Fuel consumption	Affects cost of transport	x	x	x	x
	Cost recovery for sustaining provision of services	Affects cost of transport	x	x		x
	Affordability of transportation services by ALL	High costs due to poor infrastructure and services	x	x		x

Pillars of Sustainability	Criteria	Sources / Causes / Concerns	Modes			
			Road	Rail	Aviation	Marine /Inland Water
	Trade and commerce	Limited by inadequate transport services	x	x	x	x
	Poverty reduction	Constrained by poor/limited transport infrastructure and services	x	x		x IW
	Labour standards	Lack of adequate standards and poor enforcement	x	x		x IW
	Support for mass transport operators and hauling services	Poor performance of operators	x	x	x	x
Institutional	Good governance	Constrained by limited access to transport	x	x	x	x
	Dissemination and acceptance of policies, plans, programmes and legislation	Constrained by limited access to transport	x	x	x	x
	Private sector participation and protection of investment	Need to facilitate and promote PPPs in transport sector	x	x	x	x
	Inter/cross sectoral institutional collaboration and coordination of roles and mandates	Weak institutional collaboration and coordination	x	x	x	x
	Structures for monitoring, enforcement and compliance	Weak compliance and enforcement regime	x	x	x	x
	Institutional strengthening and capacity building	Limited institutional capacities	x	x	x	x
	Feasibility of options in the local context (reality check)	Need to propose appropriate viable options for transport	x	x	x	x

Source: SEA Scoping Workshop, June 2009.

3.2 Prioritised Concerns

Following the extensive consultations and evaluation carried out in the Scoping Phase, prioritised environmental sustainability concerns were identified and ranked as shown in Table 3.2 below. Under each environmental pillar, the ranking 1 denotes the concern considered most important.

Table 3.2: Prioritised Environmental Sustainability Concerns

Pillars of Sustainability	Concerns	Overall Ranking
Natural or Biophysical Resources	Air quality	1
	Loss of biodiversity (including loss of habitat of flora and fauna)	3
	Water quality	3
	Land degradation	2

Pillars of Sustainability	Concerns	Overall Ranking
Social and Cultural	Accessibility by all to basic social and technical services through transportation	3
	Transportation safety	1
	Relocation and involuntary resettlement	2
	Public health, including STD/HIV/AIDS, noise, air quality	3
Economic	Economic growth and stability	1
	Job creation and income generation through investment	2
	Poverty reduction	3
Institutional	Good governance	1
	Inter/cross sectoral institutional collaboration and coordination of roles and mandates	2
	Institutional strengthening and capacity building	2

Source: SEA Scoping Workshop, June 2009.

3.3 Specific Objectives of the SEA

Based on the overall ITP objectives, external objectives and prioritised environmental concerns, the scope of the SEA was defined as being to ensure that transport infrastructure facilities and services, and other related activities, emanating from the Integrated Transport Plan will satisfy the objectives of the following sustainability criteria:

In terms of environmental sustainability:

i. Minimise emissions of air pollutants from all forms of transportation and adapt to climate change;
ii. Avoid degradation of land and soils;
iii. Minimise loss of biodiversity, and habitats;
iv. Avoid deterioration of the quality of ground and surface water resources.

In terms of social and cultural sustainability:

i. Improve health and reduce health and safety risks;
ii. Properly handle relocation and involuntary resettlement;
iii. Provide adequate transportation access to basic social and technical services;
iv. Avoid spread of STI/HIV/AIDS and other public health risks.

In terms of economic sustainability:

i. Support growth objectives of the economy;
ii. Increase possibilities of employment of local people;
iii. Promote poverty reduction in support of national development objectives.

In terms of institutional sustainability:

i. Respect the tenets of good governance;
ii. Promote inter and cross-sectoral institutional collaboration;
iii. Promote strengthening of institutions and building capacity;
iv. Attract private sector participation and make provisions for protecting investments.

These objectives have been used for the subsequent analysis of the Draft ITP proposals and scenarios which are presented in the following chapters.

4. Assessment of ITP Project Evaluation Criteria

Within the framework of the methodology for the SEA of the ITP as presented in our Inception Report (see Section 1.4.1 above), the SEA objectives as prioritized during the Scoping Phase should have provided the ITP planners with the relevant environmental objectives to be considered in the development of the ITP. However, the ITP process had already begun to develop a number of environmental objectives within its Multi Criteria Evaluation process, to be applied for the selection of priority projects. Under the circumstances, the objectives of the SEA sustainability criteria were used as the basis for evaluating the ITP project evaluation criteria in order to establish the ITP compatibility with SEA sustainability objectives. The findings are presented below[4].

4.1 Compatibility of ITP Project Evaluation Criteria and SEA Sustainability Criteria

The project evaluation criteria described in the Draft ITP's Multi Criteria Evaluation Manual (MCEM) comprised six (6) factors, namely: economic viability, environmental effects, social effects, strategic access, inter/intra-modal integration and local access. Some general comments were made on the project evaluation criteria, and the prioritised environmental sustainability criteria were compared with project evaluation criteria as described in the MCEM.

4.1.1 General Comments on the Project Evaluation Criteria

In weighting, the various criteria proposed as part of the evaluation process had not been applied in all cases to each of the modes. Table 4.1 below notes those factors applied by mode.

Table 4.1: Weighting Allocated to Project Evaluation Criteria

Sector	Economic Viability	Environmental Effects	Social Effects	Strategic Access	Inter/Intra Modal Integration	Local Access
Road	50%	10%	10%	10%	10%	10%
Railways	50%	15%	15%	10%	10%	
Ports	60%	20%	20%			
Aviation		30%	30%	20%		20%

Source: EGIS BCEOM, Multi-Criteria Evaluation Manual, 1st Draft, March 2009; and 3rd Draft, November 2009.

The table shows that in the evaluation process:

i. Local access had not been considered for railways;
ii. Strategic access, inter/intra modal integration and local access had not been considered for ports;
iii. Economic viability and inter/intra modal integration had not been considered for aviation;
iv. Inland waterways (which provide local access) and pipelines had not been included.

The reason for allocating different weights to different modes for the same criteria was also not clear.

[4] This feedback was provided to the ITP Consultant in April 2009 and in the SEA Scoping Report (July 2009), so that revisions to the MCEM could be made accordingly.

4.1.2 Analysis of Sustainability Criteria

Each of the identified sustainability criteria were then compared with the project evaluation criteria.

Environmental Sustainability Criteria

A comparison of environmental sustainability criteria is presented in Table 4.2 below.

Table 4.2: Compatibility of Environmental Sustainability and Project Evaluation Criteria

Sea Objectives		ITP Evaluation Criteria				
Pillars of Sustainability	**Concerns and Desired Outputs (Aims)**	**Proximity to ESAs**	**Water Quality**	**Noise (Airports & Ports)**	**Impact on Ecological Zones**	**Environmental Impact Potential**
Natural or Biophysical Resources	Air quality	✔	O	O	✔	✔
	Land degradation	✔	✔	O	✔	✔
	Loss of biodiversity (implies loss of habitat, flora and fauna)	✔	✔	✔	✔	✔
	Water quality	✔	✔ ✔	O	✔	✔

Legend
✔ Criteria are mutually supportive
✔ ✔ Criteria are strongly supportive
O No direct relationship between the criteria
X Criteria are not compatible
? Unknown / not determined

Observations and Comments

- There was general concurrence between SEA environmental criteria and the ITP environmental evaluation criteria used in the MCEM.
- Water quality conformed to both SEA and ITP/ MCEM objectives, and its significance was cross-modal.
- Air quality was identified as being the highest concern amongst the stakeholders, but this was not included as an environmental evaluation criterion in the MCEM. In the MCEM discussion on the economic evaluation of rail projects, reference was made in Section 9.2.5.3 to the economic benefits of reduction in air pollution and greenhouse gas emissions, but it was not clear whether air quality and greenhouse gas emissions had been included in the model for economic evaluation. Furthermore, air quality was only considered in terms of road and rail transport, and not other modes of transport, and was considered only as an economic cost, while it should have been included also as an environmental criterion for evaluation.
- Land degradation and biodiversity / habitat loss as sustainability criteria were embedded in the MCEM criteria related to environmentally sensitive areas, ecological zones and to some extent the environmental impact potential.
- Noise had been limited to airports and ports projects, but this should have applied across all the transport modes. Noise also adversely affects faunal species (including marine fauna).

Social and Cultural Sustainability Criteria

Social and cultural sustainability criteria are compared in Table 4.3 below.

Table 4.3: Compatibility of Social and Cultural Sustainability and Project Evaluation Criteria

Sea Objectives		ITP Evaluation Criteria			
Pillars of Sustainability	**Concerns and Desired Outputs (Aims)**	**Poverty Reduction**	**Travel Safety**	**Involuntary Resettlement**	**Destruction of Cultural Heritage**
Social and Cultural	Transportation safety	?	✔ ✔	O	O
	Relocation and involuntary resettlement	✔	O	✔ ✔	✔
	Accessibility by all to basic social and technical services through transportation	✔	O	O	O
	Public health, including STD/HIV/AIDS, noise, air quality	O	O	O	O

Legend

✔ Criteria are mutually supportive
✔ ✔ Criteria are strongly supportive
O No direct relationship between the criteria
X Criteria are not compatible
? Unknown / not determined

Observations and Comments

- Transportation/travel safety, relocation and involuntary resettlement were mutually compatible. However, travel safety had only been included under road transport, but should have been included for all modes as it is applicable to all modes.

- The influence of transportation/travel safety and public health on poverty reduction was not implied in the MCEM descriptions.

- Accessibility by all to basic social and technical services through transportation was not reflected as a social criterion, but it was included under more specific criteria for strategic and local access, which is a strong sustainability factor.

- Destruction of cultural heritage is related to relocation and resettlement, especially where immovable cultural assets, such as graves, shrines, ruins and groves are encountered.

- Effects of noise had been included under environmental effects and air quality under economic benefits, but these should have been considered in terms of their social effects. Noise was mentioned in the MCEM under the ports and airports as “one of the most undesirable nuisances caused by transport and is considered a public health issue”, but it was not included as a social criterion for evaluation (refer to Sections 10.3.1.2 and 11.3.1.3 of the MCEM).

- Public health, especially the spread of HIV/AIDS, is one of the most important social issues related to all forms of transportation, and was prioritised by stakeholders, but had not been referred to in the MCEM at all.

Economic Sustainability Criteria

Table 4.4 presents a comparison of economic sustainability criteria.

Table 4.4: Compatibility of Economic Sustainability and Project Evaluation Criteria

Sea Objectives		ITP Evaluation Criteria			
Pillars of Sustainability	**Concerns and Desired Outputs**	**Net Present Value**	**Internal Rate of Return**	**Cost Benefit Analysis**	**Poverty Reduction**
Economic	Economic growth and stability	✔	✔	✔	✔ ✔
	Job creation and income generation through investment	O	O	✔	✔ ✔
	Poverty reduction	O	O	✔	✔ ✔

Legend

✔ Criteria are mutually supportive
✔ ✔ Criteria are strongly supportive
O No direct relationship between the criteria
X Criteria are not compatible
? Unknown / not determined

Observations and Comments

- Poverty reduction was the main rationale for evaluating social criteria in the MCEM. It also formed, together with job creation, part of the economic viability evaluation in the cost-benefit analysis.

- It was pre-supposed that economic growth and stability would influence favourable NPV and IRR, and reaffirm the sustainability of the projects.

Institutional Sustainability Criteria

The project evaluation criteria had not taken into account institutional criteria, since understandably these relate more to factors necessary for effective implementation (ie. enabling environment); however these criteria could contribute much to ensuring the sustainability of the plan. Institutional criteria recommended by the stakeholders were as follows:

i. Good governance;

ii. Inter/cross-sectoral institutional collaboration and coordination of roles and mandates;

iii. Institutional strengthening and capacity building;

iv. Private sector participation and protection of investment.

It was recommended that these be given priority in the ITP process and in proposals for policy, governance and institutional frameworks.

5. Baseline Data

5.1 Data Requirements

As part of the SEA process, baseline data must be collected to provide the basis for forecasting and monitoring of environmental and social effects and to help in the identification of environmental problems in relation to transportation in Ghana.

The pre-identified sustainability criteria were translated into specific objectives in order to help the SEA identify the specific data and the source of the data. Preliminary indicators were identified for selected sustainability criteria, for which data have been gathered. Raw data is presented in Appendix B.

The main constraint in the collection of baseline data has been the lack of data or data that are current, and accessibility to data.

Table 5.1 below summarises the data required, data obtained, and data gaps.

Table 5.1: Data Requirements and Gaps

Sustainability Concerns	Aspect	Possible Indicators	Data Obtained	Data Gaps	Data Sources
Natural and Biophysical Resources					
Air quality	Emissions of greenhouse gases	Changes in CO2 levels	Air quality measurements between 1990 and 1996	There are no current data on GHG emissions in Ghana. The data that exist are at least 5 years old.	Environmental Protection Agency (EPA)
	Emissions of particulates (PM10)	Changes in PM10 levels	Ghana Country Environmental Analysis, November 2007	There are no current data on particulates - data that exist are at least 5 years old	EPA
Land degradation	Land degradation from acquiring materials used for transport infrastructure (borrow pits, quarries)	Number of rehabilitated borrow pits, against number of borrow pits opened	No data available	No data available on borrow pits.	Ministry of Lands and Mineral Resources
		Number of rehabilitated quarries, against number of quarries opened	No data available	No data on rehabilitated quarries	Ministry of Lands and Mineral Resources
Loss of biodiversity / Loss of habitat (of flora and fauna)	Effects on fauna, flora and sensitive areas	Change in number of plant species	From Ghana State of Environment Report, 2004	Data in the SOE report are more than 5 years old.	Forestry Commission – Wildlife Division State of Environment Report, 2004
		Change in number of animal species	Earth Trends Country Profiles, 2003	Data in the ETC profile are more than 5 years old.	Forestry Commission – Wildlife Division State of Environment Report, 2004
Water quality	Oil spills	No. of oil spills recorded in marine or inland water bodies	No data available	No data available on number of spills recorded in past 10 years	Ghana Maritime Authority (GMA); Bulk Oil Storage and Transport Company (BOST); EPA

Sustainability Concerns	Aspect	Possible Indicators	Data Obtained	Data Gaps	Data Sources
Social and Cultural					
Transportation safety	Road accidents	No. of road accidents	Road Accidents (2000 – 2008), No. of Vehicles registered (2000-2009)		National Road Safety Commission
	Boat disasters	No. of boat disasters	Boat accidents (1990-2009)	Data provided pertain to the Volta Lake only	Ghana Maritime Authority
	Derailments	No. of derailments	No. of rail accidents (2006-2009)	Data collected is not enough to establish a trend	Ghana Railways Corporation
Relocation and involuntary resettlement	Land take and acquisition / destruction of assets	No. of PAPs	To be determined by project-specific RAPs	Consolidated data on project affected people in all transport projects	Land Valuation Board Ghana Highways Authority
		Land area acquired for transportation projects	To be determined by project-specific RAPs	Data on land acquisition for all transportation projects	Land Valuation Board Ghana Highways Authority
		Total compensation payments	To be determined by project-specific RAPs	Total compensation payments for transportation projects to date.	Land Valuation Board Ghana Highways Authority Ministry of Finance and Economic Planning (MOFEP)
Accessibility by all to basic social and technical services through transportation	Access to schools, health facilities, markets	Time taken to reach schools, health facilities, markets and administration centres	From National Transport Household Survey, 2009		Ghana Living Standards Survey (GLSS); Ghana Statistical Service (GSS)

Sustainability Concerns	Aspect	Possible Indicators	Data Obtained	Data Gaps	Data Sources
Public health, including STI/HIV/AIDS and Malaria	Spread of disease	Change in STI/HIV/AIDS prevalence rate	HIV Prevalence in selected towns in Ghana. From National HIV Prevalence & AIDS Estimates Report (2009-2015), March 2010	Data not provided for the regions.	GLSS; Ghana AIDS Commission; Ministry of Health/Ghana Health Service
Economic					
Economic growth and stability	GDP	Change in GDP	GDP from Ghana Statistical Service, February 2007		MOFEP
Job creation and income generation through investment	Transport related jobs	No. of jobs created by ITP projects	To be established during construction of specific projects		Ministry of Employment and Labour – Department of Labour
	Investments facilitated by improved transport	No. of new investments in transport sector	Companies / services established after ITP implementation		
Poverty reduction	Improvement in livelihoods	% Change in Incidence of poverty	Poverty Incidence by Administrative Region (1991-2006)		NDPC GSS GLSS
Institutional					
Good governance	Participation, transparency and accessibility	No. of meetings / consultations for transport sector programmes per year having broad participation	Data to be collected on implementation of ITP, eg for Transport Sector DP meetings, PSC meetings for transport sector projects.		MOFEP NDPC
Institutional strengthening and capacity building	GOG budgetary allocation and manpower resources	% Change in budgetary allocation to transport sector agencies	Data on budgetary allocations for institutional buildings and capacity building for transport sector		Transport Sector institutions

Sustainability Concerns	Aspect	Possible Indicators	Data Obtained	Data Gaps	Data Sources
Inter/cros- sectoral institutional collaboration and coordination of roles and mandates	Effective integration and improved coordination within the transport sector	No. of collaborative meetings held for Transport Sector, programmes per year	Data to be collected on implementation of ITP, eg for Transport Sector DP meetings, PSC meetings for transport sector projects.		Transport Sector institutions Institutional Study of the Transport Sector
Private sector participation and protection of investment	Facilitation of local private sector participation in transport projects and services	% Change in local private sector participation in transport sector projects and services	Zero at present as there is no private sector participation in the transport sector		Transport Sector institutions

6. Summary of the Draft Integrated Transport Plan 2011-2015

6.1 Introduction

The Integrated Transport Plan (ITP) is a major output of the Transport Integration Plan study launched in 2007, summarising all work performed to date and covering policy and strategy, institutional and regulatory reform, and infrastructural investment for the 5-year period 2011-15. The Draft Integrated Transport Plan (of 16th February 2010) contained specific proposals for institutional and regulatory reforms, and new infrastructural investments.

The ITP seeks to establish a standardised integrated planning process for evaluation of infrastructural investment options, using the CUBE transport planning model. For this first Plan, the model was applied only to the national road and rail networks, but it is envisaged that, after successful establishment of the process, future iterations of the Plan (after 2015) would be extended to feeder and urban roads and to all other modes.

This chapter is a summary of the Draft ITP submitted in February 2010 and the subsequent SEA Workshop Presentations. Occasional reference is also made to earlier reports of the ITP consultant.

6.2 Transport Policy and Strategy

Policy is defined by the National Transport Policy (NTP), 2008-12, which reflects the need for the transport sector to advance the national development goals set out in the Growth and Poverty Reduction Strategy 2005-09 (GPRS II), and the earlier Vision 2020 document. The key goals of NTP are the following:

- Establish Ghana as a transportation hub for West Africa;
- Create an accessible, affordable, reliable, effective and efficient transport system;
- Integrate land use, transport and development planning and transport service provision;
- Create a vibrant investment and management environment for public and private sector investors:
- Develop and implement a comprehensive and integrated policy, governance and institutional frameworks;
- Ensure sustainable development in the transport sector;
- Develop adequate human resources and apply new technology.

The measures to achieve these policy goals are being implemented through the Transport Sector Development Programme (TSDP) 2008-12 (updated to 2009-13), which will feed into the Sector Medium-Term Development Plan (SMTDP) 2010-13, now being finalised as a key input to the National Medium-Term Development Plan (NMTDP) 2010-13, being compiled by the National Development Planning Commission (NDPC) from individual sector plans of respective ministries. Both MORH and MOT are contributing to the SMTDP for transport. Implementation of integrated transport planning is expected to provide key inputs to the sector plan.

6.3 Current Sector Constraints

6.3.1 General

Sector constraints were discussed in detail in the ITP Diagnosis Report of October 2008, and in its modal appendices. Key constraints as highlighted in the Draft ITP are listed in the following sub-sections.

6.3.2 Cross-Cutting Issues

Constraints cutting across the whole transport sector include the following:

- Lack of an integrated planning approach to policy, planning and implementation among the many MDAs in the transport sector;
- Lack of an integrated planning framework which can establish long-term perspectives for all ministries and other MDAs generating transport demand, thus enabling the transport sector to develop a consistent and integrated long-term planning perspective;
- Lack of adequate funding for infrastructure provision and maintenance;
- Lack of adequate market or technical regulation, along with poor enforcement of regulations;
- Lack of environmental data, or of well-developed procedures for minimising environmental damage (although environmental impact assessments (EIAs) of projects are being more widely applied, strategic environmental assessments (SEAs) are rarely carried out as programmes are developed);
- Lack of sufficient attention to health and safety issues along transport routes, including construction sites, with HIV/AIDS being a particular problem.

6.3.3 Road Infrastructure

Constraints in road infrastructure include:

- The prospective impact of decentralisation measures designed to shift responsibility for maintenance of feeder and urban roads to poorly resourced local authorities;
- Poor performance and supervision in road contracts, due to low levels of motivation and skills in both contracting and government organisations;
- Reduced opportunities for local employment as labour-intensive methods give way to capital-intensive ones;
- Lack of a satisfactory methodology for prioritising urban road investments.

6.3.4 Road Transport (including NMT)

Constraints on satisfactory road transport include:

- A poor road safety record, arising from unsafe vehicles, inadequate driver skills, and poor enforcement of traffic regulations. The National Road Safety Commission (NRSC) lacks resources or real authority to implement improvement measures;
- A wide spread of regulatory responsibilities for vehicle standards, driver and vehicle licensing, bus service regulation and enforcement of traffic regulations between MDAs answering to four bodies (MORH, MOT, Ministry of Local Government and Rural Development (MLGRD) and the Police);
- Many gaps in the regulatory and institutional framework, including poor enforcement of regulations, inadequate axle load control, poor driving standards, lack of regulatory regimes for passenger and freight operators, and inconsistencies between the regulatory regimes of Ghana and neighbouring countries;
- Lack of adequate resources and facilities for the DVLA and the Motor Traffic and Transport Unit (MTTU) of the Police;
- Lack of local government capacity in maintenance and management of roads, compounding traffic congestion problems;
- Inadequate market regulation of road freight operators, causing defective competition, with widespread evasion of safety and axle load standards;
- A poorly regulated passenger transport market, dominated by small tro-tros, with many deficiencies like those of the road freight market, and characterised by low safety levels, high congestion levels, and shortage of capital for fleet replacement.

6.3.5 Railways

Constraints on the railway network are as follows:

- Only 284 km of the 947-km network is operational, comprising 227 km of the Western Line and 57 km of the Eastern Line, and much of the line still open is in poor condition, reflecting many years of minimal maintenance of track and rolling stock;
- The poor state of the Western Line is a serious constraint on potential development of the reserves of manganese at Nsuta and bauxite at Awaso;
- Up to now it has not been possible to find potential private investors for proposed rehabilitations of both Western and Eastern Lines, though the establishment of GRDA and GRCL as separate regulatory and operating bodies may help to make PPP more attractive;
- Overstaffing of the little used railway has put severe financial pressures on the railway operator, with impact on the parent ministry, MOT;

6.3.6 Ports and Shipping

A master plan for Tema and Takoradi seaports is still to be completed. Pending completion of this study, the following present problems may be noted:

- Tema and Takoradi both urgently require upgrading to accommodate larger vessels being introduced on West Africa routes;
- Road and rail-to-quay links require improvement to ease congestion in the ports;
- There is a danger of losing transit cargo for land-locked countries to ports in neighbouring countries if efficient and low-cost services cannot be guaranteed at Tema;
- Port costs at Takoradi are inflated by double-handling on quays and the need to make substantial use of lighters for shore-to-ship transfer;
- As oil and gas activities commence off the Western Region coastline, there is an urgent need for GMA to review legislation on safety, security and environmental impacts, and to repair capacity gaps in coastal surveillance, search and rescue, and response to oil spillages.

6.3.7 Air Transport

A master plan for airports is also currently under way. Pending its completion, constraints affecting the air sector include:

- Severe competition from Nigeria in Ghana's aim of becoming a West African hub, with Nigeria having many more domestic and international carriers;
- Kotoka International Airport (KIA), Accra, suffers from high airport charges for limited traffic flows, poor transit facilities, inadequate maintenance facilities, unreliable water and power supplies, and lack of dedicated airport access links. Ghana Airports Company Ltd (GACL) remains financially restricted pending agreement on the splitting of assets with the Ghana Civil Aviation Authority (GCAA);
- The only Ghanaian international airline, GIA, suffers from shareholder disagreements, a severe liquidity shortage, and limitation to two European routes flown at high cost by a single wet-leased aircraft. All other international services are operated by foreign carriers;
- Very limited domestic air services, with only two small operators and few domestic airports, having inadequate fuelling facilities and not being equipped for night flights;
- A shortage of adequately trained personnel in the aviation sector;
- An impending loss of revenue by GCAA for en-route flights over the Accra Flight Information Region (FIR) when 50 % of these revenues are ceded to Togo and Benin.

6.3.8 Inland Water and Pipeline Transport

Constraints affecting the inland water and pipeline modes include the following:

- A poor safety record for vessels on Volta Lake, caused by inadequate boat design, poor navigational skills, lack of navigational aids, bad weather and overloading;
- The Volta Lake Transport Company (VLTC) has severe financial problems, receives no government subsidies, and struggles to provide services to remote communities around Volta Lake;
- Fluctuating water levels, which often make it impossible to use established landing facilities;
- Navigational difficulties when water levels are low, due to exposure of under-water tree stumps and the Debre shoals;
- Extreme difficulties for VLTC following the recent withdrawal by the Bulk Oil Storage and Transport Company (BOST) of all traffic on the intermodal pipeline-lake-pipeline route for fuel products from Tema to Northern Ghana;
- The need to open a second northern terminal for the lake section of this route at Debre, for use in periods of low water when vessels cannot reach Buipe.

6.4 Institutional and Regulatory Reforms

A number of institutional and regulatory reform measures are currently under way, including the following:

- Formulation of a national framework for public-private partnership (PPP), which will assist the NDPC policy goal of promoting private sector infrastructure and service provision;
- Establishment of effective axle load control for road vehicles;
- Harmonisation of road transport regulations and enforcement through the West African region;
- Decentralisation of infrastructure management to metropolitan, municipal and district assemblies (MMDA);
- Accompanying fiscal decentralisation measures;
- Establishment of a regulatory framework for urban bus transport (as part of the Urban Transport Project);
- Establishment of separate authorities for regulating and operating the railway;
- Separation of policy, regulation, infrastructure management and service operations for the air sector;
- Separation of policy, regulation, infrastructure management and service operations for the inland water sector.

The ITP has proposed the following additional measures:

1. Strengthening existing management and supervisory measures as follows:

   - Budget approval procedures to be in line with the Road Fund Act (Act 536);
   - Implement stricter procedures on budgeting, eliminating maintenance backlogs, letting of contracts, contract supervision, adherence to established policy objectives, establishment of performance agreements, and prior approval of road fund expenditure; preparing and updating quarterly procurement plans;
   - Establish control procedures for introducing new projects into an on-going programme;
   - Ensure regular reporting on procurement plans, and their compliance with the Public Procurement Act (Act 663);
   - Move away from traditional BOQ-based contracts to 'term' and 'performance-based' contracts, with ten pilot projects starting from 2011;
   - Develop procurement and tendering guidelines for transport infrastructure and maintenance projects, for roads (through MORH) and for other modes (through MOT);
   - Improved procedures for management, supervision and certification of road works by road agencies, with emphasis on roles of Area and Resident Engineers.

2. Strengthening management of public finances in transport sector, where

   - Measures will be implemented to improve and harmonise budgeting, accounting and reporting procedures, with emphasis on Government's financial management arrangements, including provision of data to MORH and MOT.

3. Adapting and developing the transport sector institutional framework by:

   - Creating an inter-ministerial committee co-chaired by MOT and MORH, meeting quarterly to ensure full exchange of information and needs between the decision-makers responsible for transport, and for the economic sectors using transport services;
   - Creating a working group from MOT, MORH and MLGRD to develop procedural guidelines to implement land use and transport planning;
   - Formalising the Transport Planning Group (TPG) created in preparation of ITP, as the core technical decision-making and planning group for the transport sector, to operate under the Directors of Policy and Planning for MOT and MORH;
   - Moving to harmonise the planning cycles of all MDAs in the transport sector;
   - Making available a core team of trained transport modellers to perform transport modelling activities throughout the transport sector.

4. Implementing new decision-making methods, planning tools and data collection through:

   - A review of currently available data, to be completed during 2011, identifying obstacles to their effective use and areas for additional data collection – in particular this could cover local access

along national routes, and potential growth areas which may develop through major Government initiatives such as the Sahara Development Authority;

- A study by MORH of criteria for measuring access along the rural sections of national routes;
- Provision by the inter-ministerial planning group to the transport sector of guidance on master plans for designated development areas, and on plans for future development of agricultural and mineral resources;
- Use of the HDM-4 model in the detailed planning and programming of road infrastructure investments, starting from the GHA and DUR programmes for 2011, with priority being given firstly to routine and periodic maintenance, secondly to rehabilitation of existing roads, and thirdly to new construction;
- A study to be undertaken by MORH to determine the most suitable standardised planning tool for feeder roads.

5. Filling of skills and knowledge gaps by developing:
   - A multi-disciplinary human resource strategy for all transport sector organisations;
   - An ICT development and investment strategy for transport sector MDAs;
   - A comprehensive research strategy for the sector;
   - Specific training and capacity building strategy for local contractors; and
   - Carrying out a review to be commissioned by MORH of contractor economics leading to measures to improve performance of plant for road construction and maintenance work.
6. Mainstreaming of environmental and safety issues by ensuring that:
   - Strategic environmental assessments (SEAs) are undertaken for all transport sector policies, plans and programmes;
   - Environmental impact assessments (EIAs) are undertaken for all infrastructure projects;
   - The Resettlement Policy Framework (RPF) is applied for all road infrastructure projects, with extension to aviation, maritime and railway projects, and eventually to all transport modes;
   - Defined health and safety standards are built into all contract documentation;
   - Guidelines are developed to provide education on STI, HIV/AIDS and malaria for all transport operators and on all infrastructure construction sites;
   - Annual transport sector safety audits and data collection exercises are established, to be carried out by a consultant and initially to be contracted through international tendering.
7. Maritime and inland water regulation and standards, namely:
   - Instituting safety measures for both maritime and inland waterway operations;

- Developing standards for boat construction and inland waterway operations;
- Developing legislation to enforce safeguarding of socio-economic and environmental interests before commencement of oil and gas operations;
- Implementing measures covering institutional and capacity development for GMA;
- Providing navigation aids and other safety measures on inland waterways;
- Providing for emergency response in handling oil spills and other hazards.

8. Maritime training and education services, where:

- In association with general courses for West African seamen, the Regional Maritime University (RMU) must respond in particular to new skills and procedures required for the oil and gas sector.

9. Institutional and capacity building measures for railways aimed at

- Capacity building and resource allocation to enable GRDA to complete its strategic development plan by end-2010, covering both western and eastern lines;
- Restructuring GRCL to improve management procedures and fully exploit business opportunities, and to achieve new standards of safety and operating efficiency.

10. Road safety, standards and regulations to:

- Improve road safety standards;
- Strengthen enforcement of road regulations;
- Ensure that DVLA will act to re-register motor cycles and trailers; improve driver testing and licensing; promote driver safety awareness; strengthen legislation on vehicle licensing; improve service delivery to the public; improve management and develop IT; computerise DVLA activities; upgrade vehicle testing facilities; improve training of technical staff.
- Ensure that NRSC will improve enforcement of traffic regulations through speed limiters, speed cameras and traffic light cameras; introduce log books for all commercial vehicles; enforce safety features such as reflectors and warning triangles; reduce road hazards through towing of disabled vehicles; establish a national drivers' academy; and provide road safety education in schools.

11. Improvement of road transport services through

- Implementing the Urban Passenger Transport Project, with route licensing, improved vehicle standards;
- Implementing the Bus Rapid Transit (BRT) pilot projects in Accra and Kumasi;
- Introducing market regulation, with a regulator responsible for enforcing operator standards, and for performance monitoring and evaluation, in both freight and passenger services;
- Undertaking user surveys to determine present and expected future needs.

6.5 Infrastructure Works: Maintenance and New Construction

6.5.1 Maintenance

Inadequate maintenance of transport infrastructure has been a longstanding problem in Ghana for roads and other transport modes. Road maintenance in particular has suffered for many years from chronic funding shortages. ITP assessed future road maintenance needs under alternative assumptions on availability of funds, paying prime attention to a scenario of attaining a 'target' maintenance level, which would achieve a target network condition of 70 % good and 20 % fair within eight years, and thereafter maintain it at the same level. It is evident that costs of the maintenance needs thus identified for all highways, feeder roads and urban roads will far outstrip the level of funding likely to be available.

Since maintenance of the existing road network is of prime importance, ITP recommends that government resources should be applied with the following order of priorities:

i. Routine and periodic maintenance;

ii. Rehabilitation of existing roads;

iii. Construction of new capacity.

6.5.2 New Investments

Analysis of new investments has been undertaken only for the main national road and rail routes. Since this is the first implementation of the ITP model, it has covered only national highways ('N roads') in the first instance, with the expectation that it will be extended to urban and feeder roads in future iterations of the model process. Port and airport investments have not been included, since these are the subject of separate master plan studies which are still on-going.

Investment projects for the period 2011-15 were selected through a project evaluation process based on the CUBE model and consistently applied to all proposed investments. Model procedures are described in the consultant's 'Report on Transport Model Calibration' of April 2009.

As a starting point for the appraisal, a Base Network has been defined for the year 2015, including the existing road network, road projects currently under way, and other new projects for which funding is assured or virtually certain. It also assumes completion of railway rehabilitation works currently being designed for the Western Line, which will permit reopening of the line up to Kumasi.

On-going works on the highway network are listed in the ITP, all scheduled for completion by 2013. They cover a total of 815 km, of which 481 km are on national roads, while 334 km are on inter-regional and regional roads (and therefore not included in the current appraisal). New projects considered as committed, and expected to be completed by 2015, cover a further 660 km, including 513 km of national roads and 147 km of inter-regional and regional roads. The total length of roads to be worked on is thus 1,475 km, including 994 km of national roads. Works on the national roads may be summarised as follows:

Upgrade gravel to paved	384 km
Rehabilitation of paved roads	215 km
Reconstruction/ upgrading of paved roads	305 km
Widening of paved roads to dual carriageway	66 km
New paved road construction	24 km.

Similarly works on inter-regional and regional roads may be summarised as:

Upgrade gravel to paved	334 km
Reconstruction/ upgrading of paved roads	147 km.

On urban roads it is expected that existing rehabilitation and upgrading plans covering a total of 72 km in Greater Accra, Kumasi, Sunyani and Cape Coast will be completed by 2014.

Besides the investments described above for the Base Network 2015, additional investments are proposed from the ITP model-based analysis.

A total of 19 road upgrading projects were evaluated by the ITP process, of which two were each evaluated under two options; these covered a total length of 3,695 km. Sixteen of these projects were for widening of existing paved roads, with total length of 2,290 km; the other three, extending over 1,405 km, were for upgrading of the existing two lanes. For each project, the analysis procedure calculated a present worth to discounted investment cost ratio, a 'final score' taking account of non-economic factors according to the "Multi Criteria Evaluation Analysis" (see Draft 3 of November 2004), and an optimum opening year; detailed definitions of these measures, or of how they were derived, are not given in the report. Projects found to have an optimum opening year of 2018 or earlier were included as investments to be started during the period 2011-15. Project benefits were calculated for 20 years up to 2035. Seven projects were found viable, as shown in Table 6.1.

Table 6.1: National Road Upgrading Projects Found Viable For Implementation By 2015

Road Section	Length in Km	Type of Work	NPV/ Discounted Capital Cost	Final Score (multi criteria evaluation Process)	Optimum Opening Year
N 1 Aflao-Tema	170.0	Add 2 lanes	0.66	7.18	2015
N 1 Tema-Accra	21.0	Add 2 lanes	0.62	5.64	2018
N 1 Accra-Kasoa	17.1	Add 2 lanes	0.43	5.20	2017
N 1 Kasoa-N 8 Junction	104.8	Add 2 lanes	0.31	6.12	2017
N 2 Asikuma-Hohoe	126.6	Add 2 lanes	0.20	5.34	2016
N 4 Accra-Kukurantumi	120.2	Add 2 lanes	0.60	6.16	2015
N 6 Kukurantumi-Kumasi**	153.5	Add 2 lanes	0.20	4.90	2019

Note: ** According to a hand-out received at the Stakeholders' Workshops, this had then been revised to the 22.3-km Apedwa-Kukurantumi stretch of the N 6 only. This amended project also added two lanes, recording a high NPV/Discounted Cost ratio of 1.61, a final score of 7.34, and an optimum opening year of 2015.

All other evaluated projects were found to have negative NPV/Discounted Investment Cost ratios, final scores ranging from 5.10 down to 2.03, and optimum opening years of 2021 or later.

The seven projects listed above, over a total length of 713 km, were selected for upgrading. If the project revision in the footnote is taken into account, the total length of widened road is reduced to 582 km.

The railway project for rehabilitation and upgrade of the 303.9 km of the Eastern Line from Tema to Kumasi was also found to have a positive NPV/Discounted Cost ratio, a final score of 5.72, and an optimum opening year of 2016. It was therefore also included in the list of ITP investments.

Map 1 (attached at the end of this chapter) presents the transportation network showing the base network as expected at 2015, as well as infrastructure projects proposed in the Draft ITP.

6.6 Financial Needs

A summary was made of funding requirements for GOG plans and ITP proposals, which were then compared with known levels of secured funding. Estimated funding requirements are presented in Table 6.2 below, being shown on an annual basis for 2011-15, and for five-year periods thereafter. Existing GOG investment needs are based on TSDP, 2008-12, draft inputs to the SMTDP for transport, and existing sub-sector plans. ITP expenditures cover the proposed highway and rail investments for 2011-15, further ITP road projects found viable for implementation after 2015, and the Kumasi-Paga railway extension expected to become feasible after 2020.

Road expenditures have been divided into investments and maintenance. Existing government investment plans run up to 2014, totalling US$ 1,639.3 million, comprising US$ 884.7 million for highways, US$ 304.9 million for feeder roads, and US$ 449.7 million for urban roads. Already determined road maintenance requirements are not included up to 2013 for trunk roads and feeder roads, or to 2014 for urban roads, but subsequent estimates have been adjusted so as to meet needs identified by the report on 'Determination of Maintenance Needs of Ghana's Road Network' prepared by the University of Birmingham in 2009; these needs include elimination of a major maintenance backlog of around US$ 1.5 billion which will need to be cleared from 2014/15.

Total forecast expenditure needs for the period 2011-15 are US$ 5.32 billion, including US$ 4.31 million for roads and US$ 0.66 billion for railways.

Table 6.2: Funding Requirements for Transport Sector, 2011-30 (US$ Million)

	2011	2012	2013	2014	2015	2011/15	2016/20	2021/25	2026/30
GOVT PLANS									
Cross-Cutting Measures	27.9	22.7	6.4	0.0	0.0	57.0	0.0	0.0	0.0
Aviation	115.9	86.4	50.6	0.0	0.0	252.9	0.0	0.0	0.0
Maritime	31.6	11.7	0.7	0.0	0.0	44.0	0.0	0.0	0.0
Railways	73.8	59.6	62.1	21.4	16.5	233.4	0.0	0.0	0.0
Roads	650.7	453.0	446.1	195.3	2,126.8	3,871.9	2,470.0	2,590.0	2,020.0
Totals	899.9	633.4	565.9	216.7	2,143.3	4,459.2	2,470.0	2,590.0	2,020.0
ITP PROPOSALS									
Railways	0.0	0.0	125.0	175.5	125.0	425.5	0.0	2,162.3	917.0
Roads	0.0	75.2	130.8	140.8	88.6	435.4	123.3	303.3	424.8
Totals	0.0	75.2	255.8	316.3	213.6	860.9	123.3	2,465.6	1,341.8
GRAND TOTALS	899.9	708.6	821.7	533.0	2,356.9	5,320.1	2,593.3	5,055.6	3,361.8

Levels of secured funding up to 2015 are now summarised in Table 6.3, under two alternative assumptions on road funding. The first was that the fuel levy would remain at current 2009 levels, while the second was that it would rise progressively from Gh¢ 0.06 (US$ 0.043) per litre to approximately Gh¢ 0.0133 (US$ 0.095) per litre. The values shown in the Potential Additional Road Fund (RF) Revenue row represent annual differences from current TSDP assumptions on RF funding.

Table 6.3: Secured Transport Sector Funding, 2011-15 (US$ Million)

	2011	2012	2013	2014	2015	2011/15
Cross-Cutting Measures	0.6	0.6	0.1	0.0	0.0	1.3
Aviation	8.8	4.1	1.7	0.0	0.0	14.6
Maritime	31.6	11.7	0.7	0.0	0.0	44.0
Railways	48.8	33.1	47.1	0.0	0.0	129.0
Roads	320.9	267.8	227.2	65.0	0.0	880.9
Totals	**410.7**	**317.3**	**276.8**	**65.0**	**0.0**	**1,069.8**
Potential Additional Revenue from Road Fund (a)	(21.1)	5.5	47.0	203.9	294.2	529.5
Totals Including Additional Road Fund Revenue	**389.6**	**322.8**	**323.8**	**268.9**	**294.2**	**1,599.3**

Without additional road fund revenues, secured funding for 2011-15 totals US$ 1.07 billion, amounting to only 20.1 % of the identified expenditure need of US$ 5.32 billion. With the total increased by additional RF funding to US$ 1.60 billion, this proportion rises to 30.1 %.

While PPP may be considered for the rail projects, this option would only become feasible after favourable feasibility studies. In the short term, suppliers' credits or the GOG Consolidated Fund appear to be the most likely method of funding. It may be possible to integrate the railway investments into proposed investments at Tema port.

Conclusions for the road sector are that it will be impossible to meet full maintenance needs from the fuel levy, and that recourse to development partners may be the only practical funding source for eliminating the backlog. Clearance of the maintenance backlog must, however, be an absolute priority, and will necessarily reduce the country's ability to undertake new road investments beyond the ITP proposals.

7. Stakeholder Consultations

7.1 Overview

As part of the SEA process, extensive stakeholder consultations were held. These consultations were regarded as being crucial in order to inform and solicit their inputs into the ITP process. The consultations afforded the opportunity to highlight inconsistencies, problems, and effects of the proposed ITP.

During the Inception Phase, an initial analysis of stakeholders was carried out for engagement and consultation through all phases of the SEA study. Participants were categorised on the basis of their knowledge of transportation issues and their ability to influence the SEA process, and this then determined at what level and by what means they would be involved. The stakeholder analysis is presented in Appendix C.

A requirement of the EPA's scoping methodology is that a scoping workshop is conducted as part of the process to define the scope of the SEA. This was held on 30th June 2009, and 56 participants attended from various stakeholder categories.

Issues raised at other fora were also noted, for example the Oil and Gas Conference for the Transport Sector held in July 2009.

Also in July 2009, focus group discussions were held with the transport sector development partners, transport agencies and the EPA, as well as with gender interest groups.

Finally, the Draft ITP was subjected to stakeholder consultation at three workshops held on 23rd February, 25th February and 2nd March 2010. Approximately 90 stakeholders attended the workshops, representing the key transport sector agencies; transport sector users, beneficiaries and operators; Government ministries, departments and agencies; Government regulators with an interest in the transport sector; Regional Coordinating Councils; Development Partners; commodities; organisations representing women's, environmental and disabled groups; research and academic institutions; and other stakeholders deemed to have an interest in the transport sector.

In addition, a number of briefs describing the progress of the SEA process were posted on the MORH website for the purposes of public disclosure.

7.2 Scoping Workshop

The purpose of the workshop was to facilitate broad stakeholder involvement in the development of the Integrated Transport Plan and associated processes, as well as to continue with the process of awareness raising and capacity building in the development of SEA in Ghana. In addition, the stakeholder analysis developed during the Inception Phase was then reviewed by participants at the Scoping Workshop, and their additions and amendments sought so that a more comprehensive list of stakeholders was produced in order for comprehensive consultations to be undertaken during the later phases of the SEA. The most important objective of the Scoping Workshop was to establish stakeholder concerns or desired outputs from the ITP process through the identification of environmental sustainability criteria. These criteria have been described in Section 3.3 of this report.

7.3 Additional Stakeholder Consultations

The Oil and Gas Conference held in July 2009 was hosted by the Ministry of Transport. Its aim was to establish transport infrastructure requirements resulting from the prospective exploitation of oil and gas reserves in the Jubilee Field, offshore of Takoradi. Issues raised included transportation safety; emergency response and rescue operations; potential use of inland waterways for transport of oil; the roles of air transport, railways and pipelines; and impacts of relocation, resettlement and compensation.

The focus group discussion held with development partners, transport agencies and the EPA raised issues relating to climate change; the need to consult political groups; the need to capture poverty dimensions of the ITP; the need for ITP to consider transport links to areas of untapped potential; the potential hub role of seaports; urbanisation and migration trends; transport demands of the recent oil and gas find; and data collection needs.

The gender interest focus group discussion was attended by six gender interest groups, and identified issues of concern including the needs of women in relation to poverty, agricultural production, inland water transport and enforcement of safety regulations; suitability of the rail system for bulk transport of goods; the need to consider a transport network rather than corridors; the importance of public transport and non-motorised transport (NMT); the spread of STD/HIV/AIDS along truck routes; the need for rest stops and freight terminals along the roads; and facilities for the physically challenged.

7.4 SEA Stakeholder Consultation Workshops on the Draft ITP

The main objective of the consultation workshops was to provide feedback from the stakeholders on the Draft Integrated Transport Plan in respect of its compatibility with the National Transport Policy and the Sector Medium-Term Development Plan, its effects on the sustainability criteria identified by stakeholders at the SEA Scoping Workshop, and how it addresses transportation issues related to poverty.

Stakeholders were asked to analyse three possible scenarios of the Draft Integrated Transport Plan in terms of infrastructure as well as regulatory and institutional proposals, by applying the three SEA tools, namely the compatibility matrix, the sustainability test and the poverty / transportation compound matrix.

The three scenarios evaluated were:

Scenario 1	Do minimum: Base Network (including already committed projects) by 2015 (in effect the “Without ITP” scenario);
Scenario 2	Base Network plus additional ITP institutional reforms by 2015; and
Scenario 3	Base Network plus additional ITP institutional reforms plus additional ITP infrastructure investments by 2015.

Scenario 3 comprises the full Draft Integrated Transport Plan, February 2010.

A comprehensive appraisal of the compatibility, sustainability and poverty issues indicates that Scenario 1 (ie. the “Without Project” Scenario), with only the existing system and improvement proposals in place by 2015, will in large measure fail to support the specified goals or meet the selected targets.

Under Scenario 2 (with institutional and regulatory improvements only), the proposals were expected to have positive impact on all compatibility goals, most of the sustainability goals, and on poverty goals related to institutional and regulatory factors.

If the ITP is implemented as proposed in the current draft (ie. under Scenario 3, where both institutional and infrastructural programmes are implemented), the overall impact on all criteria of ITP institutional and regulatory measures is expected to be positive. In relation to Scenario 2, the overall impact of additional ITP infrastructural investments will be positive for the compatibility and sustainability criteria. In respect of poverty alleviation, however, the investments are expected to have little impact, since they are concentrated on trunk national routes, and do not include feeder and access roads which serve the rural communities; nor do they extend to all areas of the country. Workshop findings may therefore be summarised as follows:

- The Draft ITP is in general compatible with NTP and SMTDP objectives;
- The institutional and regulatory measures of the Draft Plan will, if implemented and enforced, contribute to ensuring that the Plan is sustainable;
- The infrastructure component of the Draft Plan supports compatibility and sustainability criteria, but does not support poverty reduction, or benefit all parts of the country.

7.5 Conclusions from Stakeholder Consultations

During the Scoping Workshop, the main concerns and desired outputs prioritised by stakeholders were:

- Environmental considerations: specifically impacts on air quality, loss of biodiversity and habitats, land degradation, and water quality due to transportation projects;
- Social and cultural considerations: transportation safety, relocation and involuntary resettlement, accessibility by all to basic social and technical services through transportation, and public health concerns, especially implications on STI/HIV/AIDS;
- Economic considerations: economic growth and stability, job creation and income generation through investment, poverty reduction;
- Institutional considerations: good governance, institutional strengthening and capacity building, inter and cross-sectoral institutional collaboration and coordination of roles and mandates, and private sector participation.

Focal group discussions indicated that the ITP planning process needs to deliver solutions that address stakeholder concerns with regard to the following:

- Besides roads, the provision of, and access to, transportation by other modes of transport, particularly rail and inland waterways, but also pipelines, maritime and aviation;
- A multi-modal approach to deal with transportation safety and security;
- The provision of transport solutions to enable adaptation to the effects of climate change;

- Strategically linking rural and urban production areas, so that untapped areas in the country can be opened up to development.

- The development of a transport network, rather than transport corridors.

Issues emerging from the stakeholder consultation workshops for the overall transport planning function include the following:

- The SEA Scoping Report of July 2009 noted that the evaluation criteria of the ITP Draft Multi-Criteria Evaluation Manual placed emphasis on poverty reduction; nevertheless, the decision to limit road investments in the first round of the ITP to the national highways, plus the weighting given to scores in the multi-criteria evaluation (not detailed in the Draft ITP), have not enabled the ITP to meet the Government core policy objective of poverty reduction;

- The infrastructural proposals also show a marked lack of regional balance, with every one of the projects (including the railway project) being located south of Kumasi or Hohoe;

- There is little coverage in the Draft ITP of inter-modal integration or interchange facilities, which should have been a core area of study;

- In particular there is no mention of the need to integrate inland water and road transport, despite the insufficient level of service at strategically important crossings of Volta Lake (providing inter-regional connections at Yeji-Makongo, Kwadwokrom-Kete Krachi and Dambai). There is also little attention to the problem of access to remote lacustrine communities.

In all cases, stakeholders appreciated the opportunity of participating in the SEA process, and of expressing their views on the integrated transport planning process and plan.

8. Analysis of Draft ITP Scenarios

8.1 Introduction

As has been noted in our previous reports, the SEA and the ITP are both process-based methodologies which must necessarily provide stakeholders with a number of scenario options for consideration and decision-making. The requirement by the ITP planners to develop a number of plan scenarios for evaluation and assessment by the SEA was a major concern to be resolved between the SEA process and the ITP process. This issue was discussed at various meetings involving key stakeholders.

During the Inception Phase of the SEA, it was noted that SEA in Ghana is in an evolving phase and also that many of the SEAs carried out so far have covered sector policies and district plans and have been mostly *ex-post*. Accordingly, the SEA of the ITP provided an opportunity for an *ex-ante* SEA of a plan at the national level.

Typically, *ex-ante* SEA allows the use of a scenario approach to focus on a number of the most relevant and important issues and thus assess the possible opportunities and risks related to environmental sustainability criteria as defined under natural/biophysical resources, socio-cultural, economic and institutional pillars.

In the absence of formally defined scenarios in the Draft ITP and following from the stakeholder consultations and reviews, the SEA focused on two plan scenarios as the basis for analysis and assessment. These are the “With Plan” and “Without Plan” scenarios and are discussed in the following sub-sections.

8.2 “With Plan” Scenario

8.2.1 Compatibility with National Transport Policy Goals

The preparation of the ITP (2011-2015) is in direct response to the requirement of the NTP for an integrated transport plan - one that integrates the various transport modes in Ghana as well as transport planning with land use planning and economic planning.

The SEA, through both stakeholders’ and the SEA Team’s analysis provides a means of assessing the compatibility of the Draft ITP with the NTP and SMTDP.

In the compatibility assessment the SEA asks the basic question: ***to what extent, if at all, do the proposals in the Draft ITP for transport infrastructure, institutional and regulatory measures contribute to achieving the strategic goals of the NTP/SMTDP?***

The Draft ITP is based on the NTP. Specifically, Sections 2.1 and 2.2 and Appendix A of the Draft ITP are devoted to discussions of the NTP and the National Development Planning Framework. The Draft ITP recognises the importance of the NTP and the need for an efficient institutional and regulatory framework to ensure that the NTP goals and objectives can be achieved. Accordingly the various proposals of the ITP – infrastructure, institutional and regulatory – are all intended to work towards achieving the goals of the NTP.

From the analysis carried out by both stakeholders and the SEA Team, it can be said that the Draft ITP is generally compatible with the NTP and the National Development Goals. In many instances, the draft ITP re-states measures proposed in the NTP. However there is the need for the ITP to detail more specific plan actions that would lead to achieving the goals of the NTP.

The main findings and recommendations are presented below, and the detailed analysis is presented in Appendix D1.

Policy Goal 1: Ghana as a transportation hub for West Africa

The focus of the NTP for this goal is on promoting sub-regional trade, with the Aviation and Maritime sub-sectors becoming the drivers for achieving the 'hub' status. In this case airports, sea ports and coastal shipping services are critical strategic transport requirements to achieve the hub status and must be considered in more detail in the Plan, whether or not other master plans are being developed. In fact the ITP should help to guide the master plans that are currently under way – or interact more closely with them.

Furthermore, for the facilitation of trade within the West African sub-region, the ITP should promote road and rail linkages to neighbouring countries. The infrastructure proposals for both road and rail are very limited and there is a need to look more closely at developing transport corridors linking Ghana to neighbouring countries as required by the NTP, and as also planned at regional and continental levels by ECOWAS and the African Union (AU).

Policy Goal 2: Accessible, affordable, reliable, effective and efficient transport system

The requirement of the NTP is for transport infrastructure investments targeted to better serve population, production and tourist centres to reduce overall transport costs to government and users. This goal of the NTP is intended to be the transport sector's response to support poverty reduction objectives of the government and its partners in development.

In addressing this goal, the ITP process has considered strategic access and local access in the infrastructure evaluation. However the decision to focus only on national routes has not enabled the Draft ITP to be more responsive to meeting this goal of the NTP.

The decision to limit the ITP infrastructure proposals to the National routes, as well as the weight given to economic viability in the multi criteria evaluation process has meant that all of the infrastructure projects are concentrated in the southern part of Ghana. This means that many more people will be pulled from the northern areas to the south further increasing the pressure on limited resources in the south, thus further perpetuating poverty and deprivation in the northern areas. Poverty reduction is a major national objective and the ITP needs to revisit this aspect.

Policy Goal 3: Integrated land use, transport planning, development planning and service provision

For this goal the NTP envisages transport planning as being fully integrated with development planning and service provision. The ITP process has focused on initiating this requirement for integrated planning by integrating transport and economic planning only (holistic development planning, including land use planning, were not considered). In addition various proposals for institutional strengthening and collaboration have been made in the Draft ITP. However these are mostly too general in nature (more like policy measures) and it is required that the ITP provides more details in terms of specific planned activities,

timelines and targets etc. including guidelines and outline terms of reference where required to guide implementation.

Policy Goal 4: Vibrant investment and performance based management environment for public and private sector investors

This goal of the NTP addresses the need for PPP in the transport sector. However there is no framework for PPP in the sector and the ITP should have provided guidance on this. There are some proposals for performance improvement (Section 4.2 of the Draft ITP), but there are no clear goals and targets specified, apart from setting up the working group, inter-ministerial committee and a data survey, where timelines are specified. The ITP needs to provide more details where relevant. Considering that the bulk of transport services in all modes (except rail) are provided by the private sector, it becomes even more imperative that the ITP addresses strategies to promote the type of investment climate that will encourage the private sector to continue to provide these services efficiently and effectively.

Policy Goal 5: Comprehensive and integrated policy, governance and institutional frameworks

For this goal, the NTP requirement is for transport sector policies and plans to promote synergy between the requirements of international, regional and national development, inter-sectoral and modal objectives, and the needs of transport users. Furthermore there should be an institutional framework established, separating functions of policy formulation, regulation, asset management and services. The ITP mentions, but does not analyse, international and regional requirements. Inter-sectoral objectives have been looked at, but since the analysis is not presented, it is not apparent how ITP proposals support this. Needs of transport users have been equated to easing of capacity constraints on main routes, and therefore are influenced largely by economic viability, while influences of social, livelihood and health needs are not considered.

Moreover, the ITP should set a framework within which the different transport sub-sectors should develop their policies, and not the other way round.

Policy Goal 6: Sustainable development in the Transport Sector

The NTP requirement under this goal is for Strategic Environmental Assessments (SEAs) to be carried out on all transport policies, plans and programmes. Furthermore all transport infrastructure development and maintenance projects (above a certain threshold) should comply with existing environmental, health and safety regulations. In addition, the health and safety of communities, operatives and users are to be assured in all modes of transportation.

These are mentioned in the Draft ITP, through reiteration of strategies already proposed in the NTP; they should, however, have been developed further in the ITP. The SEA of the NTP has made a number of recommendations for fuel efficiency and emissions control. The ITP should incorporate these recommendations and provide details to guide implementation.

The approach adopted by the Draft ITP in addressing this goal creates the impression that environment is an “add on” or stand-alone component. This should be redressed by ensuring that the environmental considerations are included within the relevant institutional and regulatory proposals. (For example, SEA and EIA are planning tools, so points 1 and 2 in Section 4.2.7 could fall under Section 4.2.5. Points 3 and 4 could go under Section 4.7, 4.4.3, and 4.5, Point 5 under Section 4.2.2, Point 6 under 4.2.2 or 4.2.5, and

Point 7 under 4.2.5). Similarly, safety should be considered as a separate issue from environment, but again needs to be integrated into specific institutional and regulatory recommendations.

Policy Goal 7: Develop adequate human resources and apply new technology

For this goal the NTP requires that key skills and competencies will be developed to meet the needs of the transport sector. It also requires that research on all aspects of transport sector performance will be carried out and applied by public and private sector organisations. The Draft ITP proposals reiterate the need for the development of human resources and ICT strategies as listed in the NTP, but no further details are provided. Similarly, proposals are made for contractor training and capacity building, as well as developing a comprehensive research strategy, but again details are lacking.

However, from the findings and recommendations discussed above, it is noted that although the Draft ITP attempts to meet the requirements of the NTP, there are significant gaps that need to be addressed to enable the ITP deliver the anticipated benefits of the NTP. More specifically, it is observed that in many instances the Draft ITP re-states the measures in the NTP without developing them into actionable activities with appropriate timelines, targets and budgets.

8.2.2 Sustainability of the Draft ITP

The concept of environmental sustainability of policies, plans and programmes is a key component of the sustainability-led SEA approach adopted by Ghana in support of the drive towards achieving sustainable development. The concept is based on the 'triple-bottom line' pillars of environmental (natural and biophysical), social and economic considerations, which has been expanded in the Ghanaian approach to include the 'institutional'[5] pillar.

Sustainability objectives representing priorities within the four pillars of sustainability were identified by stakeholders and endorsed by the SEA Team during the scoping phase of the SEA and were used in evaluating the Multi-Criteria Evaluation Manual developed by the ITP.

In assessing the sustainability of the ITP, the basic question asked by the SEA is: ***to what extent, if at all, do the proposals in the Draft ITP for transport infrastructure, institutional and regulatory measures support the aims/objectives defined by prioritised sustainability criteria?***

The sustainability tool in its use and application is found to be more suitable for evaluating policy/plan statements, objectives and measures rather than infrastructure items and projects.

The main findings and recommendations are presented below. The detailed analysis is given in Appendix D2.

Overall, it is assessed that the Draft ITP, consisting of infrastructure, institutional and regulatory proposals taken together, is largely sustainable. However there are some areas that require further fine-tuning as discussed below.

[5] During the SEA of the GPRS, the term 'institutional' was derived from 'institutions' – representing not just organisations and their personnel but also their organisational systems, resources and budgets, as well as the governance, administrative, legal and policy environments that inform and influence their operations.

Natural and Biophysical Resources Pillar

Most of the sustainability issues under this pillar (dust and vehicular emissions, land degradation, habitat loss, water pollution) are due to effects related directly to construction of transport infrastructure. It is therefore expected that the institutional proposals for improving management and supervision of contracts and projects, as well as compliance with EIA requirements, would help reduce the effects.

Air quality, which is affected by both construction and operations has been mentioned, but not developed, in Section 4.2.7 of the Draft ITP (nor was it considered in the MCEM). Intermodal differences with respect to emissions are scarcely mentioned. In the Scoping Report the SEA had mentioned that air quality had not been included in the MCEM, apart from a discussion on the economic benefits of reduction in air pollution and green house gas emissions under the evaluation of rail projects. The SEA of the NTP has made a number of recommendations for fuel efficiency and emissions control. The ITP should incorporate these measures.

Social and Cultural Pillar

Transportation safety: the need to improve safety in all transport modes has been stressed repeatedly in the earlier sections of the Draft ITP. The ITP should have analysed accident figures for each of the modes, and proposed targets to reduce the number of accidents over the Plan period.

In addition, the Draft ITP should have included a TOR for the safety audits it proposes for all sectors (Section 4.2.7), and a framework for collection, storage and processing of safety data. References to safety under the sections on Aviation, Inland Water and Maritime (Sections 4.3, 4.4.2, 4.4.3, and 4.4.4) describe what the relevant authorities propose to do. Training and education needs for the inland water and maritime sub-sectors are indicated as being discussed in Section 4.2.6, but this is very general. For rail, it is proposed that staff is trained to achieve new standards. It is not clear where will they be trained, and what standards will they be trained to enforce. Nor is it specified whether these standards will be adaptations of existing rail standards from elsewhere.

Relocation and involuntary resettlement: the Draft ITP proposes operationalising the RPF across all the transport sectors. However, the recommendation on RPF inclusion into contract documents is not entirely correct, as resettlement should not be the responsibility of the contractor.

Accessibility by all to basic social and technical services through transportation: this is embedded in the ITP process of identifying infrastructure projects through the MCEM. However, the ITP infrastructure proposals do not address micro-level accessibility to social and technical services. The institutional proposal for the inter-ministerial committee could indirectly support facilitating access to these basic services.

Public health including STI/HIV/AIDS: the Draft ITP proposes that guidelines for awareness raising are developed for STI/HIV/AIDS and malaria across the sectors (Section 4.2.7 of the Draft ITP). This is taken directly from the NTP, but not developed further. These guidelines are available for the Road Sector, and should have been adapted/developed by the ITP for all sectors.

Economic Pillar

Economic growth: the core philosophy of the Draft ITP is that it responds only to soundly based forecasts of economic growth. Consequently the projections for economic growth do not take into account untapped

economic potential, or facilitate the geographical spread of benefits. This is crucial for sustainability and needs further attention in the Draft ITP.

Job creation and income generation through investment: Planning for job creation is assumed to be covered in the ITP process through cost-benefit analysis and the poverty reduction criteria in the MCEM. In addition proposed transport infrastructure in the ITP should generate some construction jobs, especially if linked with strengthening capacity of local contractors. However, evaluation of facilitated investment is severely restricted by the concentration of ITP infrastructure proposals on national routes where transport already exists. Increasing the number of toll stations and privatising toll stations would lead to some additional jobs created.

Poverty reduction: The MCEM process of the ITP considers poverty reduction as a social criterion, and the ITP states that it intends to address poverty as it is central to the government's development agenda. But access to farm inputs/markets is not developed, and affordability or subsidies for transport are not considered. Poverty reduction should be a key element of the ITP, especially in terms of developing infrastructure and pricing strategies. This aspect was a prime concern of stakeholders at the SEA consultation workshops. It would seem, however, that weighting of the MCEM process has not adequately reflected the importance of poverty reduction.

Institutional Pillar

Good governance: As discussed previously under Compatibility, the Draft ITP recognises that the NTP is a key driver for good governance in Ghana. However, the ITP does not come up with clear specific proposals to promote good governance in relation to accessibility, transparency and participation. For example, due to poor roads or poor access, some people in rural areas are disenfranchised.

Institutional strengthening and capacity building: There are proposals in the ITP for capacity building and institutional strengthening in human resources, ICT and research, which again are strategies listed in the NTP; however, these have not been detailed and costed. It is therefore likely that these proposals will not be implemented as no guidelines have been prepared for these strategies to be developed.

Inter/cross-sectoral institutional collaboration and coordination of roles and mandates: The Draft ITP has addressed these in the institutional proposals. ITP proposals will help to advance inter / cross sectoral institutional collaboration. However, the proposals could have been elaborated upon in terms of costs and resources.

For land use planning, the Town and Country Planning Dept should be involved in the working group, while the Ministry of Environment, Science and Technology should be represented in the inter-ministerial committee

Private sector participation and protection of investment: The Draft ITP has recommended PPP for rail. The ITP points to opportunities for providing port facilities and local investments in supply-chain logistics to support the oil and gas sector.

Just as was noted in the discussions on compatibility with the NTP, the proposals are mostly repetitions of measures already contained in the NTP. The ITP needs to develop more specific detailed actions to be implemented, so as to ensure that the identified challenges can be effectively addressed to support sustainable development.

8.2.3 Poverty – Transport Dimensions

Within the broad national development planning framework, transport is seen as providing a key strategic support to the productive sectors of the economy, as well as a facilitator of growth and poverty reduction. This is also captured under Section 2.1 in the Draft ITP.

During the scoping phase, stakeholders identified poverty reduction as a priority criterion for sustainability of the ITP. At the same time the SEA analysis of the MCEM revealed that poverty reduction was a significant concern for prioritising the infrastructure components of the ITP.

For the SEA analysis of the Draft ITP, various transport-related components of poverty in Ghana were identified under the broad headings of livelihoods, health and well-being, vulnerability and institutional arrangements. Therefore in the assessment of the poverty reduction effectiveness of the Draft ITP, the basic question asked by the SEA is: ***to what extent, if at all, do the proposals in the Draft ITP for transport infrastructure, institutional and regulatory measures support the components defined by the poverty-transport matrix?***

The main findings and recommendations are presented below, for the various aspects of each poverty-transport component. The details of this analysis can be found in Appendix D3.

Regrettably it is noted that the Draft ITP, with its current proposals for infrastructure, institutional and regulatory proposals, does not facilitate poverty reduction in any significant way.

Livelihoods

Livelihoods is considered in relation to productivity and income generation of the poor who are mostly rural dwellers engaged in crop farming, but also include the urban poor who live in slums on the outskirts of urban centres and have to travel long distances to get work.

Access to farm inputs and services, access to markets and affordability of transport services and facilities relate to the extent to which ITP facilitates access of the poor to farm inputs (fertilizer, seeds, tools etc) and services like extension, mass spraying etc, to boost productivity/incomes, and access of the poor to markets/storage facilities for their farm produce to enhance sales and reduce post-harvest losses. This criterion establishes how ITP interventions lead to appreciable reduction in costs of transport services so as to support livelihoods of the poor – ie. cost of goods and services, access to jobs, etc. It is anticipated that the institutional proposal for the inter-ministerial committee could indirectly support/facilitate planning for access to these basic services. Again as emphasised previously, poverty reduction should be a key element of the ITP, especially in terms of developing infrastructure and pricing strategies. Access to urban markets will be facilitated by the proposed roads, but this will not benefit poor farmers living in remote areas who use rural roads.

Job creation by and in transport relates to the various opportunities afforded by the ITP to create jobs (mostly unskilled) that can be accessed by the poor. In this regard, evaluation of facilitated investment is severely restricted by concentration of ITP infrastructure proposals on national routes where transport already exists. Increasing the number of toll stations and privatising toll stations would increase jobs, particularly for local people. But the type of ITP infrastructure projects proposed do not allow the promotion of labour-based construction which would provide job opportunities for the poor, including women and youth.

Health and Well-Being

This is assessed in relation to the general state of physical and mental well-being arising from risks and hazards associated with the poor state of transport infrastructure and services.

Access to health facilities and services is the extent to which the ITP facilitates access for the poor to health facilities and services in general. In this respect, the Draft ITP presents no specific proposals for ensuring access to health facilities. Also maintenance of feeder roads (which serve mainly the poor) is not addressed by the Plan. The institutional proposals for the inter-ministerial committee should include the Ministry of Health.

Drudgery of walking long distances for basic needs looks at how the ITP interventions lead to appreciable reduction in distances walked by the poor to access basic needs like water, kerosene, etc. This issue is not addressed by the ITP since access for the rural poor is not facilitated. There are no proposals for NMT which could benefit both the urban and rural poor.

Spread of STI/HIV/AIDS deals with the issue of construction workers' and long-haul drivers' propensity to catch and spread STI/HIV/AIDs along transport corridors, and the risk to the poor, especially girls. The proposals in the Draft ITP for dealing with this aspect should have been developed further, by adapting existing guidelines developed by GHA.

Travel challenges and risks deals with how the ITP addresses travel risks and challenges such as accidents, robberies, long delays etc. The ITP proposes some institutional measures to deal with transportation safety, both on roads and lake transport which will help the poor. Further, long delays experienced during travel would be assisted by the ITP infrastructure proposals to relieve congestion on national highways. However, while the NTP provides for accessibility for women, children, the aged and physically challenged to be considered in transport facilities, the ITP is silent on this.

Vulnerability

Vulnerability considers how the poor are exposed to risks associated with transport and how lack of transport makes them vulnerable.

Access to disaster / emergency relief is the extent to which ITP facilitates access of the poor and vulnerable to disaster relief. There are no proposals to address this issue (nor was it considered in the MCEM). With the current proposals, disaster relief would really only be facilitated close to the main roads.

Risks of STI/HIV/AIDS relates to how the ITP facilitates reduction in spread of STI/HIV/AIDs among the poor and vulnerable eg. through access by social workers. While there are proposals in the Draft ITP for developing guidelines for HIV awareness raising and prevention, these should have been developed further by adapting existing guidelines developed by GHA.

Accidents relates to how the ITP improves transportation safety among all modes. There are some institutional proposals to deal with transportation safety, both on roads and in lake transport which will help the poor. However, these proposals are fairly generic, and could be developed further.

Insecurity relates to how the ITP deals with threats to security of users of transport facilities and services. This has not been addressed in the Plan since access to transport and access to transport choices is limited by ITP infrastructure proposals which are centred on national highways.

Institutional Arrangements

This poverty-transport component relates to the systems, data, regulations and other similar factors that influence decision making in the transport sector and how these affect the poor.

Participation in this case is how the ITP facilitates participation generally, eg. through access to voting, or access to district durbars required by the NDPC planning process, and thereby contributing to the national or local decision making. The Draft ITP recognises that the NTP is a key driver for good governance in Ghana. However it does not come up with clear specific proposals to promote good governance in relation to accessibility, transparency and participation.

Discrimination relates to how the ITP addresses equity across the board in terms of job opportunities in the transportation sector. This is not addressed by the ITP. The Draft ITP infrastructure proposals do not allow for promoting labour-based construction which would provide job opportunities for the poor, including women.

Corruption relates to how the ITP addresses the issue of corruption, especially in transport infrastructure contracts and other aspects of transport service provision. This is dealt with to some extent by the ITP proposals on improvements in contract management. However the proposals should have been developed further.

Collaboration relates to how the ITP proposes measures to ensure a collaborative system that enhances transport planning to reduce poverty. The ITP proposes institutional measures to enhance collaboration under cross-sectoral planning. This should help promote poverty reduction strategies. But there is a need to develop more specific proposals.

The proposal for the inter-ministerial committee should include the Ministries of Health, Education, Women and Children, and Employment and Social Welfare.

The issue of public transportation, which is of significant interest to the poor, is discussed mainly under road transportation in Section 3.6 of the Draft ITP. Major challenges facing the public funded operators (STC and MMT) are listed and the implementation of the BRT by 2012 is recommended. It should be noted that the provision of public funded transport services in all modes – aviation, rail, road, maritime and inland water – which used to be significant up until the 1980s is now on the decline. State-owned shipping line, airline, municipal and inter-city buses, etc, have largely given way to the private sector. The intent of the NTP is to promote a vibrant investment climate to enable the private sector to provide efficient and affordable transport services. This requires further attention by the ITP.

8.2.4 Secondary, Synergistic and Cumulative Effects

In assessing the likely effects of the ITP, the anticipated effects, both adverse and beneficial, on environmental sustainability are determined as follows:

- Secondary/indirect effects: those effects that are not directly obvious, occurring further away from the source or later in time, or those that results from another direct effect;
- Cumulative effects: those effects that accumulate incrementally (i.e. added on effects) from various sources;

- Synergistic effects: those effects that interact to produce more significant effects.

However the expected benefits may not happen if the draft ITP is not significantly revised to facilitate effective implementation, particularly of the institutional and regulatory measures.

The main findings from the analysis are as below, and details are contained in Appendix D4.

Implementing the proposed institutional and regulatory measures outlined in the draft ITP may introduce some beneficial effects. Improved management procedures and better financial management may help to deliver improved maintenance of existing infrastructure and higher performance.

Beneficial cumulative effects that may result from implementing the proposed institutional regulatory measures together as a whole (particularly for the road sub-sector) include:

- Reduced negative effects of transport infrastructure construction on the natural and biophysical environment through greater compliance with SEA and EIA provisions, contract supervision, trained contractors etc;
- Improved handling of resettlement and compensation issues (EIA/RAP compliance);
- Improved compliance could enhance performance and sustainability of transport infrastructure projects;
- Improved planning and decision-making, especially by well trained, multi-skilled staff supported by relevant data and research findings;
- Improved transportation safety, reduced costs and higher performance from effective mainstreaming of environment, health and safety in the whole sector;
- More objective decision-making may lead to better sector performance, planning for access to production centres and basic services;
- More sustainable transport sector programmes and projects enhance overall performance;
- Improved safety of inland water transport may lead to increased patronage and lower costs while improved institutional framework may lead to better compliance and safety of inland water transport;
- Improved management of the rail sector may lead to better performance even of limited rail infrastructure and services.

The above benefits may be realised if the Draft ITP is revised to provide more specific plan actions and targets for the proposed measures. However, it is noted that no significant beneficial synergistic effect is expected even if the institutional and regulatory measures are implemented as planned, as infrastructure and finance will continue to be inadequate.

Although there could be some improvements in the roads sub-sector due to the proposed infrastructure improvements on national routes, there will also be a worsening of the conditions of urban and rural roads with dire consequences for exhaust and dust emissions, safety and performance.

In addition, the proposed improvements on the Western and Eastern rail lines may lead to reduction in the negative effects of bulk road haulage and provide options for passengers and traders.

Some synergy of benefits may result if both road and rail infrastructure are implemented as proposed, particularly within an improved institutional framework. However, this may not be achieved, especially if financial challenges are not adequately overcome.

More specifically, the implementation of the institutional and regulatory proposals may provide synergy for improvements in overall sector performance, if properly implemented along with infrastructure improvements in ALL modes with adequate financial provision.

8.3 "Without Plan" Scenario

Following on from the analysis of the 'with plan' options as presented above, the possible effects of the 'without plan' option are then discussed as summarized below.

8.3.1 Compatibility with National Transport Policy Goals

As indicated earlier, the ITP is intended to be the principal means for achieving the goals of the NTP. In the event that there was no such ITP (ie. "Without Plan" scenario) then the expected contribution of the transport sector to the overall development agenda of the nation would be seriously constrained. With the existing institutional challenges, planning and execution of programmes and projects would remain uncoordinated and inefficient, leading to generally worsening performance of the sector with negative consequences on socio-economic development.

8.3.2 Sustainability of the Draft ITP

The issue of environmental sustainability of the transport sector as discussed in terms of the four pillars hinges largely on the institutional framework which is currently facing major challenges emanating from poor coordination and collaboration among the different actors. The Draft ITP discusses these challenges extensively and makes various proposals to help address the problems. In the absence of the ITP, ie the "Without Plan" scenario, it would be expected that conditions in the sector could deteriorate, posing challenges to the sustainability of programmes and projects of the sector.

8.3.3 Poverty – Transport Dimensions

Since the Draft ITP does not address poverty in any meaningful way, the absence of the ITP would not alter the current situation. In order to better address the poverty situation, the ITP needs to reconsider the weighting adopted in the MCEM for selecting projects. Furthermore there is the need also to look at providing access to areas of potential economic activity.

8.3.4 Secondary, Synergistic and Cumulative Effects

If the ITP was not to be implemented, with limited infrastructure addition (mainly national roads) and relatively inefficient institutional framework, the effects on sustainability are expected to be largely adverse. Deteriorating roads will lead to more congestion, higher levels of emissions and increased accidents. With most of the transport infrastructure and services concentrated in the south and central parts of the country, the constant pull of people to these areas from the deprived northern areas would persist. This would lead to increased pressure on resources and basic services in these areas. Since most transportation services

are provided by the private sector, there would be serious challenges posed by the inability of Government to create the vibrant investment climate that is needed to motivate the private sector. Furthermore, the over-reliance on small and medium-sized vehicles as the major means of road transport would worsen the problems of congestion and its related effects. Without an improved rail network to take over from bulk road haulage, road conditions would deteriorate and accidents would also increase.

Within an environment of weak enforcement of standards and regulations (eg. axle load control challenges), these adverse effects would cumulatively lead to even higher transport costs, which would in turn impact on cost of goods and services leading to deepening poverty, especially in hard-to-reach rural areas. The north-to-south migration would further worsen conditions in the northern areas, exacerbating poverty.

The inland water transport sub-sector would face significant challenges and worsening conditions, particularly due to poor safety provisions and weak compliance enforcement.

The situation could further worsen if financial challenges to the sector persist, as it will affect the maintenance of the available and highly constrained networks.

9. Significant Effects of the Draft ITP

A risk assessment was carried out in order to determine the significance of the effects of the Draft ITP. The assessment aimed to establish:

- The risks to the sustainability of the proposed Draft Integrated Transport Plan;
- The risks posed by the Draft ITP to the four pillars of sustainability, ie. natural / bio-physical resources, social/cultural conditions, economic considerations and the institutional (including regulatory and administrative) framework.

For the purposes of this SEA, risk was defined as a function of the probability (or likelihood) of an adverse effect occurring and the expected severity of its consequences. An adverse effect can be defined as any source of potential damage, harm or negative impact on something or someone.

Effects of the Draft ITP were assessed both qualitatively and quantitatively. The qualitative assessment was based on a source-pathway-receptor analysis approach, to determine what might happen as a result of either implementing or not implementing an action or proposal. It was also necessary to understand how and why the effect may occur. Once the consequence of an action or proposal was established, then its magnitude was determined (ranging from marginal to major), together with the likelihood of it occurring (ranging from highly likely to highly unlikely to occur).

For the quantitative assessment, weighting for likelihood ranged from 1 (unlikely) to 5 (inevitable, continuous or daily), and consequence was determined on a scale of 1 to 3 (from low to high degree of severity) for duration, location, magnitude / severity, reversibility, the cumulative character of the effect, the ability to prevent or mitigate the effect, and potential or existing public concerns. Any effect receiving a score equal to or greater than 70 was considered to be significant (high risk), effects of scores of 31 to 69, inclusive, were considered to be medium risk, and those equal to or less than 30 were considered to be low risk.

Details of the methodologies used for ranking these risk levels as high, medium or low, and thereby assessing the significance of the effects, and the results of the assessment, are presented in Appendix E. Table 9.1 below presents a summary of the significance of the various risks posed to, and by, the Draft ITP.

Table 9.1: Significance of the Environmental Effects of the Draft ITP

Risks to	Risk Level	Score	Ranking
Air quality	H	90	2
Climate change	H	88	3=
Land degradation	M	48	8=
Loss of biodiversity (implies loss of habitat, flora and fauna)	M	42	9=
Water quality	H	72	6
Transportation safety	H	80	4=
Relocation and involuntary resettlement	H	76	5
Accessibility by ALL to basic social and technical services through transportation	H	80	4=
Public health, including STI/HIV/AIDS, malaria	H	88	3=
Economic growth and stability	M	51	7
Job creation and income generation through investment	M	48	8=

Risks to	Risk Level	Score	Ranking
Poverty reduction	H	95	1
Good governance	M	48	8=
Institutional strengthening and capacity building	M	48	8=
Inter/cross-sectoral institutional collaboration and coordination of roles and mandates	M	42	9=
Private sector participation and protection of investment	M	33	10

It is seen that the greatest significance is attached to poverty reduction, air quality, climate change and public health, followed by transportation safety and accessibility by all to social and technical services.

Effects of the Draft ITP are described below, while recommendations for addressing these effects are presented in the next chapter.

9.1 Natural / Biophysical Effects

Air quality emerged as the second highest priority of all, followed by climate change. Water quality ranked sixth, and land degradation and loss of biodiversity eighth and ninth, respectively.

9.1.1 Air Quality

A major cause of dust generation in Ghana is from driving on unpaved roads. Proposed infrastructure projects will necessitate construction activities which will also generate large quantities of dust due to earthworks. Indeed, the general perception of impacts on air quality with regard to transport projects is attributed to dust emissions. Apart from rehabilitation and dualisation of identified N roads, all of which are already paved, the Plan does not propose activities for sealing earth or gravel roads, and therefore the issue of dust is not addressed by the Plan.

The Plan projects that there will be a 400% growth in both GDP and motorization between 2008 and 2035. As income levels increase the demand for transport services would increase, and more individuals would be able to afford travel, or to afford using motorized vehicles for travel (the latter may also be attributed to the currently limited access to travel choices for mass transit). This implies that volatile organic compounds, sulphur oxides, nitrogen oxides and greenhouse gas (GHG) emissions will increase from all modes of transportation. The diesel-run railway from Tema to Kumasi will be an additional source of air emissions, but the diversion of bulk goods from road to rail should have a net effect of lowering emissions.

Reduction in air quality cannot be averted or eliminated by any recommendations; however, it can be controlled. The ITP infrastructure proposals would, to an extent, support improving air quality, since dualisation of major routes would initially reduce congestion and therefore vehicle emissions. The Plan also makes institutional recommendations for stricter procedures for contract supervision, and it is assumed that this would include measures to mitigate dust emissions, vehicle idling, speeding, etc. Further the proposed projects would have to undergo individual EIAs which would propose recommendations for reducing the impact of the projects on air quality. Section 60 of the General Conditions of Contract for Civil Works deals with minimizing dust emissions and impacts of dust.

Nevertheless, the risk to air quality from ITP proposals is considered to be high because the likelihood that recommendations made in the EIAs, requirements of the Conditions of Contract, and ITP recommendations

and mitigation measures, will in practice be implemented and regulations enforced, is low due to behavioural attitudes, and a lack of capacity and resources for enforcing regulations as well as for contract supervision. The qualitative assessment ranks this as being the second most important risk.

9.1.2 Climate Change

Adaptation to climate change is related to the predictability of the impacts resulting from climate change and the vulnerability to those impacts. At present this is difficult in Ghana because of the lack of data to predict potential trends in changes. One could expect the following impacts to occur as a result of climate change induced events:

Roads: Damage to road surfaces as a result of extreme or rapid contraction and expansion of the surface material, may occur due to extreme changes in temperature. Excessive rain may damage or overwhelm drainage structures, since drainage and bridge structures are designed to withstand certain flood probabilities, and climate change may increase the frequency of these floods occurring. Low-lying sections of roads would be susceptible to flooding, particularly those traversing areas having many streams and rivers (N2 Asikuma-Nkwanta-Hohoe), or those running along the coast (N1 Tema-Aflao).

Rail: Extreme changes in temperature would cause damage to tracks, for example causing them to buckle. Embankments and soil under the tracks may be washed away by excessive rain, and bridges may be undermined or washed away by floods. Coastal infrastructure could be affected as a result of sea level rise.

Inland water: Inland water transport could be affected by low lake levels, which would inhibit navigation on much of the lake. On the other hand, if lake levels were to increase dramatically due to excessive rain in the catchment area, the ports along the lake and associated infrastructure could be inundated.

Maritime Ports: Port infrastructure would be affected by sea level rise.

Aviation: Airline schedules and safety would be affected by the unpredictability of storms.

NDPC is currently working with the transport sector and other agencies to develop a Policy on Climate Change. The policy is expected to outline strategies and actions for adaptation to climate change.

Nonetheless, the risk of these effects are considered to be high, in part because of their unpredictability, but also because of the time it will take for adaptation strategies to be put into place, and the generally inadequate disaster response and coping systems now prevailing. Climate change ranked third in the qualitative risk assessment, indicating that it is a high priority issue.

9.1.3 Land Degradation

Effects on land degradation will emanate from the ITP's infrastructure proposals, as well as transport operations. Earthworks would lead to loss of productive land (for example land taken for materials sites may no longer be suitable for agriculture), and would also result in soil erosion, which in turn would lead to nutrient depletion. Spills and leaks of oil and oil products – whether during construction or as a result of a transport accident - would contaminate soil. Most of these issues would be addressed by the EIAs for the individual projects, which would include the preparation of environmental management plans which would subsequently have to be implemented during construction and operation. National conditions of contract

for environmental management for civil works also deal with soil erosion, soil pollution and land degradation.

The evaluation process for ITP infrastructure projects included a criterion on "environmental impact potential" which took into consideration the nature and type of construction works required by the project. ITP institutional and regulatory proposals will help to further mitigate the land degradation effect through its recommendations for strengthening existing management and supervisory measures and mainstreaming environmental issues (refer to Sections 4.2.2 and 4.2.7 of the Draft ITP, respectively); these specifically contain stricter procedures for contract supervision, which it is assumed would include ensuring best environmental management practices during construction (including clean-up after construction), proper and regular maintenance during operation, and auditing.

But the problem lies in lack of compliance and enforcement, stemming from attitudinal problems, as well as lack of resources for supervision, and failure to allocate adequate financial resources for environmental management. EMPs or contract requirements are therefore seldom implemented in full. Hence the risk of this effect occurring is considered to be of medium significance.

9.1.4 Loss of Biodiversity (also Implying Loss of Habitat)

The seven road projects proposed by the Draft ITP all involve the dualisation of existing national highways. In general widening of roads requires the clearing of vegetation, which results in loss of habitats and therefore biodiversity. In the case of the proposed ITP road projects, widening itself is expected to take place within existing road reserves, having widths of 30 m. However, in order to have road reserves for the dualised roads, there will be a need to increase the road reserve width from 30 m to between 60 m and 90 m, and this will mean that more land will have to be acquired in order to accommodate new (wider) road reserves.

In addition, the setting up of construction camps for the road projects, as well as the proposed upgrading of the railway from Tema to Kumasi, would necessitate land take resulting in loss of habitats and biodiversity. While these activities will take place on areas that have already been altered from their natural state, vegetation will nevertheless have to be cleared.

The ITP project evaluation process included impact on ecological zones as a criterion for selection of infrastructure projects, and this took into account the impacts on biodiversity.

As with the issue of land degradation, the EIAs for the individual projects would have to determine whether any environmentally sensitive areas are affected and make recommendations accordingly. In addition, Section 60 of the General Conditions of Contract also stipulates the need for controlling clearing of vegetation and protecting natural resources. The Draft ITP institutional and regulatory proposals will contribute to mitigating this effect through its recommendations for strengthening existing management and supervisory measures and mainstreaming environmental issues (as mentioned above). However, again the danger is that environmental management plans are not fully implemented or contract conditions are not adhered to, because of a lack of manpower or financial resources, or proper supervision.

While the consequences of the effects on biodiversity are considered minor, clearing of vegetation is inevitable, so that risk is calculated as being of medium significance.

9.1.5 Water Quality

Water quality will be affected by construction activities, especially in terms of sediment loading and chemical pollution. Sediment loading is the result of soil erosion, where eroded soils wash into rivers and streams, resulting in high concentrations of suspended solids and turbidity. During operation and also during construction, accidents involving transportation of hazardous substances (chemicals and oil products) will cause spillage resulting in pollution of rivers, streams, and lakes, upon which many rural communities depend for sources of domestic and potable water. The effects are therefore considered major.

As mentioned above under Section 9.1.3 on Land Degradation, the Draft ITP has made institutional and regulatory proposals for supervision of construction activities, which could lead to some reduction in soil erosion, and therefore reduced sediment loading in water bodies. Nevertheless, the lack of compliance, and financial and manpower resources for proper supervision, mean that sediment loading will continue to occur.

Proposals for addressing transportation safety are no different from previous recommendations and strategies for reducing the causes of accidents, or for response to any such accidents, and therefore accidents involving vehicles carrying hazardous chemicals are still likely to take place.

Thus the risks of deterioration of water quality are considered to be high.

9.2 Social and Cultural Effects

Public health, specifically STI/HIV/AIDS, ranked third in importance (together with climate change), while transportation safety and accessibility to basic social and technical services ranked fourth equal, and relocation and involuntary resettlement came fifth.

9.2.1 Transportation Safety

With regard to transportation safety, the risk is the non-implementation of ITP proposals, which would result in an increase in the likelihood of accidents occurring in all modes of transport. Data on transportation safety shows that there has been no substantial improvement in the number of road accidents or casualties between 2000 and 2008 (see Appendix B). The same applies for rail and inland water. As a consequence, lives are lost or people are injured, reducing productivity which directly or indirectly affects the economy of the country. In regard to ITP proposals for road infrastructure, substantial accident cost savings that are known to arise as a result of dualisation will not be realized in full.

Lack of maintenance of infrastructure, compounded by lack of enforcement of regulations, also increases the risk of accidents occurring, and on heavily trafficked roads the effect is exponentially greater.

The Draft ITP has made new proposals for transportation safety involving the building into contract documentation of defined health and safety standards for all transport infrastructure projects, conducting of annual safety audits, and retraining of railway operating staff to achieve new safety standards. Recommendations for aviation, maritime and road safety are those currently proposed by the various key agencies for those sectors. Risks to transportation safety (including the transportation of hazardous substances and wastes) would be reduced if these proposals were implemented, but the ITP proposals

have yet to be developed and implementation of other proposals for safety in the aviation, maritime and roads sectors will be slow, due to funding and institutional constraints. Hence the risk to transportation safety remains high.

9.2.2 Relocation and Involuntary Resettlement

Infrastructure projects often require people to move from their usual locations to other locations. This could be due to either temporary or permanent land take, where land is required for infrastructure purposes (for example construction camps, expansion of railway yards), or where people are required to move out of rights of way (ROWs) in order to allow infrastructure to be built, or where additional land is required for a widened ROW. Although involuntary resettlement was included in the project evaluation criteria for the selection of prioritized ITP infrastructure proposals, compensation and relocation are likely to occur not only for all the ITP road projects where dualisation is proposed, but also for the proposed rail project from Tema to Kumasi. The consequences of relocation resulting in involuntary resettlement are severe, as they cause major upheavals to livelihoods, loss of income, loss of property and assets, and social defragmentation. Compensation is in effect a form of mitigation for these impacts and can take various forms: in kind (land for land), or in cash, or through replacement of lost property/assets.

Individual EIAs to be undertaken for each infrastructure project will highlight the need for compensation and relocation where necessary, and thus for the need for a RAP to be implemented. While a Resettlement Policy Framework (RPF) is in place for the road sector, no similar framework been adopted by, and adapted to, the other transport sub-sectors, and thus there are no guidelines for the other modes. It is therefore likely that projects may go ahead without following the required procedures for compensation and resettlement. Even where a RPF exists, the difficulty is in the proper implementation of a RAP that fully complies with the RPF, as well as in monitoring the compensation and resettlement process during RAP implementation, both of which are frequently hindered by the lack of funds allocated to these activities.

The risk of relocation and involuntary resettlement is therefore high.

9.2.3 Accessibility to Social and Technical Services through Transportation

As mentioned elsewhere (see for instance Sections 3.1 and 4.1.2), accessibility to basic social and technical services through transportation is a key contributor to poverty alleviation in rural and urban areas. The National Transport Household Survey Report[6] indicates that nearly 17% of the population in Northern Region travel more than 15 km to reach a motorable road, while about 10% of the country's population have to walk three to six kilometres to reach a motorable road. The report states that in Upper West and Northern Regions, 22.4% and 19.3% of the population, respectively, take more than an hour to reach a health facility. Apart from bad road conditions, a major obstacle in reaching a health facility is quoted as being the difficulty in getting a vehicle. The report also shows that approximately 53% of the nation's population travel to work on foot, while about 15% use trotros. (See Appendix B).

ITP infrastructure proposals did consider local access as a criterion in the selection of priority roads, which included connection to local markets, health centres, education facilities and human settlements. However, they do little to facilitate widespread accessibility to basic social and technical services, especially in rural areas, because they focus on national highways. Feeder roads, which are of great importance in terms of rural access, are not considered in the Draft ITP. If institutional and regulatory measures proposed by the

[6] MOT & GSS; National Transport Household Survey Report; TSPS II Transport Indicators Database Project; February 2009.

ITP for cross-sectoral planning are not implemented, then there will be no improvement in rural health, education levels or agricultural productivity, and so the consequences can be considered to be intermediate, since the existing situation will continue, and perhaps worsen, even if gradually. The level of the risk is dependent on whether these ITP institutional and regulatory measures are implemented. But the ITP proposals require further development in order to be effective, and it will take time to set up the inter-ministerial committee; moreover for the cross-sectoral committee to be set up, but there has first to be a firm commitment from each of the ministries to actively participate on it.

9.2.4 Public Health

With regard to public health, the chief concern is the spread of STI/HIV/AIDS, although other illnesses such as malaria, TB and other infectious and communicable diseases are also important. In relation to ITP infrastructure proposals, the incidence of STI/HIV/AIDS may increase as a result of setting up construction camps, and resultant social interaction with local communities. Similarly, during operation, increasing trucking flows, and long delays at terminals and transit points, will increase the spread of STI/HIV/AIDS. The link between transportation and the spread of STI/HIV/AIDS is well documented. Indeed, the GHA has undertaken some studies to establish the effects of the pandemic in the road sector. In addition, EIAs for road sector activities require STI/HIV/AIDS campaigns to be prepared, and implemented during construction. The road sub-sector has current guidelines for awareness raising and prevention of HIV/AIDS. But the risk applies to all the transport sub-sectors, and at present the significance of the issue is only appreciated by the road sector.

The Draft ITP, under its recommendations for mainstreaming environmental and safety issues, proposes that guidelines be developed for awareness raising and educational programmes for STI/HIV/AIDS as well as malaria. Its proposals for strengthening existing management and supervisory measures, for example in the context of term- or performance-based contracts or supervision of works, could also assist in curbing if not preventing the spread of STI/HIV/AIDS and malaria. However the proposals in the Draft ITP are not specific enough, and besides they still need to be developed in order to apply to the other sub-sectors.

STI/HIV/AIDS campaigns essentially have to target behavioural change, but this will take a long time to achieve, after persistent awareness raising and educational programmes. So the risk from this illness remains high.

9.3 Economic Effects

As would be expected, poverty reduction was accorded the highest score of all the sustainability criteria, and was therefore the most significant criteria. Economic growth and stability, and job creation and income generation, ranked seventh and eighth, both of which were deemed to be of medium significance.

9.3.1 Economic Growth and Stability

It was anticipated that the Draft ITP would support economic development in rural areas through support to the agricultural, industrial and tourism sectors throughout the country. Currently economic growth in the northern and north-eastern parts of the country is inhibited by consistently poor transport infrastructure. The ITP infrastructure proposals do not address this situation, and the national transport sector will not

improve substantially as a whole, as there is no clear investment strategy provided for expansion of the transport network to potentially productive parts of the country.

The effect of this situation is considered to be intermediate in that there will be only limited improvement in living standards in these more remote areas, since agriculture and tourism in rural areas will not be supported, but that the economy will not grind to a halt. With the current ITP proposals, this effect is likely to happen. The risk to economic growth and stability is therefore medium.

9.3.2 Job Creation and Income Generation through Investments

A common perception among the public is that infrastructure projects will create jobs, or other income-generating opportunities. The ITP infrastructure proposals offer some opportunities for job creation and income generation. Construction works will require both skilled and unskilled labour, and the labour force will demand other services that will create opportunities for income generation (for example, the demand for accommodation or for food at the construction site). In fact the ITP recommendations for strengthening the capacity of local contractors will contribute to increasing job opportunities. But this will provide only short term employment. The nature of the ITP infrastructure proposals however does not promote labour-based works, and therefore places some limits on the number of people likely to be employed.

Implementing the ITP infrastructure proposals will reduce congestion on some major routes, and therefore contribute in some measure to enhancing productivity from time savings. This can be translated as contributing to income generation.

With the current Plan proposals, rural economies will be stimulated only to a very small extent because of continuing difficulties in access and delivery of goods.

The ITP proposals have not elaborated on possibilities for investment, and therefore offer limited opportunities in this respect.

The consequences of this effect are considered to be minor to intermediate, and because they are likely to happen, the risk is of medium significance.

9.3.3 Poverty Reduction

Poverty reduction emerged as the most important criteria for sustainability of the ITP. Indeed a major underlying theme of the ITP has been to address poverty alleviation, in line with the national development agenda (see Draft ITP, Section 2 1). Poverty was also included as a social effect in the project evaluation criteria.

Poverty-transport dimensions in relation to this SEA have been discussed in detail in Section 8.2.3 above.

However, ITP proposals do not promote poverty reduction, because existing infrastructure is severely restricted in its capacity to meet the needs of both the rural and urban poor. As indicated earlier, the infrastructure proposals are centred on upgrading stretches of existing national highways, limiting improved access to only a fraction of the rural poor who reside in communities located close to the main roads, while the majority of the poor are excluded. This can be largely attributed to the weighting methodology applied during the project selection process.

With the current ITP proposals, the risk of perpetuating poverty is therefore high.

9.4 Institutional Effects

Good governance and institutional strengthening and capacity building is ranked eighth in significance (equal with job creation and land degradation). Inter/cross-sectoral institutional collaboration and coordination of roles and mandates was ranked ninth (on a par with loss of biodiversity), and private sector participation and protection of investments was the least significant criteria, ranked tenth. All the institutional criteria were considered to pose medium risk.

9.4.1 Good Governance

Good governance is facilitated by enabling the public, for example to vote, participate in meetings or durbars, access information issued by the government, etc, which in turn promotes transparency and accountability. But because of the existing difficult conditions experienced in the transport sector, people are unable to participate fully in the processes of achieving good governance.

Although the project evaluation process has taken into account strategic and local access, both of which are important in this respect, the focus of ITP infrastructure proposals is on national routes, and this therefore does little to enhance equity of access. For example, feeder roads provide essential access for rural people who should, and indeed have every right to, participate in governance processes. ITP institutional and regulatory proposals have not addressed this issue.

It is therefore likely that the Draft ITP will not promote good governance as there will be scarcely any improvement in access for most of the country. The consequences are considered to be intermediate, but because the risk is likely to occur, the significance of the risk is rated as medium.

9.4.2 Institutional Strengthening and Capacity Building

The ITP makes several proposals for institutional strengthening and capacity building. However, as presented, the proposals require procedures, plans, and contract documentation to be developed, which they indicate will be done by the respective MDAs. In addition, no costs are provided for the development of the necessary documentation, or the process of applying them. In practice, MDAs lack the capacity, time and finances to develop these procedures and plans, and it is therefore likely that many of these proposals will not be fully implemented. But the consequences are deemed to be intermediate, since the MDAs are, and will continue to be, functional with or without the implementation of the proposals, albeit with probably a lower degree of efficiency and effectiveness. Hence the significance of the risk is considered to be medium.

9.4.3 Inter/Cross-Sectoral Institutional Collaboration and Coordination of Roles and Mandates

Collaboration and coordination between the various transport sector MDAs, as well as between transport sector MDAs and other sectoral MDAs with an interest in the transport sector (for example, mining, tourism, agriculture), is currently inadequate and ineffective. To overcome this, the Draft ITP has made proposals for the establishment of an inter-ministerial committee.

However, there is not enough guidance in the proposal for setting up the inter-ministerial committee, and it is likely that it may not be established for some time to come or that it will operate ineffectively. Progress towards integrated transport planning will therefore be impeded. The consequence is deemed to be minor

to intermediate, as things will otherwise continue as they are at present. Thus the risk of this effect is considered to be of medium significance.

9.4.4 Private Sector Participation and Protection of Investments

PPP is being promoted by the government, but as yet a national framework for PPP has not yet been developed, so there will not be sufficient private sector interest in investing in rail and other transport infrastructure. Moreover, the current environment is not conducive to investment in rail.

If PPP is not facilitated, then it is likely that the situation with regard to investment in infrastructure will remain as it is, but not necessarily improve (ie. a consequence of intermediate magnitude). The risk in this regard is therefore medium.

10. Recommendations

This Chapter summarises findings reported during the Analysis Phase for inclusion into the Final ITP in order that environmental issues can be fully mainstreamed into the Plan. Recommendations have also been made for specific activities related to environmental sustainability objectives that need to be implemented by the transport sector, and other, MDAs. In addition, based on experiences and lessons learned from this SEA, recommendations are also made for improving the SEA process for future transport sector (and other) plans.

10.1 Synopsis of SEA Findings

10.1.1 Earlier SEA Findings and How They Were Addressed

During the course of this SEA a number of issues and concerns were brought to the attention of the ITP planners, as envisaged in the methodology of the SEA's constant interaction with the ITP process. This section reviews the extent to which initial recommendations were considered in the Draft ITP.

Prior to the SEA, the ITP approach was to develop a plan primarily based on road infrastructure, on the basis that the existing road network carries 97% of the existing traffic. During the Scoping Phase, the SEA recommended that, in addition to roads, the provision of, and access to, transportation by other modes, particularly rail and inland waterways, but also pipelines, maritime and aviation, should be considered. The Draft ITP has proposed one rail project and made reference to master plans being developed for aviation and ports. However the Draft Plan has not addressed sufficiently how these will be integrated into the ITP. Pipelines have not been considered as a transport service.

The SEA had made recommendations on the need for a multi-modal approach to deal with transportation safety and security. But this had not been done. However, some safety proposals have been mentioned for specific sectors.

The SEA identified the need for the ITP to provide solutions to enable transportation to adapt to the effects of climate change. This has not been addressed.

The Draft Plan also fails to strategically link rural and urban production areas so that untapped areas in the country can be opened up to development, as recommended by the SEA. This again can be attributed to the prioritisation process, which puts greater emphasis on economic viability as against strategic access and access to basic services.

A recommendation was made for the development of a transport network, rather than transport corridors, in order to provide widespread better access to the rural communities. The prioritised projects are, however, concentrated on existing major trunk routes, and in the south of the country.

10.1.2 Strategic Environmental Findings

The Analysis Phase covered compatibility, sustainability and poverty-transport dimensions. The key findings are as follows:

Compatibility with the National Transport Policy

The ITP appears to largely conform with the NTP, but this is primarily because the ITP re-states policy measures already provided in the NTP, often without elaboration. Being a plan, however, the ITP should have further developed these policy measures by proposing specific strategies with appropriate action plans, backed by targets and budgets, to enable implementation of the Plan so as to achieve the goals of the NTP. This would demonstrate full compatibility with the NTP.

Environmental Sustainability

From the analysis, the ITP appears to be environmentally sustainable. Proposed institutional and regulatory measures are expected to contribute to better management of the natural and biophysical environment as it relates to transportation and infrastructure services.

However, the main concern is the Plan's failure to address poverty reduction, which is the principal goal of the Government's development agenda.

Poverty-Transport Dimensions

The analysis of the Draft ITP in respect of poverty-transport dimensions reveals how inadequately the issue of poverty has been dealt with. Poverty reduction is the main focus of the national development agenda, and transport is seen as a key facilitator to support economic growth and poverty reduction. In this regard the Draft ITP has not facilitated access to social and technical services that are essential to support the rural and urban poor, nor has it made proposals for the expansion of regional networks.

Risk Assessment

The analysis highlighted eight high priority criteria. These are air quality, climate change, water quality, transportation safety, relocation and involuntary resettlement, accessibility by all to basic social and technical services, public health, and poverty reduction. Here too poverty reduction came out as being the issue of highest concern, further underscoring its significance.

10.1.3 Other Relevant Findings

Several further comments should also be made on the Draft ITP which, even if not directly related to environmental issues, still have relevance to the socio-economic and institutional aspects of the overall strategic environmental assessment process. These include the following:

- Although institutional and regulatory proposals of the Draft ITP generally conform to the aims of NTP, TSDP and the draft SMTDP, many of them are not developed in any detail, nor have any cost estimates been prepared;

- The Draft ITP scarcely reflects, or makes cross-reference to, the several earlier reports produced under the same consultancy since early 2008. It should have been made more evident how their specialist inputs have been consolidated into the draft final document;

- No separate reports have been prepared on traffic forecasts, transport costs or transport integration, though all these aspects must have been essential building blocks in compilation of an Integrated

Transport Plan, and should have been fully reported to permit a more complete understanding of the Draft ITP process and findings;

- It is surprising that there is a near-absence of any reference to investment needs for the air and maritime transport sub-sectors, and of their roles and inter-connections in the future integrated transport system, even if separate master plans have also been under preparation for seaports and the air sector;

- The concentration of all proposed infrastructural investments on national road and rail routes severely constrains the Draft ITP's ability to contribute to the central national policy goal of poverty alleviation in the rural areas;

- There is a marked lack of regional balance in the Draft ITP, since all proposed infrastructure investments are concentrated in the south of the country;

- Little attention has been paid to transit traffic to land-locked countries, or to potential future economic development associated with either the Savannah Accelerated Development Authority (SADA) or the future off-shore or on-shore oil and gas developments, though all these factors may be relevant to future transport sector activities and needs.

10.1.4 Opportunities Arising

During the analysis of the Draft ITP, a number of opportunities were identified which the ITP could develop further. In the event that the final ITP is unable to accommodate these opportunities, they should be taken on by subsequent plans and programmes in the transport sector.

Climate Change and Air Quality

EPA has a dedicated unit that deals with issues of climate change. The transport sector agencies should work with EPA to address coping mechanisms for the transport sector. Lessons learned and strategies developed could be shared with other West African countries through the ECOWAS Environment Section. Ultimately Ghana could aspire to be a leader in actions for the transport sector's adaption to climate change in the West African region. In addition to the above, the transport sector should support EPA to institutionalise monitoring of air quality.

Water Quality

In view of the risks posed to water bodies from possible accidents involving transport of hazardous chemicals (oils, oil products and other hazardous materials), there is an opportunity to develop rapid response strategies that are aimed at containment, clean-up and remediation. Capacity could be developed within the traffic unit of the police as the first point of response, since they are always the first to be on the scene of any accident. They would therefore need training in responding to chemical and oil spills.

Transportation Safety

With air and maritime transportation, safety requirements necessarily have to meet high standards because of international obligations. This does not apply to rail, road and inland water. Transportation safety should be addressed in a more holistic sense, drawing from the expertise and experiences from the aviation and maritime sectors. This becomes more significant if Ghana is to progress towards multi-modal transportation, where safety of passengers and goods must be assured along the whole transport chain.

Since there is a general weakness in compliance enforcement, there is a need to look at other strategies for creating awareness and raising a sense of civic responsibility. One way of doing this is through heightened and persistent media campaigns.

Accessibility to Social and Technical Services through Transportation

Promotion of non –motorized and intermediate transportation is an essential element of the total network system to support accessibility by all to basic social and technical services. Strategies should therefore be developed to provide incentives and motivation for people to move towards these forms of transportation.

Poverty

In general the rural poor are at a disadvantage in terms of accessing transport services due to limited supply, and in some cases, no choices for transport, and also relatively prohibitive costs. The latter also affects the urban poor (although they have transport choices). This brings an opportunity for the transport sector to investigate support to subsidised public transport, targeting the rural poor.

10.2 Recommendations for Inclusion into the Final ITP

A number of recommendations have been made for inclusion into the Final Integrated Transport Plan. These are presented below “for each of the “pillars of sustainability”.

10.2.1 Natural / Biophysical Effects

Air Quality

There are already a number of regulations in place that would contribute to reducing emissions (eg vehicle emissions standards, speed limits on unpaved roads). The challenge is to ensure that these are enforced, and this lies in the strengthening of existing management and supervisory arrangements.

Proposals have been made in the Draft ITP for an inter-ministerial committee, which would discuss transport sector issues and resolve any arising problems. As one of the main weaknesses in terms of both safety and air quality is policing of unroadworthy vehicles or speeding, this committee could also have on it representation from the police force (traffic police) through the Ministry of Interior. The police would then require training in environmental awareness.

ITP recommendations for term- and performance-based (and other civil works) contracts need to be further expanded to ensure that environmental management is a specific requirement of the contract, with particular reference to dust and air emissions, among others.

The ITP should propose the need for improving maintenance regimes for both paved and unpaved roads, which would contribute, among others, to reduced emissions. (For example on a potholed road, where vehicles need to slow down to negotiate the pothole, and the subsequent acceleration leads to increased emissions from the car. A properly gravelled or compacted road will also emit less dust).

Climate Change

Regulatory proposals have been recommended in the SEA of the NTP for introducing low-sulphur fuels, ensuring that fuel-efficient vehicles are imported into the country, promoting the use of alternative (low carbon) fuels, enforcing legislation on exhaust emissions, and providing incentives for low-carbon vehicles. The ITP needs to emphasise the need to implement these proposals, and to define timelines and target dates.

With regard to infrastructure proposals, the Plan should consider mass transit options for both urban and inter-urban transportation of people and goods.

Land Degradation

The ITP proposals for strengthening existing management and supervisory measures should be expanded to cover all transportation modes – the recommendation focuses primarily on the road sector. In addition, auditing should not confine itself to safety, but regular environmental auditing should be carried out both during construction and operation of roads, railway yards and workshops, bus depots, weighbridges, airports and ports, and pipeline terminals, covering, among others, soil erosion and land degradation.

As mentioned above, ITP recommendations for term- or performance-based, or other civil works contracts need to specify environmental management as a requirement of the contract, with particular reference to soil erosion, soil pollution and land degradation.

Loss of Biodiversity (also Implying Loss of Habitat)

As mentioned above, ITP recommendations for civil works contracts need to specify environmental management as a specific requirement of contracts; this would cover controlled clearing of vegetation, avoiding environmentally sensitive areas, full implementation of the EMPs, and adherence to the General Conditions of Contract.

Water Quality

Proposed ITP recommendations for conducting regular environmental auditing during construction and operation of roads, railway yards and workshops, bus depots, weighbridges, airports and ports, and pipeline terminals, should include protection of water sources, through ensuring there are no discharges, or leaching, that could potentially pollute water sources.

Recommendations made above for land degradation and soil erosion in respect of term- or performance-based and other civil works contracts specifying environmental management, with particular reference to soil erosion and land degradation, would also assist in reducing sediment loading in water sources.

ITP proposals for transportation safety must be elaborated in order to reduce the number of accidents involving hazardous substances (including oils and chemicals) that could pose a pollution risk to water sources.

10.2.2 Social and Cultural Effects

Transportation Safety

Institutional and regulatory proposals for transportation safety in the ITP need to be further elaborated. Moreover, the ITP should look at how proposals made for safety by other sector agencies can be facilitated, assisting these agencies to overcome financial and institutional constraints.

Relocation and Involuntary Resettlement

The ITP must give further elaboration on its recommendation that resettlement policy frameworks be developed for the other transport sub-sectors, by giving guidance as to how these guidelines can be prepared. Moreover, in its recommendations for strengthening existing management and supervisory measures, responsibility for ensuring that RAPs are properly implemented in accordance with the sub-sector RPFs should be allocated to specified departments within the transport sector MDAs.

Accessibility to Social and Technical Services through Transportation

In term of infrastructure, the ITP should include provision for feeder roads; in addition, it should facilitate transportation services to poorly served areas in the country, particularly the northern regions, and areas east of Volta Lake.

The ITP proposals should also elaborate further on how the cross-sectoral committee should operate, particularly ensuring that cross-sectoral planning goes hand in hand with land use planning, and in line with NDPC Act 480.

Public Health

The ITP should refine the STI/HIV/AIDS guidelines that already exist for the road sector, if necessary, and also develop guidelines applicable to other transport sub-sectors. Contractual obligations on raising awareness on STI/HIV/AIDS should be specified, which should also ensure that an appropriate budget is provided for this activity.

In addition, ITP recommendations for civil works contracts need to specify environmental management as a requirement of the contract, with particular reference to rehabilitation of borrow pits and quarries and management of water discharges, in order to prevent accumulation of stagnant water which would provide breeding habitats for malaria-carrying mosquitoes. Again there is a need to specify an appropriate budget in the contract for these environmental management activities is requisite.

10.2.3 Economic Effects

Economic Growth and Stability

As economic growth in this context is linked to accessibility issues described above, the recommendations in this case are similar to those listed above under accessibility, namely that the ITP needs to include infrastructure provisions for feeder roads and non-motorised transport (NMT), and must facilitate transportation services to poorly served areas in the country (eg. the northern regions and areas east of Volta Lake), and also to potential tourist destinations. Furthermore, it must make provisions for transport infrastructure needs of the oil and gas sector.

In addition, the ITP should include a comprehensive investment plan for the whole transport sector.

Job Creation and Income Generation through Investments

Job creation opportunities can be enhanced by ensuring that ITP recommendations for strengthening capacity and using local contractors are implemented.

In addition, the Plan needs to include opportunities for investment.

Poverty Reduction

In order for poverty reduction to be given the importance it warrants, the Plan needs to be revised to give greater weight to poverty reduction. In addition, recommendations made above for accessibility to basic social and technical services would also contribute to alleviating poverty (for example consideration of feeder roads).

10.2.4 Institutional Effects

Good Governance

The ITP needs to develop specific proposals on good governance in relation to equity of accessibility, participation, transparency and accountability. To achieve this, it should include feeder roads and facilitate regional expansion of the road network. In terms of institutional measures, it needs to propose means for including representation by rural communities during the prioritisation of transport services for improvement.

Institutional Strengthening and Capacity Building

The ITP proposals for institutional strengthening and capacity building need to be more detailed in order to facilitate timely implementation. They should give guidelines as to what procedures and contract documentation could contain, and indicate how specific outputs will be achieved; for example, they should specify who in the road agencies will carry out the list of tasks that they have been allocated, and through what mechanism.

Inter/Cross-Sectoral Institutional Collaboration and Coordination of Roles and Mandates

The ITP needs to develop and elaborate its recommendations on improving the transport sector institutional framework, giving detailed specific actions for coordination and collaboration, including identifying and including other relevant sectoral agencies.

Private Sector Participation and Protection of Investments

The ITP could make proposals for the development of a clear and attractive PPP framework, particularly making clear GOG's intention to develop specific railway proposals.

10.3 Recommendations for Transport Sector MDAs

Recommendations have also been made for follow-up and actions required by transport sector MDAs in the context of the recommendations made above for inclusions into the Final Integrated Transport Plan.

10.3.1 Natural/Biophysical Effects

Air Quality

As mentioned above, regulations do exist which could significantly reduce the transport sector contributions to air emissions (eg vehicle emissions standards, speed limits on unpaved roads), but the challenge is in the enforcement of these regulations, where the responsibility for enforcement lies mainly with the traffic police. A recommendation has been made above for including representation on the inter-ministerial committee from the police force (traffic police) through the Ministry of Interior. In order to be able to enforce these regulations effectively, the police would require training in environmental awareness.

Recommendations have been made above for specifying of environmental management in civil works contracts, with particular reference to dust and air emissions, among others. The transport sector MDAs must ensure that these clauses appear in contract documentation.

Transport sector MDAs will have to implement proposals recommended above for improving maintenance regimes for both paved and unpaved roads, which would contribute to reduced dust and air emissions.

Climate Change

Ghana has acceded to the United Nations Framework Convention on Climate Change (UNFCCC) and the Kyoto Protocol. In line with this, the SEA of the NTP made recommendations for introducing low-sulphur fuels, ensuring that fuel-efficient vehicles are imported into the country, promoting the use of alternative (low carbon) fuels, enforcing legislation on exhaust emissions, and providing incentives for low-carbon vehicles.

Following the Conference of Parties on UNFCCC in Copenhagen in November 2009, a conference to establish the next steps after Copenhagen proposed the following key messages:

1. Climate change mitigation efforts need to address emissions from the transport sector in developing countries;

2. Decision making in the transport sector should consider multiple policy objectives in support of sustainable development;

3. Countries can take important steps towards sustainable, low-carbon transportation now;

4. The allocation of transport-related funds requires a paradigm shift;

5. There should be more financial support directed towards enabling and preparatory activities;

6. Adaptation needs to be mainstreamed in the transportation sector.

Adapting transport infrastructure need not require significant extra resources, but requires precision in timing. The cost of investment in infrastructure to cater for climate change events (for example designing a

drain for possible future flooding) at the time of construction will be less than the cost of replacing or upgrading it in the future to cope with changed conditions.

Recommendations based on strategies adopted in the UK are that adaptation to climate change in the transport sector should be approached through a risk assessment, and a risk management plan. Hence enforcing and implementing proposed actions in the SEA of the NTP would almost certainly assist in preparing for any consequences in climate change.

A report on a workshop held by the UK's Transport Research Laboratory in 2008[7] suggests that adaptation to climate change requires:

- Data to be recorded on weather impacts, and shared with various multi-modal authorities;
- Climate change impact to be considered as part of maintenance strategy;
- An understanding of present vulnerability and how this will change over time.

With regard to the latter, the EPA has prepared a report on climate change impacts, vulnerability and adaptation assessments for Ghana[8]. The report discusses climate change impacts on, and adaptation strategies for, fisheries, human health, land management, agriculture, women's livelihoods and poverty. , However, climate change impacts on the transport sector, and associated adaptation strategies, have not been included. The transport sector therefore needs to develop its own adaptation strategies for climate change.

Furthermore, the TRL Report proposes actions that would facilitate adaptation to climate change by the transport sector, including:

- Reviewing monitoring and maintenance regimes;
- Reviewing design standards and specifications in order to improve the resilience of infrastructure;
- Considering major upgrading or re-routing of potentially vulnerable transport infrastructure or routes;
- Avoiding new development in 'at risk' locations;
- Developing a risk assessment methodology that can be applied across the transport sector, which would culminate in the preparation of a risk management strategy.

Land Degradation

As part of the ITP proposals for strengthening existing management and supervisory measures, it has been recommended that regular environmental auditing should be carried out both during construction and operation of roads, railway yards and workshops, bus depots, weighbridges, airports and ports, and pipeline terminals, covering, among others, soil erosion and land degradation. Transport sector MDAs need

[7] http://www.sd-research.org.uk/wp-content/uploads/trl-event-report-final-21-01-08.pdf

[8] EPA; *Ghana Climate Change Impacts, Vulnerability and Adaptation Assessments*; in association with the Netherlands Climate Assistance Programme (NCAP); May 2008.

to ensure that these audits are carried out. For example, this can be done as part of condition surveys or maintenance needs assessments.

Transport sector MDAs need to ensure that term- or performance-based and other civil works contracts specify environmental management as a requirement of the contract, with particular reference to soil erosion, soil pollution and land degradation. This would also ensure reduced sediment loading of water sources.

Loss of Biodiversity (also Implying Loss of Habitat)

Again, transport sector MDAs must ensure that environmental management is a specific requirement of contracts, and cover, in this context of loss of biodiversity, controlled clearing of vegetation, avoiding environmentally sensitive areas, full implementation of the EMPs, and adherence to the General Conditions of Contract.

Water Quality

The recommendations that transport sector MDAs carry out regular environmental audits also applies for the protection of water sources, in order to ensure that there are no discharges, or leaching, that could potentially pollute water sources.

As with land degradation and soil erosion, transport sector MDAs must ensure that civil works contracts specify environmental management, with particular reference to protection of water sources, including pollution risks from hazardous materials.

10.3.2 Social and Cultural Effects

Relocation and Involuntary Resettlement

Transport sector MDAs must designate specific departmental responsibilities for ensuring that RAPs are properly implemented in accordance with the RPF.

Public Health

Transport sector MDAs need to ensure that contracts specify obligations on raising awareness on STI/HIV/AIDS, and for environmental management (with particular reference to rehabilitation of borrow pits and quarries, and management of water discharges, in order to prevent accumulation of stagnant water which would provide breeding habitats for malaria-carrying mosquitoes), and that appropriate budgets are provided for these activities.

10.3.3 Economic Effects

Job Creation and Income Generation through Investments

The transport sector MDAs need to ensure that ITP recommendations for strengthening capacity and using local contractors are implemented,

10.4 Recommendations for Improving SEA Processes in Transport Sector Planning

It is crucial that when terms of reference are developed made for preparing transport sector plans, SEA requirements for feedback are taken into account. The planning and SEA processes should be structured so that after specific phases, feedback is provided to the planners to develop firstly the plan objectives, and then, as plan outputs emerge, to subject those to consultation for feedback to the planners again so that refinements to the plan begin at a very early stage in planning. This means that at the very outset of the planning process, the terms of reference and methodology are defined so as to assimilate SEA findings continuously. Thus ideally, the preparation of a plan and its SEA should commence in tandem to ensure that environmental sustainability issues identified through stakeholder consultation are included in the plan objectives (as indicated in Figure 1.1, Section 1.4.1 of this report).

The roles of EPA and NDPC in the SEAs must be recognised, and they must be represented on the Project Steering Committee (PSC). The roles and functions of the PSC must be adequately spelt out and duly followed in order for all relevant stakeholders (particularly EPA and NDPC) to be kept abreast with developments and issues arising regarding proposed plans or programmes that are undergoing SEAs. It is therefore important to have regular PSC meetings so that SEAs (and the planning process) can be constantly guided by the PSC. For example, as in the case of the present SEA, the challenge posed by the lack of plan scenarios that were required to be subjected to consultation may have been resolved soon after the Scoping Phase when this concern was first raised.

There is a need to ensure wider stakeholder participation in SEA processes, and mechanisms for giving and receiving feedback should be well established. Consultation budgets therefore need to consider the flexibility requirements of the stakeholder consultation processes, and allow for variations in the number and type of consultations.

The transport sector should develop a forum that deals specifically with SEAs, comprising specific people from the various transport sector departments and agencies, as well as private sector operators and a whole range of transport sector stakeholders. This will also help in capacity building in SEA, and will contribute to improving the quality of SEA in the sector, as well as at a national level.

Accessibility to, and availability of, data has been a serious constraint for both the ITP planning and SEA processes. All key agencies involved must be willing to readily provide any data requirements. However, with regard to environmental planning in the transport sector, there is a need for the transport sector to set up a national database for collecting and collating key environmental sustainability criteria. This could be the responsibility of the Research and Monitoring Directorate at MORH.

11. Monitoring Plan

As a result of the SEA process, a number of recommendations were prepared to overcome constraints and enhance opportunities, and for development of a framework to ensure sustainable development within the transport sector. These recommendations must now be implemented.

The monitoring plan presented here comprises three separate components in order to ensure that:

i. SEA recommendations are considered during the preparation and finalisation of the Final Integrated Transport Plan;

ii. Recommendations for sustainability in the ITP are properly implemented by the responsible transport sector agencies;

iii. Any effects on priority sustainability concerns which were identified by stakeholders, and formed the basis of the SEA analysis, can be monitored.

Monitoring involves the continuous or periodic review of specific transport sector activities to determine the effectiveness of implemented recommendations for enhancing sustainability. The purpose of monitoring is to establish benchmarks so that the nature and magnitude of anticipated environmental, social, economic and institutional effects of the ITP can be continually assessed. Consequently, trends in degradation or improvement in environmental sustainability can be established, and previously unforeseen impacts can be identified or pre-empted. This also allows measures to be implemented in order to prevent or avert negative effects.

The overall objective of monitoring therefore is to ensure that proposed recommendations to enhance sustainability are implemented, and that transport sector activities are environmentally and socially acceptable, and therefore sustainable.

11.1 Monitoring of SEA Recommendations for Inclusion into the Final ITP

A number of recommendations have been proposed in Section 10.2 for the ITP planners to incorporate into the Final Integrated Plan. The ITP planners are also required to give reasons if any of these recommendations are not taken into account.

The responsibility for ensuring that these recommendations are considered in the final ITP lies with the MORH.

The inclusion of these recommendations in the ITP is considered to be part of the ITP Programme, and therefore should not incur additional costs. Table 11.1 below presents the specific recommendations, and indicates how the MORH can ensure that these recommendations have been taken on board.

Table 11.1: Monitoring of Inclusion of SEA Recommendations into the Final ITP

Sustainability Criteria	Recommendations for Mitigation	Indicators / Verification Means
Natural and Biophysical Resources		
Air Quality	Ensure civil works contracts address dust and air emissions	ITP recommendations expanded to include specifications for dust and air emissions
	Improve maintenance regimes for both paved and unpaved roads, so as to reduce dust emissions from use of unpaved road sections and shoulders	ITP emphasizes need for improving maintenance regimes
Climate change	Develop regulatory proposals for climate change in the SEA of the NTP, and define timelines and target dates and provide costs	Proposals developed in ITP Timelines, target dates and costs provided in ITP
	Consider mass transit options for both urban and inter-urban transportation of both people and goods	Mass transit options included in the ITP
Land degradation	Environmental auditing should be carried out both during construction of transport infrastructure, and in all operations, to address issues of soil erosion and land degradation.	Environmental audits addressing soil erosion and land degradation included in ITP recommendations, covering all transport modes
	Ensure performance-based and other civil works contracts address soil erosion, soil pollution and land degradation.	ITP recommendations expanded to include soil erosion, soil pollution and land degradation
Loss of biodiversity (implies loss of habitat, flora and fauna)	Term-, performance-based and other civil works contracts should specify environmental management as a specific requirement of contracts; this would cover controlled clearing of vegetation, avoiding environmentally sensitive areas, full implementation of the EMPs and adherence to the General Conditions of Contract.	ITP recommendations expanded to include specifications for minimizing loss in biodiversity
Water quality	Environmental auditing both during construction of transport infrastructure, and in all operations, to address water quality issues.	Environmental audits addressing water quality included in ITP recommendations
	Ensure civil works contracts specify environmental management, with particular reference to sediment loading through soil erosion, and land degradation.	ITP recommendations expanded to include protection of water sources and water quality
	Elaborate proposals for transportation safety in order to reduce the number of accidents involving hazardous substances (including oils and chemicals) that could pose a pollution risk to water sources.	Proposals for transportation safety, including transportation of hazardous substances, incorporated into ITP
Social and Cultural Aspects		
Transportation safety	Recommend means by which proposals for safety by transport sector agencies can be facilitated, to assist these agencies to overcome financial and institutional constraints.	Specific proposals to facilitate transportation safety in all transport sub-sectors developed
Relocation and involuntary resettlement	Elaborate recommendation on resettlement policy frameworks for the other transport sub-sectors, by giving guidance as to how these guidelines can be prepared.	Guidelines prepared for transport sub-sectors to implement RPFs (refer Draft ITP pg 61)
	Allocated responsibility for ensuring proper implementation of RAPs to specific departments within transport sector MDAs	Specific departments in transport sector MDAs with mandates for ensuring implementation and follow up on RAPs
Accessibility by all to basic social and technical services through transportation	Make provision for feeder roads;	Proposals for feeder roads developed in ITP
	Provide for facilitation of transportation services to poorly served areas in the country, particularly the northern regions, and areas east of Lake Volta;	Proposals for feeder roads, and NMT access to northern regions and areas east of Volta Lake, to be developed in ITP

Sustainability Criteria	Recommendations for Mitigation	Indicators / Verification Means
	Provide more detailed guidelines on how cross-sectoral committee should operate, particularly ensuring that cross-sectoral planning goes hand in hand with land use planning, and in line with NDPC Act 480.	Detailed guidelines for cross-sectoral committee operations included in ITP
Public health, including STI/HIV/AIDS, malaria	Refine STI/HIV/AIDS guidelines that already exist for the road sector, if necessary, and also develop guidelines applicable to other transport sub-sectors;	Guidelines for STI/HIV/AIDS developed for other transport sub-sectors
	Specify contractual obligations on raising awareness on STI/HIV/AIDS, and prevention of accumulation of water, which should also ensure that appropriate budgets are made for these activities.	ITP recommendations expanded to include need for contractual obligations and allocation of budget for STI/HIV/AIDS awareness raising
Economic Aspects		
Economic growth and stability	Make provisions for feeder roads and NMT access, to facilitate transportation services to poorly served areas in the country (eg. the northern regions and areas east of Volta Lake) and also to potential tourist destinations.	Proposals for feeder roads and NMT to facilitate transportation services to northern regions and areas east of Volta Lake developed in ITP
	Make provisions for transport infrastructure needs of the oil and gas sector.	Proposals for transport infrastructure needs of the oil and gas sector developed in ITP
	Include a comprehensive investment plan for the whole transport sector	Comprehensive investment plan produced in ITP
Job creation and income generation through investment	Ensure ITP covers opportunities for investment induced by transport improvements	Opportunities for investment addressed by ITP (can be part of comprehensive investment plan)
Poverty reduction	Revise ITP to give greater weight to poverty reduction	Multi Criteria Evaluation Process revised to reflect greater importance to poverty reduction
	Implement SEA recommendations made above for accessibility to basic social and technical services.	Proposals for feeder roads, NMT access, transportation services to northern regions and areas east of Volta Lake developed in ITP
Institutional Aspects		
Good governance	The Draft ITP to develop specific proposals to include feeder roads; facilitate regional expansion of the road network; include means for including representation by rural communities during the prioritisation of transport services for improvement.	Proposals for feeder roads, and NMT access to northern regions and areas east of Volta Lake, to be developed in ITP
Institutional strengthening and capacity building	Proposals for institutional strengthening and capacity building need to be more detailed in order to facilitate timely implementation, by providing guidelines on contents of procedures and contract documentation, specifying how outputs will be achieved; allocating responsibility for tasks	Detailed guidelines provided in ITP on procedures and contract documentation
Inter/cross-sectoral institutional collaboration and coordination of roles and mandates	Develop and elaborate ITP recommendations on improving the transport sector institutional framework, giving detailed specific actions for coordination and collaboration, including identifying and including other relevant sectoral agencies.	Detailed elaboration on coordination and collaboration between institutions

Sustainability Criteria	Recommendations for Mitigation	Indicators / Verification Means
Private sector participation and protection of investment	Make proposals for the development of a clear and attractive PPP framework, with particular reference to GOG's intention to develop specific railway proposals.	PPP framework included in ITP

11.2 SEA Recommendations for Implementation by Transport Sector MDAs

Once the ITP has been finalised to include recommendations emerging from the SEA process, there will be specific items that will require monitoring by the transport sector agencies. These have been presented in Table 11.2 below.

Since the police (mainly traffic police) are instrumental in ensuring enforcement and compliance with regulations that could potentially reduce transport sector contributions to environmental degradation related to air quality, water quality, loss of biodiversity and land degradation, they must also be represented on the inter-ministerial committee proposed in the Draft ITP. In addition, it is proposed that they be given training in environmental awareness for them to be able to enforce these regulations effectively. It is estimated that such training would cost in the region of Euros 4000 in the first year (including development of course material, delivery of lectures and field work). This would reduce to approximately Euros 1500 in the following years.

Maintenance is key to environmental protection, and improved maintenance regimes will greatly reduce effects on air quality (and associated impacts on public health), soil erosion and soil pollution, and water quality.

The proposed recommendations include ensuring that environmental management issues are included into contract documentation, and that these are contractual obligations pinned to contract payments. This applies particularly to dust and air emissions; soil erosion, soil pollution and land degradation; impacts on biodiversity; water quality; and public health (covering STI/HIV/AIDS and malaria).

It is also recommended that, in addition to safety audits, environmental audits should be conducted, which would help to check adverse effects on the key natural and biophysical aspects. These can be done at the same time as road condition surveys or maintenance needs assessments, and would involve the drawing up of a basic checklist to be filled in (by observation) while on site.

As part of the SEA recommendations for coping with the effects of climate change in the transport sector, it is proposed that the MORH/MOT engage a consultant to carry out a climate change risks/vulnerability assessment of transport infrastructure in Ghana, in order to provide recommendations/strategies for enabling the implementation of adaptation measures to protect such expensive and critical assets. The main objective of the assignment would be to make available detailed and reliable information on risks posed by climate change to various transport infrastructure in Ghana, as well as to recommend adaptation measures that would need to be implemented.

The specific objectives of the assignment would include:

- Establishing an inventory of all types of transport infrastructure for all modes in Ghana;
- Reviewing various proposals already made for climate change adaptation in the different ecological zones of Ghana;
- Assembling all relevant data related to climate change and its effects in Ghana, including data on weather patterns and their impacts on existing infrastructure;
- Developing assessment criteria for determining the vulnerability of each component of the identified infrastructure to climate change effects, based on physical surveys;
- Using criteria developed above to carry out a risk/vulnerability assessment of the various transport infrastructure components;
- Developing a risk management plan corresponding to the findings of the risks/vulnerability assessment.

Additional points for consideration based on the UK TRL Report are:

- Reviewing monitoring and maintenance regimes;
- Reviewing design standards and specifications in order to improve the resilience of infrastructure;
- Considering major upgrading or re-routing of potentially vulnerable transport infrastructure or routes.

The study would cost in the region of Euros 500,000.

All the proposed recommendations, apart from training of traffic police and the studies to develop a risk management strategy for climate change for the transport sector, should be part of regular transport sector agency operational budgets, and as such do not incur any additional costs.

Table 11.2: Monitoring of SEA Recommendations by Transport Sector MDAs during ITP Implementation

Effects due to or on	Recommendations for Mitigation	Monitoring Means / Indicators	Responsibility	Timeframe	Indicative Budget
Natural and Biophysical Resources					
Air Quality	Ensure representation of the police force through the Ministry of Interior on the proposed inter-ministerial committee	List of membership showing Ministry of Interior as member. Minutes of meetings indicating attendance by Ministry of Interior	MORH & MOT	As per Draft ITP (pg 53), committee to be set up within 6 mths	Should be included in ITP budget proposals for convening inter-ministerial committee
	Train police in environmental awareness	Integration of environmental management/monitoring into Police Academy curriculum. No. of policemen trained in environmental management / monitoring	Led by MORH, MOT and Ministry of Interior/Ghana Police Service; supported by National Road Safety Commission and EPA	Start with ITP implementation in 2011	€4000 in the first year; thereafter €1500 per year
	Ensure civil works contracts address dust and air emissions	Dust and air emissions specified in performance contracts	MORH, MOT; Transport sector agencies who issue contracts	Start with ITP implementation in 2011	No additional cost
	Improve maintenance regimes for both paved and unpaved roads, so as to reduce dust emissions from use of unpaved road sections and shoulders	Regular maintenance reports (assuming these include road condition surveys) eg through ITP proposal for Maintenance Management System (refer Draft ITP pg 72)	MORH	Continuously	No additional cost
Climate change	Develop regulatory proposals for climate change in the SEA of the NTP, and define timelines and target dates and provide costs	Regulations for climate change adapation in the transport sector prepared and implemented	MORH & MOT; support from EPA	Start with ITP implementation in 2011	Included within regular operational budgets
	Record data on weather impacts, to be shared within various multi-modal authorities	Reports on transport infrastructure damaged by weather effects (eg through condition surveys and works inventories)	Transport Sector agencies, to be coordinated by MORH and MOT for collation into Transport Sector databases	Start with ITP implementation in 2011	Included within regular operational budgets

Effects due to or on	Recommendations for Mitigation	Monitoring Means / Indicators	Responsibility	Timeframe	Indicative Budget
	Review monitoring and maintenance regimes	Maintenance monitoring reports to include sections on damage to infrastructure caused by weather effects	Transport Sector agencies, to be coordinated by MORH and MOT for collation into Transport Sector databases	Start with ITP implementation in 2011	Included within regular operational budgets
	Review design standards and specifications in order to improve the resilience of infrastructure	Existing design standards reviewed to accommodate climate change effects	Transport sector agencies, to be coordinated by MORH and MOT	Beginning 2011	Internal cost, within normal operational budget
	Consider major upgrading or re-routing of potentially vulnerable transport infrastructure or routes	Survey of all major transport infrastructure for vulnerability Risk locations identified Risk management methodology and strategy developed	Consultants, coordinated by MORH and MOT	Beginning 2011, six months study	Euros 500,000.
	Avoid new infrastructure development in 'at risk' locations				
	Develop a risk assessment methodology that can be applied across the transport sector, which would culminate in the preparation of a risk management strategy for the transport sector				
Land degradation	Environmental auditing should be carried out both during construction of transport infrastructure, and in all operations, to address issues of soil erosion and land degradation.	Environmental audits done covering all transport modes	Transport sector agencies, coordinated by MORH and MOT	Start with ITP implementation in 2011	Part of transport sector budgets for HSE
	Ensure civil works contracts address soil erosion, soil pollution and land degradation.	Soil erosion, soil pollution and land degradation specified in performance and other contracts	MORH, MOT; Transport sector agencies who issue contracts	Inclusion in ITP by end June 2010 Start with ITP implementation in 2011	No additional cost
Loss of biodiversity (implies loss of habitat, flora and fauna)	Civil works contracts should specify environmental management as a specific requirement of contracts; this would cover controlled clearing of vegetation, avoiding environmentally sensitive areas, full implementation of the EMPs and adherence to the General Conditions of Contract.	Protection of biodiversity and habitats specified in performance and other contracts	MORH, MOT; Transport sector agencies who issue contracts	Start with ITP implementation in 2011	No additional cost

Effects due to or on	Recommendations for Mitigation	Monitoring Means / Indicators	Responsibility	Timeframe	Indicative Budget
Water quality	Environmental auditing both during construction of transport infrastructure, and in all operations, to address water quality issues.	Environmental audits done	Transport sector agencies, coordinated by MORH and MOT	Start with ITP implementation in 2011	Part of transport sector budgets for HSE
	Ensure term- , performance-based and civil works contracts specify environmental management, with particular reference to sediment loading through soil erosion, and land degradation.	Protection of water sources specified in performance and other contracts	MORH, MOT; Transport sector agencies who issue contracts	Start with ITP implementation in 2011	No additional cost
Social and Cultural Aspects					
Relocation and involuntary resettlement	Allocated responsibility for ensuring proper implementation of RAPs to specific departments within transport sector MDAs	Specific departments in transport sector MDAs with mandates for ensuring implementation and follow-up on RAPs	MORH, MOT; Transport sector agencies	Start with ITP implementation in 2011	Internal cost, within normal operational budget
Public health, including STI/HIV/AIDS, malaria	Specify contractual obligations on raising awareness on STI/HIV/AIDS, prevention of accumulation of water, which should also ensure that appropriate budgets are available for these activities.	Contractual obligations on raising awareness on STI/HIV/AIDS, and malaria, specified in contracts.	Transport sector agencies, coordinated by MORH and MOT	Start with ITP implementation in 2011	Part of transport sector budget for HSE
Economic Aspects					
Job creation and income generation through investment	Ensure ITP recommendations for strengthening capacity and using local contractors are implemented.	No. of local contractors trained No. of local contractors contracted	Transport sector agencies, coordinated by MORH and MOT	Start with ITP implementation in 2011	Part of ITP programme implementation

11.3 Monitoring of Key Sustainability Criteria

This component of the monitoring plan covers those aspects for which indicators have been identified for the priority sustainability criteria which informed the SEA objectives and subsequent analysis of the Draft ITP proposals. Monitoring is required in order to establish trends in improvement or decline in environmental sustainability and thus determine the extent to which the transport sector, through the ITP implementation, contributes to overall sustainable development in Ghana.

Table 11.3 below outlines the components of the monitoring plan including indicators, means of monitoring and frequency. It is proposed that the various transport sector MDAs take direct responsibility for the monitoring processes and activities to promote ownership as well as enabling them to take specific and prompt corrective actions if any of the aspects are noted to be adversely affected.

In terms of budgets and costs for the monitoring, it is considered that these activities fall directly within the routine functions of the relevant MDAs which are provided for in their respective operational and administrative budgets. For example, in terms of air quality, EPA has set up various monitoring stations at key locations from which they collect data at specified intervals within their core environmental quality monitoring function. Such information is available to be accessed by all MDAs as required. Similarly the Forestry Commission through its Forests Services and Wildlife Divisions collects data on various flora and fauna of conservation significance.

The monitoring plan is structured such that data that is required for monitoring of the various aspects can be derived mainly from existing programmes and activities. While noting the persistently repeated refrain of 'lack of data', it is also realised that there is indeed a significant amount of data generated in the various MDAs as part of their routine administrative/operational functions. For example, project supervision consultants routinely inspect sites from which borrow materials are obtained for construction and evaluate and determine both quality and quantities of such materials for use in projects and therefore it can be said that data on all such quarries and borrow pits are available. Similarly nearly every transport accident that occurs (except for very minor ones) is reported to the police and as such data on accidents in all modes of transport should be readily available.

This situation applies for all the monitoring indicators that have been provided in the plan. The main constraint has to do with the lack of basic database systems that facilitate routine collection, collation and reporting of such data.

Accordingly it is proposed that as part of the implementation of the monitoring plan, a basic database system designed to cover the indicators provided in the plan, should be set up at the Research and Monitoring directorate of the MORH. All sector MDAs (assisted by the appropriately identified agencies) will be mandated to supply the necessary inputs into the system as required.

This way it is expected that the SEA would in addition to promoting sustainable development also help to facilitate the development of systematic data collection and collation within the sector to aid objective planning as envisaged under the ITP.

It is estimated that the cost of developing such a system would be in the region of Euros 5,000.

Table 11.3: Monitoring of Priority Sustainability Criteria

Sustainability Concerns	Aspect	Indicators	Baseline	Monitoring Means	Frequency	Responsibility	Cost
Natural and Biophysical Resources							
Air quality	Emissions of greenhouse gases	Changes in CO2 levels	Air quality measurements between 1990 and 1996	Data to be collected from ongoing EPA Air Quality Monitoring Programme	Annually	Relevant transport sector MDAs (assisted by EPA)	Routine administrative/operational budget
	Emissions of particulates (PM10)	Changes in PM10 levels	Annual Average PM concentrations applied to cities in Ghana (as at 2007)	Data to be collected from ongoing EPA Air Quality Monitoring Programme	Annually	Relevant transport sector MDAs (assisted by EPA)	Routine administrative/operational budget
Land degradation	Land degradation from acquiring materials used for transport infrastructure (borrow pits, quarries)	Number of rehabilitated borrow pits, against number of borrow pits opened	Zero pits rehabilitated at start of ITP	Project consultants' reports	Quarterly	Relevant transport sector MDAs	Routine supervision cost
		Number of rehabilitated quarries, against number of quarries opened	Zero quarries rehabilitated at start of ITP	Project consultants' reports	Quarterly	Relevant transport sector MDAs	Routine supervision cost
	Land degradation from transport induced development	Change in land use	Area of specified land uses in Ghana (2000)	Observation records	Annually	Relevant transport sector MDAs (assisted by EPA, District Assemblies, Forestry Commission)	Routine administrative/operational budget

Sustainability Concerns	Aspect	Indicators	Baseline	Monitoring Means	Frequency	Responsibility	Cost
Loss of biodiversity / Loss of habitat (of flora and fauna)	Effects on fauna, flora and sensitive areas	Change in number of plant species	No. of indigenous and introduced families, genera and species of plants (as at 2005). No. of threatened plant species (2003)	Data from Forestry Resources Division	Annually	Relevant transport sector MDAs (assisted by Forestry Resources Division)	Routine administrative/operational budget
		Change in number of animal species	No. of threatened animal species	Data from Wildlife Division	Annually	Relevant transport sector MDAs (assisted by Wildlife Division)	Routine administrative/operational budget
Water quality	Oil spills	No. of oil spills recorded in marine or inland water bodies	Zero at start of ITP	Incident records	Quarterly	Relevant transport sector MDAs (assisted by GMA, WRC and police)	Routine administrative/operational budget
Social and Cultural							
Transportation safety	Road Accidents	No. of road accidents	Road Accidents (2000 – 2008),	Accident records	Quarterly	MORH; data from NRSC and Police	Routine administrative/operational budget
	Boat Disasters	No. of boat disasters	Boat accidents (1990-2009)	Accident records	Quarterly	MOT (data from VLTC, GMA and Police)	Routine administrative/operational budget
	Derailments	No. of derailments	No. of rail accidents (2006-2009)	Accident records	Quarterly	MOT; data from GRC	Routine administrative/operational budget
Relocation and involuntary resettlement	Land take and acquisition / destruction of assets	No. of PAPs	To be determined by project-specific RAPs	Resettlement action plans	Annually	Relevant transport sector agency	Routine administrative/operational budget
		Land area acquired for transportation projects	To be determined by project-specific RAPs	Resettlement action plans	Annually	Relevant transport sector agency	Routine administrative/operational budget
		Total compensation payments	To be determined by project-specific RAPs	Resettlement action plans	Annually	Relevant transport sector agency	Routine administrative/operational budget

Sustainability Concerns	Aspect	Indicators	Baseline	Monitoring Means	Frequency	Responsibility	Cost
Accessibility by all to basic social and technical services through transportation	Access to schools, health facilities, markets	Time taken to reach schools, health facilities, markets and administration centres	From National Transport Household Survey 2009	Routine GSS surveys	Every four (4) years - synchronised with SMTDPs	MORH, MOT (Planning and Policy Directorates) assisted by GSS	Routine administrative/operational budget
Public health, including STI/HIV/AIDS and Malaria	Spread of disease	% Change in STI/HIV/AIDS prevalence rate	HIV Prevalence in selected towns in Ghana. From National HIV Prevalence & AIDS Estimates Report(2009-2015) March 2010	Data from National AIDS Commission	Annually	Relevant transport sector agency; Assisted by Ghana National AIDS Commission	Routine administrative/operational budget
Economic							
Economic growth and stability	GDP	Change in GDP	GDP (1990 – 2009)	Statistical Reports	Annually	Relevant transport sector agency; assisted by GSS	Routine administrative/operational budget
Job creation and income generation through investment	Transport related jobs	No. of jobs created by ITP projects	Zero at start of ITP	Project Consultants' reports	Quarterly	MORH, MOT (Planning and Policy Directorates)	Routine supervision cost
	Investments facilitated by improved transport	No. of new investments due to improved access	Zero new investments at start of ITP	Operational licences issued for each transport mode	Annually	Relevant transport agencies that issues licence.	Routine administrative/operational budget
Poverty reduction	Improvement in livelihood	% Change in poverty incidence	Poverty Incidence by Administrative Region (1991-2006)	Data from NDPC, MOFEP, GSS, District Assemblies	Annually	Relevant transport agencies; Assisted by NDPC, MOFEP, GSS, District Assemblies	Routine administrative/operational budget
Institutional							
Good governance	Participation, Transparency and Accessibility	No. of meetings / consultations for transport sector programmes per year having broad participation	Zero meetings at start of ITP	Consultation reports	Annually	MORH, MOT (Planning and Policy Directorates)	Routine administrative/operational budget

Sustainability Concerns	Aspect	Indicators	Baseline	Monitoring Means	Frequency	Responsibility	Cost
Institutional strengthening and capacity building	GOG budgetary allocation and manpower resources	% Change in budgetary allocation to transport sector agencies for capacity building	Assume zero budgetary allocation at start of ITP	Records of institutional and capacity building activities	Annually	Relevant transport agencies, and MORH, MOT (Planning and Policy Directorates)	Routine administrative/operational budget
Inter/cross-sectoral institutional collaboration and coordination of roles and mandates	Effective integration and improved coordination within Transport sector	No. of collaborative meetings held for Transport Sector, programmes per year	Zero meetings at start of ITP	Records of meetings	Annually	MORH, MOT (Planning and Policy Directorates)	Routine administrative/operational budget
Private sector participation and protection of investment	Facilitation of local private sector participation in transport projects and services	% Change in local private sector participation in transport sector projects and services	Zero at start of ITP	Contracts awarded, licences for services	Annually	MORH, MOT (Planning and Policy Directorates)	Routine administrative/operational budget

Appendices

Appendix A. Legal and Institutional Framework for Environmental Management

A.1. Environmental Legislation and Policies

The consideration of national- and international-level environmental legislation and policies within the SEA is intended to address the influence of external objectives which form part of the wider objectives of the SEA. This chapter describes national and international legislation and policies that inform the environmental objectives relevant to the transport sector.

A.1.1. National Legislation

Constitution of Ghana

The 1992 Constitution of the Republic of Ghana is the fundamental law of the country from which all other legislation and regulations are derived.

The Constitution states, among others, that:

- The State shall promote just and reasonable access by all citizens to public facilities and services in accordance with law.
- The State shall cultivate among all Ghanaians respect for fundamental human rights and freedoms and the dignity of the human person.
- The State shall actively promote the integration of the peoples of Ghana and prohibit discrimination and prejudice on the grounds of place of origin, circumstances of birth, ethnic origin, gender or religion, creed or other beliefs.
- The State shall take appropriate measures needed to protect and safeguard the national environment for posterity; and shall seek co-operation with other states and bodies for purposes of protecting the wider international environment for mankind.

The Constitution further that states that in order to achieve these objectives, the State shall take appropriate measures to provide adequate facilities for, and encourage, free mobility of people, goods and services throughout Ghana, and that as far as practicable, a government shall continue and execute projects and programmes commenced by the previous Governments.

EPA Act, 1994 (Act 490)

The EPA Act, 1994 (Act 490) established the Environmental Protection Agency. It is the framework legislation from which subsequent environmental laws are currently derived. The Act stipulates the functions of the EPA as:

- Environmental regulation: ‘to prescribe standards and guidelines relating to the pollution of air, water, land and other forms of environmental pollution including the discharge of wastes and the control of toxic substances’;

- Legal compliance: 'to ensure compliance with any laid down environmental impact assessment procedures in the planning and the execution of development projects, including compliance in respect of existing projects';
- Effective partnership: 'to act in liaison and co-operation with government agencies, District Assemblies and other bodies and institutions to control pollution and generally protect the environment';
- Environmental management: 'to promote effective planning in the management of the environment';
- Training and Capacity building: 'to conduct seminars and training programmes and gather and publish reports and information relating to the environment';
- Revenue generation: 'to impose and collect environmental protection levies in accordance with this Act or regulations made under this Act'.

However, until very recent times (ie. after the GPRS 2003) the main economic sectors such as Transport, Energy, Mining, Tourism, etc, did not have broad national level policies to effectively address environmental concerns directly within their sectors. In the absence of such policies, environmental considerations have been generally managed through various legal instruments such as acts of incorporation of the relevant organisations.

Other Relevant Legislation

In addition to the EPA law noted above, there are a number of legal provisions that deal with the specific aspects of the broad national environmental policy objectives within the sectors. Among those that cover objectives relevant to the provision of transport infrastructure, facilities and services include:

- Forestry Commission Act, 1999 (Act 571);
- The Administration of Lands Act, 1962 (Act 123);
- State Lands Act, 1962 (Act 125);
- State Lands Regulations 1962 (LI 230);
- State Lands (Amendment) (No. 2) Regulations 1963 (LI 285);
- Lands (Statutory Way Leaves) Act, 1963 (Act 186);
- Office of the Administrator of Stool Lands Act, 1994 (Act 481);
- Water Resources Commission Act, 1996 (Act 522);
- National Development Planning Act, 1994 (Act 479);
- Ghana Ports and Harbours Authority Law, 1986 (PNDC Law 160);
- Ghana Maritime Authority Act, 2002 (Act 630);
- Ghana Shipping Act, 2003 (Act 645);

- Port Regulations, 1964 (LI 352);
- Ghana Free Zones Act (Act 504);
- Labour Act, 2003 (Act 651);
- Children's Act, 1998 (Act 560);
- Human Trafficking Act, 2005;
- Ghana AIDS Commission Act, 2002 (Act 613);
- Commission on Human Rights and Administrative Justice Act, 1993 (Act 456)
- National Vocational Training Act, 1970 (Act 351).

A.1.2. National Policies

National Environmental Policy

Ghana's broad national-level environmental objectives are enshrined within the National Environmental Policy (NEP), adopted in 1991 to ensure that the environment was considered as a significant component in Ghana's development. The goal of the policy is to ensure sound management of the environment and the avoidance of exploitation of resources in ways that may result in irreparable damage to the environment.

The NEP aims to ensure that a 'preventive approach' is adopted in the pursuit of sound environmental management. The fundamental objectives of the policy are being addressed through the enactment and enforcement of relevant legislation and also through the implementation of a plan of action.

The policy objectives cover the following:

- Maintenance of ecosystem and ecological processes essential for the functioning of the biosphere;
- Sound management of natural resources and the environment;
- Protection of humans, animals and plants and their habitats;
- Guidance for healthy environmental practices in the national development effort;
- Integration of environmental considerations in sectoral, structural and socio-economic planning at all levels;
- Seeking common solutions to environmental problems in West Africa, Africa and the world at large.

All of the above are relevant when considering the effects of various developmental activities within the Transport Sector.

Forest and Wildlife Policy

The Forest and Wildlife Policy (1994) is aimed at developing a national forest estate and timber industry to provide the whole range of benefits required by society in a sustainable manner including the conservation of Ghana's environmental and cultural heritage. The policy objectives include:

- Management and enhancement of Ghana's permanent estate of forest and wildlife resources;
- Promotion of viable and efficient forest-based industries, particularly in secondary and tertiary processing;
- Promotion of public awareness and involvement of rural people in forestry and wildlife conservation;
- Promotion of research-based and technology-led forestry and wildlife management, utilization and development;
- Development of effective capability at national, regional and district levels for sustainable management of forest and wildlife resources.

National Energy Policy

The draft National Energy Policy (currently under review) is intended to provide the needed framework for the energy sector to play its critical role in Ghana's socio-economic advancement and has the following objectives:

- To rehabilitate and expand energy production and supply infrastructure to maintain supply adequacy;
- To secure future supply of energy;
- To accelerate the development and exploitation of indigenous energy resources to assure a high level of self-sufficiency;
- To manage the rapidly growing demand for energy;
- To increase access to high quality energy services, especially for the poor;
- To ensure energy supply in an environmentally acceptable manner;
- To ensure end-use efficiency to reduce environmental impact of energy supply and use; to manage the future energy delivery by reformation of the sector and building human resource and R&D capacity in energy production and supply.

Gender Policy

There is a currently a policy vacuum which has to be addressed to serve transportation related needs of Ghanaian women. Women are weakly represented in the transport profession, and policy makers have failed to develop policy alternatives such as the creation of transport user groups which have appropriate gender representation. The transport profession receives little or no feedback from women on the inadequacies of transport systems despite the centrality of women in the provision of the agricultural transport system. Women are part of the transport structure of Ghana, as in the rest of Africa. In rural

areas, women carry more of the transport burden on their backs and on their heads than motorised transport.

The Strategic Country Gender Assessment (SCGA) (2002) indicates that gender disparities persist, and that gender inequality is costly to Ghana's economic and social development and for the realization of Ghana's growth and poverty reduction objectives. Women predominate among the core poor. Gender differences in labour force participation and earnings, in time allocation, in schooling and literacy, in health and the impact of HIV/AIDS, and in access to and control of a wide range of human, economic, and social capital assets, are impediments to growth and poverty reduction in Ghana.

The SCGA reveals that village transport surveys in the country show that women spend nearly three times as much time in transport activities compared with men, and that they transport about four times as much in volume. Women's transport needs are typically more complex than those of men; adequately responding to these needs could increase women's contribution to economic productivity and qualitatively improve household welfare. Women's access to transport further determines their utilization of existing health and other services, and particularly affects the ability of female children to attend school.

The assessment further concludes that men and women differ in their access to, and control over, these facilities. Economic capacities and incentives are, therefore, strongly gender-differentiated in ways which affect supply response, resource allocation within the household, labour productivity, and welfare. These differences have implications for the flexibility, responsiveness, and dynamism of the economy, and directly limit economic growth; moreover these effects are magnified by the inadequacies of the transport system in Ghana

Ghana is currently using the SCGA to draft a Gender Policy document. The SCGA document considers gender as an economic and not just a social (or social sector) issue, as gender affects economic performance and growth. The SCGA, therefore, recommends that policy makers consider the following principles in crafting Ghana's Gender Policy:

- Since men and women both play important roles in the Ghanaian economy, these roles are relevant for poverty reduction, and for policies aimed at rapid, sustainable, and better distributed growth;
- The uneven distribution of men and women across the economy means that different sectoral investment and growth patterns make different demands on men's and women's labour, and have different implications for the division of labour and the distribution of income;
- Improving labour productivity and access to, and control of, economically productive assets, especially for females, is important for growth, agricultural performance, food security, household welfare, and poverty reduction;
- Documenting men's and women's economic roles, including those in the informal sector about which little is known, is an important building block for country work so as to develop gender-inclusive and pro-poor growth strategies.

National Food and Agricultural Sector Development Policy

Based on the role of agriculture in the national development framework, the objectives of the National Food and Agriculture Sector Development Policy of 2007 (FASDEP II) are:

- Food security and emergency preparedness;
- Improved growth in incomes;
- Increased competitiveness and enhanced integration into domestic and international markets;
- Sustainable management of land and environment;
- Science and technology applied in food and agriculture development and improved institutional coordination.

Under the policy framework, there are two agricultural policy strategies clearly related to transport. These are:

i. Enhanced infrastructure development: Under this, the priority objective is to accelerate the provision of relevant infrastructure to support improved production and to generate gainful employment so as to reduce urban and rural poverty. The strategy is focused on creating an enabling environment to stimulate private sector investment and growth, particularly agriculture and industry. The transport (including road, rail, water and air transport) and construction sub-sectors, in particular, will have to continue the significant increases in growth under the GPRS I, which increased road construction and other infrastructural development throughout the country. All the major highways specifically targeted in the GPRS I to open up the country and link it effectively with the trans-ECOWAS highway project, are to be completed. The coverage of the feeder road network, linking the rural areas to the urban centres, will continue to be increased beyond the 2005 target of 41,039 kilometres of which only 35% is estimated to be in good condition. The growth rate of the construction sub-sector is expected to rise from the 8.2% achieved in 2006.

ii. Modernized agriculture based on rural development: This policy objective is related to rural transformation, land reform, increased land under irrigation, increased mechanization, value addition to traditional crops such as cocoa, expanding cash crop production and strengthening support to the private sector.

These policies are to be guided by the Maputo Declaration principles, which among other goals, require targeting of the poor in appropriate aspects of policy and implementation; pursuit of regional balance in agricultural development, building on regional comparative advantage; the design of all policies and programmes from a gender perspective to enable government to work towards greater gender equality in the agricultural sector; investments in the sector to be scientifically based, environmentally sustainable and considered on the basis of economic feasibility and social viability/sustainability; pursuit of inter-sectoral collaboration in the implementation of policies and programmes; an enabling environment for private sector provision of key infrastructure (irrigation, roads, storage, and energy) and information to be fostered by government, and where necessary government to provide such infrastructure; all sector policies and plans to be subjected to Strategic Environmental Assessment (SEA) and all projects to Environmental Impact Assessment (EIA).

FASDEP II states that the following policy principles will be espoused:

- Transport planning will be fully integrated with development planning and service provision;
- Transport infrastructure investments will be targeted to better serve population, production and tourist centres aiming to reduce overall transport costs to the government and users; and
- A bulk goods transportation strategy will be developed based on specific user needs, identifying critical investments in the rehabilitation of railways and inland waterways infrastructure.

National Employment Policy

The National Employment Policy (2008), which an efficient and effective transportation will enhance, seeks to:

- Promote the goal of full employment in national economic and social policy, and enable all men and women, who are available and willing to work, to attain secured and sustainable livelihood through full productive and freely chosen employment and work;
- Secure improvement in the productivity of the labour force to improve private sector competitiveness and enhance employability to the extent that labour is afforded quality and well-remunerated employment consistent with productivity;
- Provide the fullest possible opportunity to each worker to qualify for, and to use his/her skills and endowments in, a job for which he/she is well suited, irrespective of race, sex, religion, political opinion, national extraction, ethnic or social origin;
- Safeguard the basic rights and interests of workers, and to that end promote respect for relevant International Labour Standards, including those on Forced Labour, Freedom of Association, the Right to Organise and Bargain Collectively, the Principle of Non-Discrimination and Equality of Treatment and Opportunities, and elimination of the most extreme forms of Child Labour;
- Secure maximum cooperation from, and participation by the Ghana Employers Association (GEA), the Trades Union Congress (TUC) and other interested parties in decisions relating to national employment policy, so as to ensure industrial peace and harmony and minimise productivity and job losses through industrial unrest;
- Stimulate economic growth and development, eradicate poverty, and improve the standards of living by minimising the rates of unemployment and underemployment, and optimising the utilisation of labour and human resources.

A.1.3. International Conventions

Ghana is a signatory to over 40 international conventions, treaties and protocols related to various aspects of the environment.

A number of these have specific relevance to the provision of transport infrastructure, facilities and services. These include:

- Convention on Wetlands of International Importance Especially as Waterfowl Habitat, Ramsar, 1971;

- Convention Concerning the Protection of Workers against Occupational Hazards in the Working Environment Due to Air Pollution, Noise and Vibration, Geneva, 1977;
- Convention on Biological Diversity, Rio de Janeiro, 1992;
- International Convention for the Prevention of Pollution from Ships and Protocol (MARPOL 73/78);
- United Nations Framework Convention on Climate Change, New York, 1992, and its Kyoto Protocol, 1997;
- The Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal, Basel, 1989;
- International Covenant on Economic, Social and Cultural Rights (CESCR), 1966;
- Convention on the Elimination of All Forms of Discrimination against Women (CEDAW), 1979;
- Convention on the Rights of the Child. 1989 (New York, USA).

A.2. Institutional Framework for Environmental Management

This section presents an analysis of the institutional issues related to environmental sustainability in Ghana and more specifically within the agencies responsible for the implementation of the ITP.

The term “institutions” as used within the context of this SEA and in other similar applications represents both the organisations (i.e. structures, resources, personnel), as well as the systems and procedures of operation (i.e. legislation, mandates, policies, strategies etc.), which influence and control their functions. Some of the main issues considered at this stage were first identified in the Inception Report of the SEA of the ITP, delivered in March 2009.

A.2.1. Environmental Management and Governance Systems in Ghana

A.2.1.1. Legal Framework

The 1992 Constitution of the 4th Republic, which came into force on 7th January 1993, is the fundamental law of Ghana and provides the foundation on which all other laws stand.

Within the directive principles of State policy, the Constitution has a provision on Environmental protection and management which states in Article 36(9) that: “The State shall take appropriate measures needed to protect and safeguard the national environment for posterity; and shall seek co-operation with other states and bodies for purposes of protecting the wider international environment for mankind”.

This constitutes the basis on which Government initiates policy actions and legislation to promote sound environmental protection and management.

Prior to the 1992 Constitution, the formal considerations of environmental protection and management in Ghana began with the establishment of the Environmental Protection Council (EPC) in 1974 following the 1972 Stockholm UN Conference on the Human Environment. Among the main functions of the EPC was the mandate "to ensure the observance of proper safeguards in the planning and execution of all

development projects including those already in existence that are likely to interfere with the quality of the environment."

In 1989, the EPC developed draft Environmental Impact Assessment (EIA) guidelines and development activities expected to have significant environmental impacts were required to obtain appropriate clearance from EPC. The National Environmental Policy was adopted in 1991, and its goal is to ensure a 'preventive approach' to sound management of the environment and the avoidance of exploitation of resources in ways that may result in irreparable damage to the environment. The policy makes provision for, among others, guidance for healthy environmental practices in the national development effort and integration of environmental considerations in sectoral, structural and socio-economic planning at all levels.

In tandem with the NEP, the National Environmental Action Plan (NEAP) identified specific actions to be carried out to protect the environment and ensure better management of natural resources. NEAP dealt with sustainable development issues as defined by the World Commission on Environment and Development in 1987 and provides a broad framework for the integration of environmental issues into development strategies and actions.

NEAP led to the enactment of the Environmental Protection Agency (EPA) Act 1994, Act 490, which transformed the EPC from an advisory to a regulatory body with the required capacity to lead environmental management in the country. It promoted inter-agency coordination, support to District Assemblies, involvement of community groups and NGOs in environmental management.

EPA published EIA Procedures in June 1995 which laid out both the administrative and process issues required for smooth implementation of the EIA process in Ghana. At the same time EPA provided training and capacity building for local consultants to support proponents in complying with the environmental assessment system. In 1999, the Environmental Assessment Regulations, 1999, (LI 1652) was passed into law. The regulations prohibit commencing an "undertaking" without prior registration and environmental permit, and define the relevant stages of the procedures for Environmental Assessment. The practice of SEA has evolved under the application of these regulations and initial guidelines for minimum requirements for SEA in Ghana have recently been issued in May 2009 as an output of the SEA Review carried out from 2008.

A.2.1.2. Institutional Arrangements for Environmental Management

The EPA is organised around seven (7) main divisions:

i. Field Operations;

ii. Chemicals Control and Management;

iii. Information Education and Communication;

iv. Environmental Compliance and Enforcement;

v. Inter-sectoral Division;

vi. Finance Division;

vii. Administration Division.

These divisions are further sub-divided into departments. Environmental Assessment is the function of the Environmental Assessment and Audit Department under the Environmental Compliance and Enforcement Division. The EAA Department deals with environmental impact assessment (EIA), environmental audits, monitoring and evaluation and environmental economics. The Environmental Compliance and Enforcement Division is responsible for ensuring that effective environmental management practices are applied across all sectors.

The Agency is vested with the power to determine what constitutes an “adverse effect on the environment” or an activity posing “a serious threat to the environment or public health”, and also to regulate and serve an Enforcement Notice for any offending or non-complying undertaking, including transport sector undertakings. Where there is a requirement by EPA for an EA for an undertaking, it overrides any authorizing MDA from licensing, permitting, approving or consenting such undertaking, unless notified otherwise by the EPA.

The environmental management system therefore functions effectively on institutional collaboration and linkages between EPA and the various Ministries, Departments and Agencies at the National, Regional and District levels as well as NGOs and Development Partners.

From the commencement of the SEA of GPRS, EPA has set up a unit responsible for SEA under the Office of the Executive Director to coordinate the implementation of SEA.

A.1.1.1. Implementation of Environmental Management in Ghana’s Transport Sector

Ghana’s Transport sector comprises of the following modes, all of which are under consideration in this SEA:

- Road;
- Rail;
- Maritime and Inland Water;
- Aviation;
- Pipelines.

Among the transport sector agencies and organisations, the Ghana Highway Authority (GHA) and the Ghana Ports and Harbours Authority (GPHA) have fully developed Environmental Units dealing with environmental management issues on regular basis.

The pursuit of sustainable development in Ghana has led to NDPC’s requirement, in the GPRS II 2006-2009, that all public policies and programmes should be subjected to SEA. In this regard the Ministry of Roads and Highways has led the way with the SEA of the National Transport Policy and the Environmental and Social Management Framework of the TSDP.

The GHA has also conducted the Sectoral Environmental Assessment for General Maintenance for Trunk Roads with support from DANIDA which has effectively integrated environmental management into highway maintenance systems. The Department of Urban Roads (DUR) is currently conducting the SEA of the Urban Transport Project to ensure that it meets environmental sustainability objectives.

In the maritime sub-sector GPHA has carried out an SEA of its Port Development Plan which is currently under implementation and for which the various projects have been subjected to EIA. To date no other SEAs have been carried out in the other agencies.

The report of the SEA of the Transport Policy published in June 2007 proposed a number of recommendations which are intended to enhance environmental management within the transport sector. These recommendations include:

- The need to provide for effective integrated approach to addressing environmental issues within the sector. This requires defining clear-cut policy objectives on environmental management and ensuring adequate budgetary support for dealing with environmental issues.
- The requirement to mainstream environment across all the policy goals of the Transport Policy so as to ensure that environmental issues are institutionalized and managed in an integrated and sustainable manner.
- Integrating transport and land use planning so as to mitigate the effects of noise and air pollution on sensitive receptors such as schools, hospitals, etc.

A.1.2. Capacity of Key Institutions Responsible for Environmental Sustainability Issues

The priority environmental sustainability issues for the ITP as identified during this Scoping Phase are shown in Table A.1 below with the key responsible agencies responsible for the relevant natural/ biophysical and socio-cultural criteria. For the economic and institutional criteria, a multi-sectoral approach will be necessary, where a number of sector MDAs will have to work together.

Table A.1: Priority Environmental Sustainability Issues for the ITP

Pillars of Sustainability	Concerns/desired aims	Key Responsible Organisations
Natural Resources or Biophysical	Air quality	EPA
	Land degradation	EPA Forestry Commission
	Loss of biodiversity (implies loss of habitat, flora and fauna)	EPA Forestry Commission
	Water quality	EPA Water Resources Commission
Social and Cultural	Transportation safety	Transport Sector Organisations
	Relocation and involuntary resettlement	*MS
	Accessibility by ALL to basic social and technical services through transportation	*MS
	Public health, including STD/HIV/AIDS, noise, air quality	Ghana Health Service Ghana Aids Commission EPA

Pillars of Sustainability	Concerns/desired aims	Key Responsible Organisations
Economic	Economic growth and stability	*MS
	Job creation and income generation through investment	*MS
	Poverty reduction	*MS
Institutional	Good governance	*MS
	Inter/cross sectoral institutional collaboration and coordination roles and mandates	*MS
	Institutional strengthening and capacity building	*MS
	Private sector participation and protection of investment	*MS

*MS – Multi-Sectoral; outcomes determined by a number of organisations working together

The organisations considered here are:

i. EPA;

ii. Forestry Commission;

iii. Water Resources Commission;

iv. Transport Sector organisations.

A.1.2.1. Environmental Protection Agency

EPA is responsible for issues related to air quality, water quality, noise, land degradation and bio-diversity and loss of habitats, and their monitoring. The Environmental Quality Department provides guidelines and quality standards for the regulation of emissions to air, discharge of effluents into receiving media and noise levels in various classes of human settlements.

These standards and guidelines are monitored and enforced through the field operations department and the legal department provides support in situations where recalcitrant culprits are prosecuted in court.

Quality of vehicular emissions are not yet regulated by law in Ghana (cases of excessive smoke emission from vehicles are treated as public nuisance and the Police are empowered to intervene). EPA is currently supporting the Driver and Vehicle Licensing Authority (DVLA) in a pilot programme to monitor emissions from vehicles in Accra. It is expected that in due course appropriate regulatory instruments would be introduced for the control of vehicular exhaust emissions.

EPA's responsibility for issues related to land degradation and bio-diversity is exercised through the various environmental management processes such as EIA, preliminary environmental reports, environmental management plans, etc. EPA has offices in all the administrative regions in Ghana which carry out monitoring to ensure compliance with the relevant permit conditions.

Furthermore, EPA is also the designated authority of Ghana's National Oil Spill Contingency Plan (NOSCP). EPA is responsible for the management of the environment, including oil spill preparedness, response and cooperation. The EPA coordinates the development and maintenance of a national capability to respond to accidents at sea, on land, inland waterways or in connection with oil pipeline, storage, transport facilities and installations which have caused or are likely to cause any kind of oil pollution.

Particularly, the EPA, as the Pollution Executive Body, is, in the event of a spill, required to convene National Reporting Centre, which will receive all reports of oil spill incidents or any observed pollution inside the geographical coverage of this plan. A National Oil Spill Authority is to be established which shall take responsibility for the operational response to all oil spill incidents, which have caused or are likely to cause any kind of oil pollution or to any observed pollution.

A National Contingency Plan to deal with such events or incidents has been developed. The plan covers the land territory, including the coastline of the Republic of Ghana and the areas and waters as defined in the Maritime zones law and the Territorial Seas Act. The area of responsibility of the NOSCP for Ghana includes the area offshore within the 200-nautical mile Exclusive Economic zone and all the area within the interior boundaries of the country. It is also responsible for addressing oil spills emanating from across the national borders.

A.2.1.3. Forestry Commission

The two (2) principal agencies of relevance in the context of this SEA are the Forest Services Division (FSD) and the Wildlife Division (WD). FSD is responsible for the conservation of the various forests and forest resources spread all over the country. They provide regulations and procedures to guide the implementation of projects which may impact on these resources to ensure that activities are carried out in a sustainable manner. They work closely with EPA in providing support during the EA phase of the projects and subsequent follow-up during implementation.

Similarly the WD has responsibility for all the wildlife resources including Ramsar sites and other wetlands, bird sanctuaries, coastal resources etc. They also work with EPA to ensure that the various sensitive areas and protected areas are not adversely impacted by projects.

In terms of capacity, both organisations are legally empowered by their acts of establishment to be able to enact and enforce various regulations to conserve and protect the resources under their control. However they face challenges related to budgetary constraints which limit their ability to effectively deploy adequate staff to monitor all the various acts of encroachment and violations that occur during implementation of projects.

A.2.1.4. Water Resources Commission

The Water Resources Commission (WRC) was established to facilitate the coordination and harmonization of water resource management in Ghana. Specifically, the objectives of the WRC are to:

- Propose comprehensive plans for the utilization, conservation, development and improvement of water resources;
- Initiate, control and coordinate activities connected with the development and utilization of water resources;
- Grant water rights;
- Collect, collate, store and disseminate data or information on water resources in Ghana;
- Require water user agencies to undertake scientific investigations , experiments or research into water resources in Ghana;

- Monitor and evaluate programmes for the operation and maintenance of water resources;
- Advise the Government on any matter likely to have adverse effects on the water resources of Ghana;
- Advise pollution control agencies in Ghana on matters concerning the management and control of pollution of water resources;
- Perform such other functions as are incidental to the foregoing.

Within this mandate, WRC works closely with EPA to ensure that projects do not impact adversely on water resources including water quality preservation. As with the FSD and WD, the WRC also faces capacity constraints in relation to inadequate budgetary allocation to ensure effective monitoring and control. WRC works with various communities to implement integrated water resources management initiatives to promote sustainable use of water resources.

A.1.2.2. Transport Sector Agencies

The Transport Sector agencies are responsible for initiating and implementing the programmes and projects within the Sector and are therefore responsible for ensuring compliance with the measures needed to achieve sustainability of these programmes and projects. The agencies covering the different modes are:

1. Road Infrastructure Agencies

Three agencies are primarily responsible for the development and maintenance of the country's roads.

The Ghana Highway Authority

The Ghana Highway Authority (GHA) was established as an autonomous body responsible for planning, designing, construction, rehabilitation, maintenance and management of highway (or trunk roads) and related road works in the country.

GHA has a fully developed Environment and Safety Department headed by a Director, which is responsible for ensuring environmental issues related to their activities are adequately managed. However this capacity is only available at the head office in Accra from where they provide support to the regional offices.

Department of Urban Roads

The Department of Urban Roads (DUR) was established to take over the responsibilities for reconstruction, rehabilitation and maintenance of city roads in Accra, Kumasi, Sekondi/Takoradi, Tema and Tamale.

In support of the policy of decentralisation, DUR is working closely with Metropolitan, Municipal and District Assemblies to plan and implement development and maintenance programmes to meet acceptable standards in road works and traffic management in the metropolitan, municipal and district centres.

DUR has an Environmental Desk at the head office under the Directorate of Development for dealing with environmental issues arising from their activities. This capacity is limited in terms of providing support beyond the head office.

Department of Feeder Roads

The Department of Feeder Road (DFR) was set up with the responsibility for planning and integrating feeder road construction, rehabilitation and maintenance with trunk roads, in line with agricultural priorities in the country. In accordance with the current policy of decentralisation, DFR is working closely with District Assemblies to plan and implement development and maintenance programmes to meet acceptable standards in road works and traffic management.

DFR currently does not have a functional environment unit.

Road Transport Services and Safety Agencies

Road safety, road traffic enforcement, driver licensing and vehicle examination as well as the training of mechanics in the industry are administrated by the National Road Safety Commission (NRSC), the Motor Traffic and Transport Unit (MTTU) of the Ghana Police Service, and the Driver Vehicle Licensing Authority (DVLA).

The MTTU of the Ghana Police Service enforces road traffic laws and regulations.

The DVLA inspects and issues road worthiness certificates to new vehicles as well as vehicles which are already in operation. It also tests and issues licenses to drivers.

The intercity State Transport Company Ltd (STC), established by LI 681 of 1971, is a Public Private Partnership company that provides inter-regional and international road transport services for the carriage of passengers and goods. The service is complemented by the Ghana Private Transport Union (GPRTU) and other private road transport operators.

Intra city passengers service is provided by Government agencies like the Metro Mass Transit (MMT) as well as private bus operators from the GPRTU and other private transport associations.

The Government Technical Training Centre (GTTC) develops skilled artisans for the road transport industry.

2. Maritime and Lake Transport Agencies

Maritime and lake transport services are provided by five (5) public sector agencies and a joint public-private enterprise.

Ghana Maritime Authority

Ghana Maritime Authority (GMA) was set up by the Ghana Maritime Authority Act 2002 (Act 630) to replace the Shipping and Navigation Department. It performs regulatory functions for the industry through licensing of seafarers and vessels and the enforcement of international maritime standards and conventions. The GMA has a dedicated Directorate of Environment and Safety that oversees issues of marine pollution and safety and compliance enforcement.

Ghana Ports and Harbours Authority

Ghana Ports and Harbours Authority (GPHA) was established to plan, build, develop, manage, maintain, operate and control ports in Ghana. Currently it operates two deep-water ports at Tema and Takoradi, which handle all of Ghana's maritime trade. The Authority also operates fishing harbours at Tema and Sekondi.

GPHA has a functional environment unit within the department of estates and environment and is responsible for handling environmental aspects of their activities. GPHA also has a safety unit that handles all issues related to safety within the port environment. All grades of workers within the ports are trained in safety and emergency procedures as is required for such facilities.

The Volta Lake Transport Company

The Volta Lake Transport Company Ltd (VLTC) is a subsidiary of the Volta River Authority (VRA) and provides freight and passengers transport services between Akosombo and Buipe on the Volta Lake and cross-lake services for local traffic.

VRA also has a well developed and functional directorate of environment and sustainable development which is appropriately located at Akosombo. This unit provides VLTC with the needed support for dealing with environmental concerns. In addition operators of VLTC crafts and vessels are suitably trained in safety and emergency response and certified by the Regional Maritime University in Accra.

3. Air Transport Agencies

The Ghana Civil Aviation Authority (GCAA) is responsible for safety regulations and provision of air navigation services at all of Ghana's airports.

The Ghana Airports Company Limited (GACL) was set up to plan, develop, and manage and maintain all public airports and aerodromes in the country.

Ghana International Airlines Limited is responsible for the provision of domestic and international passenger, mail and cargo transport.

All these agencies are expected to meet the high quality in both structural and operational safety standards established worldwide for the air transport industry in order to ensure overall sustainability. These agencies are focussed on safety/security, but not on other environmental issues.

4. Rail Transport Agency

Ghana Railway Company Limited (GRC) is a limited liability company established to construct, operate and maintain the railway and its terminals/stations, and other facilities like level crossing, bridges, culverts, drains and other works that will ensure the efficient and effective transportation of passengers and goods by rail.

The Government of Ghana is in the process of privatising railway operations and development in Ghana. The Railway Act, 2009 (Act No. 779) has recently been passed which seeks to establish Ghana Railway Development Authority (GRDA) and to regulate railway operations in the country. The GRDA shall regulate the development and operation of railway services in Ghana in accordance with the Railway Act.

Appendix B. Baseline Data

B.1. Natural Resources / Biophysical Data

B.1.1. Air Quality

Table B.1: Air Quality Measurements between 1990 and 1996

Gas	Emission Level
Carbon dioxide (CO2)	3,801Gg
Methane (CH4)	431Gg
Nitrous Oxide (N20)	3.0Gg

Source: EPA, State of the Environment Report, 2004

Table B.2: Annual Average PM Concentrations applied to Cities in Ghana

PM	Annual Values
PM 10 concentrations(µg/m³	80
PM 2.5/Pm 10 ratio	0.5
PM 2.5 concentration (µg/m³)	40
Lower threshold value PM2.5(µg/m³)	7.5

Source: Ghana Country Environmental Analysis, November 2007

Table B.3: Annual Cost of Urban Air Pollution for Three Scenarios

	Annual Average Pm 10	Annual Cost (Millions US$)		
		Low	Mean	High
"Lower" case	Accra: Other cities	12.2	26.0	40.0
Base Case	Accra: Other cities	13.9	30.0	46.0
"Upper case"	Accra: Other cities	15.5	33.3	51.0

Source: Ghana Country Environmental Analysis, November 2007

Note Accra does here not include Tema and Teshie. Tema and Teshie are included in "Other cities"

Table B.4: Emissions Summary for Ghana 1990-1996

	Emissions, in Gg CO2 equivalent		
	1990	1994	Latest available year (1996)
CO2 emissions without LUCF	3,124.0	3,329.7	3,801.0
CO2 net emissions/removals by LUCF	-33,273.0	-19,878.0	-19,428.0
CO2 net emissions/removals with LUCF	-30,149.0	-16,548.3	-15,627.0
GHG emissions without LUCF	11,157.9	12,578.6	13,139.6
GHG net emissions/removals by LUCF	-32,867.7	-19,472.7	-19,022.7
GHG net emissions/removals with LUCF	-21,709.7	-6,894.1	-5,883.0

	Changes in emissions, in percent		
	From 1990 to 1994	From 1994 to latest available year (1996)	From 1990 to latest available year (1996)
CO2 emissions without LUCF	6.6	14.2	21.7
CO2 net emissions/removals by LUCF	-40.3	-2.3	-41.6
CO2 net emissions/removals with LUCF	-45.1	-5.6	-48.2
GHG emissions without LUCF	12.7	4.5	17.8
GHG net emissions/removals by LUCF	-40.8	-2.3	-42.1
GHG net emissions/removals with LUCF	-68.2	-14.7	-72.9
	Average annual growth rates, in per cent per year		
	From 1990 to 1994	From 1994 to latest available year (1996)	From 1990 to latest available year (1996)
CO2 emissions without LUCF	1.6	6.8	3.3
CO2 net emissions/removals by LUCF	-12.1	-1.1	-8.6
CO2 net emissions/removals with LUCF	-13.9	-2.8	-10.4
GHG emissions without LUCF	3.0	2.2	2.8
GHG net emissions/removals by LUCF	-12.3	-1.2	-8.7
GHG net emissions removals with LUCF	-24.9	-7.6	-19.6

Source: Ghana Profile UNFCCC

B.1.2. Biodiversity

Table B.5: Land Use in Ghana

Land use	Area km	% Total
Agriculture Land	146,810	61.5
Forestry and wildlife	8,400	3.5
Savannah	47,860	20.1
Shrub Thick	73	0.3
Built up Area	73	0.3
Bare Land	12	0.05
Water Body	11,800	5
Wetlands	954	0.4
Unclassified	1,561	0.6
Total	238,539	100

Source: CERSGIS, 2000

Table B.6: Number and Status of Plant and Animal Species in Ghana

Plants	
Total known species, 1992-2002	3,725
Threatened species, 2002	115
Mammals	
Total known species , 1992-2002	222
Threatened species, 2002	14
Breeding Birds	
Total known species , 1992-2002	206
Threatened species, 2002	8
Reptiles	
Total known Species, 1992-2003	131
Threatened species, 2002	2
Amphibians	
Total known Species, 1992-2003	33
Threatened species, 2002	
Fish	
Total known Species, 1992-2003	90
Threatened species, 1992-2002	

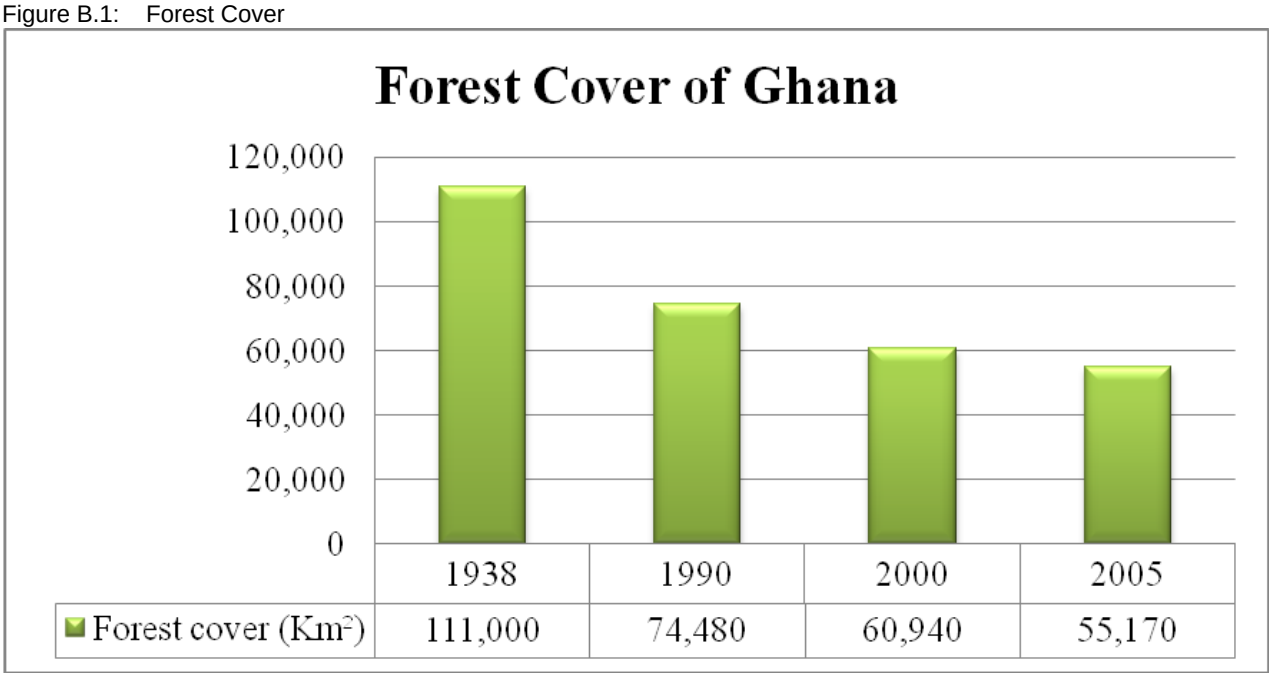
Source: Earth Trends Country Profiles, 2003 http://earthtrends.wri.org

Table B.7: List of Plant Species in Ghana

Group (Indigenous)	Families	Genera	Species
Pteridophytes	15	43	124
Gymnosperms	1	1	1
Monocotyledons	30	227	780
Dicotyledons	127	806	2069
Group(Naturalized)			
Monocotyledons	15	42	53
Dicotyledons	63	149	200

Source: Ghana State of Environment Report, 2005

Figure B.1: Forest Cover



Source: The National Biodiversity Strategy, Republic of Ghana, 2002

(NB: Figures for 2005 are projected)

B.1.3. Social / Socio Cultural Data

B.1.3.1. Transportation Safety

Roads

Table B.8: Registered Vehicles 2000-2009

Year	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Number of Registered Vehicles	511,063	567,780	613,153	643,824	703,372	767,067	841,314	932,540	1,033,140	1,128,138

Source: Ghana Road Safety Commission, 2009

Table B.9: Road Accidents in Ghana (2000 – 2008)

Year	2000	2001	2002	2003	2004	2005	2006	2007	2008
Total No. of Accidents	11,714	11,291	10,715	10,644	12,164	11,328	11,668	12,038	11,339
No. of Deaths	1,578	1,660	1,665	1,716	2,185	1,784	1,856	2,043	1,652
No. of Injuries	6,429	6,831	6,593	6,849	7,952	7,025	7,137	7,533	8,567

Source: Ghana Road Safety Commission, 2009

Table B.10: Distribution of Accidents and Casualties on Proposed Infrastructure Projects

Route name	Year	Accidents					Casualties			
		Total	Fatal	Serious	Slight	Damage	Total	Killed	Serious	Slight
N1 Aflao-Accra-Tema	2004	360	78	108	93	81	1094	125	353	616
	2005	446	70	112	120	144	739	109	250	380
	2006	442	60	113	82	187	794	84	314	396
	2007	489	73	118	104	194	931	99	391	441
	2008	339	65	73	74	127	552	88	218	246
N2 Asikuma Nkwanta(jct N5)-Hohoe	2004	39	1	18	9	11	64	1	32	31
	2005	36	6	14	9	7	101	9	25	67
	2006	48	10	21	8	9	121	13	74	34
	2007	32	5	11	10	6	48	5	25	18
	2008	16	6	7	1	2	48	9	19	20

Source: Ghana Road Safety Commission, 2009

Rail

Table B.11: Number of Accidents and Line Restoration Time (Hours)

Year	Total No. of Trains Run	No. of Accidents	Line Restoration Time (in Hours)
2006	6048	113	1100.4
2007	4148	81	4822.95
2008	2311	30	2262
2009	2229	37	3181

Source: Ghana Railway Company, 2009

Table B.12: Number of Accidents Distribution Based on Train Type

Year	Number of Restoration Hours Cargo Train	Number of Restoration Hour Passenger Train
2006	940.4	160
2007	3491.5	1331.45
2008	2119	143
2009	2572	609

Source: Ghana Railway Company, 2009

Maritime

Table B.13: Number of Crafts Operating on the Volta Lake

Type of Boat	No.
Ferries and Cargo boats	81
Wooden vessels(Traditional design)	328
Total	409

Source: Ghana Maritime Authority, 2010

Table B.14: Number of Airlines Operating at the Airport 2000-2008

Indicators	2000	2001	2002	2003	2004	2005	2006	2007	2008
Airlines operating at the airport	14	12	13	13	14	19	21	22	24

Source: Statistical and Analytical Report (2000-2008), June 2009

Table B.15: Number of International Flights to Ghana 2000-2008

Indicators	2000	2001	2002	2003	2004	2005	2006	2007	2008
Average daily	13	11	12	13	14	17	19	22	24

Source: Statistical and Analytical Report (2000-2008), June 2009

Table B.16: Number of Air Crashes in the Aviation Industry 2000-2008

Year	2003	2004	2005	
Air crashes	1	1	1	

Source: Statistical and Analytical Report (2000-2008), June 2009

Table B.17: Inland Water Transport Accident (1990-2009)

Year	No. Boat(wooden open)	Death
1990	1	46
1995	1	100
1997	1	6
1999	2	75
2001	2	13
2002	1	50
2006	3	43
2007	1	13
2009	3	18

Source: Ghana Maritime Authority, 2010

B.1.4. Accessibility by All to Basic Social and Technical Services through Transportation

Table B.18: Distance to the Nearest Motorable Road by Region (km)

Region	0-1km	1.1-2km	2.1-3km	3.1-6km	6.1-10km	10.1-15km	>15km	Total
Western	42.3	35.1	17.6	4.1	0.7	0.2	0.0	100.0
Central	39.2	21.9	12.0	18.3	7.0	1.0	0.6	100.0
Greater Accra	40.0	40.0	12.3	3.1	3.6	0.0	0.0	100.0
Volta	42.0	23.2	10.7	13.8	4.9	2.7	2.7	100.0
Eastern	52.0	19.9	12.2	8.5	4.8	1.8	0.7	100.0
Ashanti	44.5	31.1	9.0	5.0	6.7	2.5	1.3	100.0
Brong Ahafo	16.3	46.0	20.0	13.4	3.2	1.0	0.0	100.0
Northern	27.4	13.0	2.9	18.2	7.9	13.9	16.7	100.0
Upper East	36.8	33.3	18.2	6.0	5.3	0.0	0.4	100.0
Upper West	42.6	23.2	8.4	12.6	5.3	1.1	6.8	100.0
Ghana	36.7	27.4	11.9	10.9	5.2	3.5	4.3	100.0

Source: National Transport Household Survey Report 2009

Table B.19: Distance from Residence to School

Region	Distance (km)							Total
	<.01	.01-.90	1.0-1.9	2.0-2.9	3.0-3.9	4.0-4.9	5+	
Western	2.2	56.1	21.9	5.6	5.2	4.0	5.0	100.0
Central	4.2	54.1	22.8	6.2	6.9	2.7	3.1	100.0
Greater Accra	4.5	48.5	18.3	7.8	5.1	2.2	13.4	100.0
Volta	4.9	52.4	23.8	7.1	4.9	3.3	3.7	100.0
Eastern	2.6	65.5	16.4	4.0	4.4	2.8	4.4	100.0
Ashanti	0.8	47.0	28.9	10.2	5.0	2.7	5.4	100.0
Brong Ahafo	1.2	72.9	13.4	2.8	4.8	1.4	3.6	100.0
Northern	0.4	61.3	22.9	3.7	5.5	1.5	4.8	100.0
Upper East	0.2	35.4	47.0	6.7	5.5	2.9	2.3	100.0
Upper West	0.0	47.5	29.1	8.2	13.7	0.3	1.1	100.0
Ghana	2.3	52.9	24.0	6.7	5.7	2.5	5.9	100.0

Source: National Transport Household Survey Report 2009

Table B.20: Main Obstacles Encountered in Visiting a Health Facility in Relation to Transport

Region	No access road	Bad roads	Difficulty getting vehicle	Long waiting time	Heavy traffic on road	Distance too long	No money for transport	Other	Total
Western	1.8	45.2	21.2	4.6	1.5	16.6	7.3	1.8	100.0
Central	3.3	54.9	30.8	5.7	0.4	1.0	1.2	2.7	100.0
Accra	0.7	28.1	14.1	12.6	31.2	4.4	1.3	7.6	100.0
Volta	5.9	39.6	21.4	8.6	0.7	20.0	2.7	1.1	100.0
Eastern	0.6	32.4	32.2	9.9	0.5	13.9	6.1	4.5	100.0
Ashanti	1.6	26.1	32.1	13.0	11.5	11.7	1.1	2.9	100.0

Region	No access road	Bad roads	Difficulty getting vehicle	Long waiting time	Heavy traffic on road	Distance too long	No money for transport	Other	Total
Brong-Ahafo	3.9	88.2	2.8	5.1	0.0	0.0	0.0	0.0	100.0
Northern	5.5	37.5	15.4	2.7	0.0	23.7	15.2	0.0	100.0
Upper East	0.0	3.9	12.9	3.2	0.0	67.1	0.2	12.7	100.0
Upper West	1.4	39.0	17.1	3.7	0.0	23.3	9.7	5.8	100.0
Ghana	2.4	36.9	22.2	7.7	5.7	16.7	4.9	3.5	100.0

Source: National Transport Household Survey Report, 2009

Table B.21: Travel Time to a Health Facility

Region	Travel time to health facility (minutes)										
	0	1 - 5	6 - 10	11 - 15	16 - 20	21-30	31-40	41-50	51-60	60+	Total
Western	0.0	12.7	19.2	12.8	9.4	14.2	10.4	10.0	4.8	6.5	100.0
Central	0.4	16.9	18.7	15.7	6.6	13.9	3.5	6.5	7.8	9.8	100.0
Accra	0.5	23.4	26.9	17.9	10.7	12.7	2.4	2.3	2.1	1.2	100.0
Volta	0.2	11.6	19.1	14.2	8.4	15.0	5.3	4.1	13.3	8.8	100.0
Eastern	0.2	16.7	23.3	18.0	11.1	13.2	5.6	2.3	4.5	5.4	100.0
Ashanti	0.0	13.9	25.1	14.2	12.6	18.7	6.1	3.2	2.9	3.4	100.0
Brong-Ahafo	1.4	5.8	27.8	14.0	15.2	16.0	4.9	2.3	5.0	7.9	100.0
Northern	0.2	13.5	21.0	13.1	7.9	11.3	1.6	3.1	8.9	19.3	100.0
Upper East	0.0	2.2	16.9	13.4	2.8	15.6	14.7	18.5	2.7	13.1	100.0
Upper West	0.0	2.5	14.2	3.6	8.4	9.8	7.0	21.4	10.6	22.4	100.0
Ghana	0.3	13.7	22.5	14.6	9.8	14.4	5.6	5.9	5.3	7.7	100.0

Source: National Transport Household Survey Report, 2009

Table B.22: Average Distance (km) from Residence to Place of Work of the Currently Employed by Sex and Locality

Distance	Urban			Rural			Ghana
	Male	Female	All	Male	Female	All	All
Less than 1	37.5	58.1	48.4	32.5	42.8	37.6	43.7
1-2	20.9	15.3	18.0	31.7	27.6	29.7	23.1
2.1-3	7.3	4.7	5.9	10.0	7.2	8.6	7.1
3.1-4	6.9	5.0	5.9	10.3	8.6	9.4	7.4
4.1-5	5.6	4.2	4.9	5.7	5.5	5.6	5.2
5.1-10	12.9	7.3	10.0	6.6	5.1	5.9	8.2
10.1-15	3.7	2.0	2.8	1.3	1.2	1.2	2.1
15.1-20	2.5	1.4	1.9	0.2	0.7	0.4	1.3
20.1+	2.8	2.0	2.4	1.8	1.2	1.5	2.0
All	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: National Transport Household Survey Report, 2009

Table B.23: Means of Transport from Residence to Workplace of the Currently Employed by Sex and Locality

Means of transport	Urban			Rural			Ghana		
	Male	Female	All	Male	Female	All	Male	Female	All
Individual Public (taxi)	3.3	3.1	3.2	0.7	0.5	0.6	2.2	2.0	2.1
Vehicle (trotro)	23.9	3.3	21.9	4.6	0.7	4.7	2.2	13.4	14.6
Vehicle (taxi)	11.5	11.0	11.3	4.0	3.9	3.9	8.3	8.0	8.2
Bus (metro mass)	0.2	0.3	0.3	0.1	0.0	0.0	0.2	0.2	0.2
Bus (public)	1.7	1.6	1.7	0.9	0.9	0.9	1.3	1.3	1.3
Company Bus	3.1	0.7	2.0	1.0	0.3	0.7	2.2	0.5	1.4
Train	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Vehicle (private)	8.8	3.8	6.5	0.2	0.2	0.2	5.1	2.3	3.8
Motorcycle	2.7	1.2	2.0	2.0	0.4	1.3	2.4	0.9	1.7
Boat/Ferry/Canoe	0.8	0.5	0.7	2.1	0.9	1.6	1.3	0.7	1.0
On foot	34.8	54.8	44.1	56.1	80.6	67.2	43.8	65.5	53.8
Bicycle	8.5	2.9	5.9	27.5	6.5	17.9	16.5	4.4	10.9
Other	0.8	0.4	0.6	0.9	0.9	0.9	0.8	0.6	0.7
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: National Transport Household Survey Report, 2009

B.1.5. Public Health

Table B.24: HIV Prevalence in Selected Towns in Ghana

Town	2005	2006	2007	2008	2009
Korle Bu	0.6	4.2	4	3.8	4
Adabraka	2.9	2	3.4	2.8	1.8
Maamobi	2.2	2.8	4.2	2.8	3.2
Dangme East	3.5	4.4	3.3	3.5	3.2
Tema	2.2	3.6	2.2	2	4
Ho	2.6	4.2	2.4	1.6	3.6
Hohoe	1.4	4.8	3.4	2.6	3.4
Krachi	2.4	1.8	0.3	2.1	1.4
North Tongu	0	0	0.6	0	0.7
Afram Plains	3	2.8	1.2	1.5	2.2
Akim Oda	3.4	3.6	2.6	2.9	3.2
Fanteakwa	4.1	5.1	5.8	4.6	4
Agormanya	6	8.4	8.9	8	5.8
Koforidua	6.4	4.4	2.4	3.4	5.8
Asikuma Odoben Brakwa	3	1.8	3.9	2	2
Assin Fosu	2.6	3.1	1.8	1.2	2
Cape Coast	3.2	2.6	3.4	2.8	5
Eikwe	4	5.6	3.8	2.8	3
Sefwi Asafo	3.2	5.4	2.6	3.8	2.8
Takoradi	2.6	3	4.6	3.2	4
Tarkwa	1.9	3.3	1.9	1.8	2.6
Obuasi	2.8	3.6	5	2.8	5.4

Town	2005	2006	2007	2008	2009
Amansie West	3	2.2	1.8	3.7	1.8
Kumasi	3.4	4.8	4.6	3.6	4
Mampong	2.7	4	3.6	2.2	4
Asunafo	1.8	2.2	1.8	2.1	2
Kintampo	3.1	3.5	3	3.1	2.1
Sunyani	4.7	2	3	2	3.8
Wenchi	3.2	3.2	4.8	3	3.4
Salaga	1.8	0.8	2.6	1.6	1.8
Nalerigu	0.6	1	1.6	1.2	1
Tamale	2	2	1.8	1.2	1.6
Adido	0.5	1.2	0.9	0.4	3.4
Bawku	4.6	3.4	3.8	1.4	2.4
Bolgatanga	2.2	3.4	2.6	2.2	2.6
Builsa	1.6	2.8	1.4	1.6	0.8
Navrongo	2	3.3	2	2.8	2.8
Jriapa	2.8	3.5	1.4	2	4.5
Nadowli	1.7	0.7	1.9	0.3	2.6
Wa	3.2	3.2	5.8	2	2

Source: National HIV Prevalence & AIDS Estimates Report (2009-2015), March 2010

Table B.25: Reported malaria cases (annual) in Ghana

2000	2001	2002	2003
3,349,528	3,383,025	2,830,784	3,552,869

Source: Ghana Country Profile, 2005

B.1.6. Economic Data

Economic Growth and Stability

Table B.26: GDP 1990 – 2008 (GH¢ million)

	Current (Nominal)	Constant/Real 1993 Prices	Growth Rates
1990	203.17	337.32	3.33
1991	242.75	355.14	5.28
1992	280.29	368.91	3.88
1993	387.25	387.25	4.97
1994	520.52	399.91	3.27
1995	775.26	416.00	4.02
1996	1,133.92	435.12	4.60
1997	1,411.34	453.39	4.20
1998	1,729.58	474.67	4.69
1999	2,057.91	495.69	4.43
2000	2,715.27	514.21	3.74
2001	3,807.07	535.71	4.18

	Current (Nominal)	Constant/Real 1993 Prices	Growth Rates
2002	4,886.24	560.08	4.55
2003	6,615.77	589.47	5.25
2004	7,980.37	622.35	5.58
2005	9,726.06	658.87	5.87
2006	11,672.00	701.20	6.42
2007	14,045.80	741.20	5.70
2008	17,617.60	795.10	7.27
2009*			4.7%
2010 - projected#			5.4%

Source: Bank of Ghana, 2010

*Source: *www.indexmundi.com/ghana/economy-profile.html* - based on CIA Factbook

#Source: Economist Intelligence Unit, January 2010

B.1.7. Poverty Reduction

Table B.27: Poverty Incidence by Administrative Region (in percent)

Region	1991/92	1998/99	2005/06	2007*
Western	60	27	18	
Central	44	48	20	
Greater Accra	26	5	12	
Eastern	48	44	15	
Volta	57	38	31	
Ashanti	41	28	20	
Brong-Ahafo	65	36	29	
Northern	63	69	52	
Upper West	88	84	88	
Upper East	67	88	70	
Ghana	52	40	29	28.5%

Source: Ghana Statistical Service, 2007

*Source: *www.indexmundi.com/ghana/economy-profile.html* - based on CIA Factbook

Poverty line: GH¢ 370.89

Appendix C. Stakeholder Identification and Analysis

Notes on Stakeholder Analysis

1. Ratings for the knowledge of issues are: unknown, low, medium or high (?, L, M, H)
2. Ratings for the ability to influence the outcome are: unknown, low, medium or high (? , L, M, H)
3. The communication strategy is as follows:
   - key stakeholder, study coordinator, assigned agency focal persons – requires close contact (phone calls, emails, frequent meetings, workshops);
   - important stakeholder – requires regular interaction (emails, meetings, workshops)
   - stakeholder of some importance - intermittent contact (updates, workshops);
   - general stakeholder – can be informed through eg. the media, websites etc

Stakeholder	Name of Nominee (if available)	What do they represent?	Stake in ITP and/or SEA	Knowledge of Transport Sector Issues	Ability to Influence Outcome	Communication Strategy Level 1,2, 3 or 4	Comments
GOVERNMENT MINISTRIES & DEPARTMENTS, AND REGULATORY BODIES							
Boankra Inland Port		Implementer Inland container depot	Intermodal significance	H	M	2	Not yet operational Being implemented by GSC and GPHA
Bulk Oil Storage and Transport Company		Implementer Pipeline transport	Intermodal significance	H	H	2	
Department of Feeder Roads	Director:	Implementer Rural feeder roads	Intermodal significance	H	H	2	

Stakeholder	Name of Nominee (if available)	What do they represent?	Stake in ITP and/or SEA	Knowledge of Transport Sector Issues	Ability to Influence Outcome	Communication Strategy Level 1,2, 3 or 4	Comments
Department of Town and Country Planning		Responsible for land use planning	Provides link between transport systems and planning	H	H	2	
Department of Urban Roads	Director:	Implementer – urban roads	Intermodal significance	H	H	2	SEA to be carried out for DUR
Driver and Vehicle Licensing Authority (DVLA)	Director: Amegashie	Regulator	Impact of plan	M	M	3	DVLA implementing Vehicle Emission Testing
Environmental Protection Agency		Regulator	Ensuring SEA recommendations incorporated into plan	H	H	1	
Forestry Commission		Transport system user	logging operations – depend on road transport	M	M	3	
Ghana Airports Company		Implementer air transport	Intermodal significance	H	M	2	
Ghana Civil Aviation Authority		Regulator Air transport	Intermodal significance	H	H	2	
Ghana Free Zones Board		Regulator	Depends on modes for Export	H	H	2	
Ghana Highways Authority	Chief Executive:	Implementer Highways and trunk roads	Intermodal significance	H	H	2	
Ghana International Airlines		Airline operations	Intermodal significance	H	M	2	
Ghana Maritime Authority		Regulator	Intermodal significance	H	H	1	
Ghana Police Service		Law Enforcement	Maintenance of Law and order in Road Transportation	M	M	3	
Ghana Ports & Harbours Authority		Implementer / Regulator Ports and harbours	Intermodal significance	H	H	2	SEA of Port Master Plan carried out

Stakeholder	Name of Nominee (if available)	What do they represent?	Stake in ITP and/or SEA	Knowledge of Transport Sector Issues	Ability to Influence Outcome	Communication Strategy Level 1,2, 3 or 4	Comments
Ghana Railway Corporation	Joseph Sankah	Implementer National railways	Intermodal significance	H	H	2	SEA to be carried out for future railway
Ghana Shippers Council		Regulator		H	H	2	
Land Valuation Board		Deal with compensation issues on behalf of GOG	Projects that may require acquisition of land	M	L	3	
Metro Mass Transit	Director	Implementer – bus transport	Intermodal significance	M	M	3	
Minerals Commission		Transport system user	Dependent on rail for transport of minerals	H	M	3	
Ministry of Food and Agriculture		Transport system user	Dependent on roads for transport of produce	M	M	3	
Ministry of Communications		Development of communications and related infrastructure	Access may affect communication infrastructure	L	L	4	
Ministry of Education		Transport system user	Dependent on roads for access to schools	M	M	3	
Ministry of Energy							
Ministry of Environment , Science and Technology							
Ministry of Finance and Economic Planning		NAO Policy, Planning, Budgeting and Monitoring	NAO	H	H	1	
Ministry of Health	Alhaj Saaka Dumba	Transport system user Treatment and management of victims	Dependent on roads and various transport modes for access to health facilities	H	H	1	

Stakeholder	Name of Nominee (if available)	What do they represent?	Stake in ITP and/or SEA	Knowledge of Transport Sector Issues	Ability to Influence Outcome	Communication Strategy Level 1,2, 3 or 4	Comments
Ministry of Information		Communicator of national development agenda	Dependent on various transport modes for dissemination of information	M	M	3	
Ministry of Interior				M	M	3	
Ministry of Lands and Mineral Resources							
Ministry of Local Government and Rural Development		Decentralisation policy and Rural Infrastructure	Decentralisation affects planning as a whole	H	H	2	District level consultation through this Ministry
Ministry of Roads and Highways	Chief Director; Head of Planning and Policy – Godwin Brocke	Plan co-owner Policy, Planning, Budgeting and Monitoring	Plan success	H	H	1	
Ministry of Tourism		Transport system user	Dependent on various transport modes for access to tourist sites	M	M	3	
Ministry of Trade and Industry							
Ministry of Transport		Plan Co-owner Policy, Planning, Budgeting and Monitoring	Plan success	H	H	1	
Ministry of Women and Children's Affairs		Women and children who are transport users	Access to health, education, market facilities by women	M	M	3	
National Development Planning Commission (NDPC)	Principal Planning Analysts	Overall responsibility for National development planning and coordination of decentralised planning system	Ensuring proper vision of sector development planning Reflecting SEA, National Monitoring and evaluation	H	H	1	Commission is an Agency of the Presidency and includes all the key Cabinet Ministers and regional representatives

Stakeholder	Name of Nominee (if available)	What do they represent?	Stake in ITP and/or SEA	Knowledge of Transport Sector Issues	Ability to Influence Outcome	Communication Strategy Level 1,2, 3 or 4	Comments
National House of Chiefs		Actors involved in releasing land for development of roads, rail, depots and terminals	Have land for development and have socio-cultural stake in socio-cultural implication of plan	M	M	3	
National Petroleum Authority		Regulator – Fuel pricing	Fuel Pricing affects costs of various modes	H	H	2	
National Road Safety Commission	Director: May Obiri-Yaboah	Regulator	Impacts of plan	M	M	3	
Parliamentary Subcommittee on Transport		Overall legislative and budgetary responsibility for national development	Political dividend from Plan Success	H	H	3	
PSC-Tema Shipyard		Implementer Maritime transport	Intermodal significance	M	M	2	
Regional Maritime University			Intermodal significance	M	M	3	
Volta Lake Transport Co		Implementer Inland waterways	Intermodal significance	H	H	2	
DEVELOPMENT PARTNERS							
European Union	Jannik Vaa Willem Roodhart	Financier	Road sector development	H	H	1	Interest in SEA development in Ghana
World Bank		Financier	Road sector development	H	H	2	Interest in SEA development in Ghana
JICA/OECF		Financier	Road sector development	H	H	2	
African Development Bank		Financier	Road sector development	H	H	2	
DFID		Financier	Road sector development	H	H	2	Interest in SEA development in Ghana
Royal Netherlands Embassy	Sean Doolan	Financier	Lead donor in Environment	H	H	2	Interest in SEA development in Ghana

Stakeholder	Name of Nominee (if available)	What do they represent?	Stake in ITP and/or SEA	Knowledge of Transport Sector Issues	Ability to Influence Outcome	Communication Strategy Level 1,2, 3 or 4	Comments
Danida		Financier	Road sector development, indicators for transport	H	M	3	Interest in SEA development in Ghana
Agence France Development		Financier	Road sector development	H	M	2	
Govt of China		Financier	Road sector development	H	M	2	
OPEC FUND		Financier	Road sector development	H	H	3	
BADEA		Financier	Road sector development	H	H	3	
CONSULTANTS / CONSULTING FIRMS							
EGIS/BCEOM	Alan Gilham	planner	Developing ITP	H	H	1	
Jacobs	Richard Edmunds	monitor	Monitoring and evaluation of TSDP	H	H	2	
	Stuart Kane	TSDP component study	Project finance management – implications on finances required for monitoring environmental indicators	H	M	2	
Louis Berger SAS	Alemayehu Ambo	TSDP component study	Capacity development in policy making as well as monitoring SEA	H	M	2	
Delin Consult	Magnus Quashie	Minor transport mode (NMT)					
TRANSPORT SECTOR ORGANISATIONS FOR USERS/BENEFICIARIES							
Boat operators		Major transport mode	Could be directly affected by plan	H	H	2	
Ghana Association of Planners		Planners	Firms involved in transport sector projects	M	M	3	
Ghana Association of Road Contractors		Contractors	Firms involved in transport sector projects	H	M	3	

Stakeholder	Name of Nominee (if available)	What do they represent?	Stake in ITP and/or SEA	Knowledge of Transport Sector Issues	Ability to Influence Outcome	Communication Strategy Level 1,2, 3 or 4	Comments
Ghana Freight Forwarders Association		Major transport mode	Could be directly affected by plan	H	H	2	
Ghana Haulage Transport Drivers Union		Major transport mode	Could be directly affected by plan	H	H	2	
Ghana Institute of Engineers		Local engineering firms	Firms involved in transport sector projects	H	M	3	
Ghana Private Road Transport Union (GPRTU)		Major transport mode	Could be directly affected by plan	H	H	2	
Ghana Road Transport Coordinating Council		Road users and transport owners and government	Could be directly affected by the plan	H	M	3	
Progressive Transport Owners Association (PROTOA)		Major transport mode	Could be directly affected by plan	H	H	2	
Boat Owners on the Volta Lake		Implementers Inland Waterway		H	H		Contact through Ghana Maritime Authority Ghana inland committee of fishermen council at ada market/ Star oil office
Ghana Association Of Consultants	Presidents	Engineer	Policy Designers and Supervisors	H	H	2	
Local Government Service Secretariat	Mabel adjaottor						
OTHER ORGANISATIONS							
Ghana Cocoa Board		Responsible for development and trade of cocoa	Transport of cocoa	H	H	3	
Ghana Timber Millers Organisation		Timber millers	Transport of timber	H	M	3	
Ghana Bauxite Company	Joe Nsiah	Bauxite mining	Transport of bauxite for export	H	H	3	

Stakeholder	Name of Nominee (if available)	What do they represent?	Stake in ITP and/or SEA	Knowledge of Transport Sector Issues	Ability to Influence Outcome	Communication Strategy Level 1,2, 3 or 4	Comments
Ghana Manganese Company		Manganese mining	Transport of manganese for export	H	H	3	
Federation of Environmental Journalists		Environmental journalists	Dissemination of environmental information	M	M	3	
Friends of the Earth		Environmental NGOs	Environmental implications of plan	M	M	3	
Millennium Development Authority		Authority to achieve millennium development challenges	Have funds for transport sector	M	L	3	
Ghana Federation for the Disabled		Social NGO	Transport policy emphasises	M	M	3	
Centre for Community Studies, Action and Development	Executive Director- Mrs. Vera Quaye 0244379355	Social Development NGO	Research/Social implications of plan and dissemination of social-cultural information	M	M	3	
Centre for Environment, Health Research and Training	Mr Yaw Amoyaw-Osei	Consultancy.	Developed ESMF for Transport Sector	H	M	3	
NETRIGHT	Rose Mensah-Kutin	Gender issues	Gender responsiveness	H	H	3	
AGE	Elizabeth Akpalu	Equity	Women's right in transport	H	H	3	
Women in Broadcasting	Sarah Akrofi Quarcoo	Gender issues	Women's right in transport	H	H	3	
CENSUDI	Margaret Mary Isacar	Deprived communities	Access for marginalized groups	H	H	3	
TUC	Adwoa Sakyi	Workers and farmers right	Rural transportation	H	H	3	
Daily Graphic	Salome Donkor	Transport reports in newspapers	Media role in transportation	H	H	3	

Stakeholder	Name of Nominee (if available)	What do they represent?	Stake in ITP and/or SEA	Knowledge of Transport Sector Issues	Ability to Influence Outcome	Communication Strategy Level 1,2, 3 or 4	Comments
Market women association	Victoria Mensah	Women food transport	Access, affordability and women needs	H	H	3	
Ghanaian Times	Adowa Asiedu	Transport reports in newspapers	Media role in transportation	H	H	3	
Political Parties						2	
Ghana association of Industry						3	
Institute of economic affairs						3	
Ghana chamber of commerce						3	
Kosmos Energy and Group						3	
Tullow Ghana						3	
Ministry Of Justice and Attorney General's Department	Solicitor General	Justice to all transport users	Provide Legal Aid to transport users	M	H	3	
Driving schools	Principals			H	M	3	
Media House		Disseminator of development agenda	Provide link between government, implementers and Civic society/users and stakeholders	L	M	4	
International land developing companies		Land developers	Firms involved in land development	H	H	2	
Ghana institute of logistics	David Gary	Road users	Affected by plans directly	H	H	1	
Aviance Ghana limited		Air cargo operators	Dependent on airlines for transport of dangerous and hazardous goods	M	M	3	

Stakeholder	Name of Nominee (if available)	What do they represent?	Stake in ITP and/or SEA	Knowledge of Transport Sector Issues	Ability to Influence Outcome	Communication Strategy Level 1,2, 3 or 4	Comments
A.H. Menzies		Air cargo operators	Dependent on airlines for transport of dangerous and hazardous goods	M	M	3	
Ghana Chamber Of Mines	Chief Executive Officer	Transport system user	Dependent on roads and rail for transport of equipment, chemical inputs for the mining industry	H	M	2	
GNAT		Give education		M	H	4	
Police		To enforce the law		H	H	4	
Ghana Bar Association		Enforce law		M	H	3	
Tanker owners union	Mr. I.k doe	Road users and transport owners	Could be directly affected by the plan	H	H	2	
Tanker drivers union	Mr. P.K Doomson	Road users	Could be directly affected by the plan	M	M	2	
Oil marketing companies	Mr. Agyeman Duah	Users and implementers	Could be directly affected by the plan				
RESEARCH AND ACADEMIC INSTITUTIONS							
Kwame Nkrumah University of Science & Technology – Planning Department		Academia / research	comment on scenarios	H	L	4	
Building and Road Research Institute		Academia / research	Comment on scenarios	H	L	4	
Centre for Remote Sensing and Geographic Information Services, Univ. of Ghana, Legon	Executive Director (Dr. Foster Mensah) 0243352468	Academia / research	Comment on scenarios				
ISSER, Univ. of Ghana, Legon		Academia / research	Comment on scenarios				

Appendix D. Analysis of Draft ITP

D.1. Compatibility with National Transport Policy and Development Goals

In the compatibility assessment the SEA asks the basic question: **to what extent, if at all, do the draft ITP proposals (Transport Infrastructure, Institutional and Regulatory Framework) contribute to achieving the strategic goals of the NTP/SMTDP?**

Table D.1 below presents the findings/comments from the SEA Team's analysis.

Table D.1: Analysis of Compatibility of the Draft ITP with the National Transport Policy

NTP/SMTDP Goal	Main Requirements	ITP Proposal	Findings/Comments
Policy Goal 1: Ghana as a transportation hub for West Africa	Liberalised aviation sector expanded with emphasis on improving efficiency in Ghana's airports to increase competition with other sub-regional airports.	Aviation proposals are described in Section 4.3, but these are policy type statements/measures. There are no additional specific proposals in the ITP addressing aviation and about Ghana in the regional context. Aviation is relegated to the Development Plan that is being developed.	All references to aviation sector (especially Section 4.3) are very broad/too general, there is nothing specific integrating these statements which are more policy oriented into a plan.
	Competition increased in airport and maritime port services to reduce costs and improve overall service.	In terms of increased airport and maritime port services, these have been left it to the respective Master plans under preparation. No specific proposals to promote Ghana becoming a transportation hub.	Proposals for maritime are too broad and general. Airports and ports are critical strategic transport requirements to achieve the hub status and must be considered in more detail in the plan, (whether or not other master plans are being developed). In fact the ITP should help to guide the master plans that are currently underway – or interact more closely with them. There is no reference to coastal shipping at all.
	Transport corridors developed to improve trade opportunities within Ghana and with neighbouring countries.	ITP infrastructure focuses on road and rail. Apart from the Aflao to Tema (N1) link, other links to neighbouring countries are considered not viable beyond 2050. Rail proposal from Tema to Kumasi will go through Boankra carrying transit containers which will continue by trucks to neighbouring countries. But specific proposals for the Boankra Port are not mentioned (although the viability of the rail project has taken this container traffic into	What the policy requires is that the ITP should promote linkages to neighbouring countries. The proposals are very limited by both road and rail. There is a need to look more closely at developing transport corridors linking Ghana to neighbouring countries as required by the Policy. There is also a need to relate transport flows through Ghana to inland destinations, and those flowing through

NTP/SMTDP Goal	Main Requirements	ITP Proposal	Findings/Comments
		account).	other countries to those same destination, and to evaluate the relative advantages and disadvantages to other ports such as Abidjan and Lome.

NTP/SMTDP Goal	Main Requirements	ITP Proposal	Findings/Comments
Policy Goal 2: Accessible, affordable, reliable, effective and efficient transport system	Transport infrastructure investment targeted to better serve population, production and tourist centres to reduce overall transport costs to government and users.	The ITP is targeted to areas of highest flow, and therefore highest economic viability. The ITP proposals – both road and rail – are not targeted to serve the population, production or tourist centres.	ITP has not specifically targeted areas that the NTP says it should. Strategically they have only looked at national routes – addressing congestion on existing highly used routes
	Mass transportation prioritised in urban areas, aiming to move at least 80% of passengers.	Mass transportation has been completely omitted.	The Multi criteria evaluation did take into account strategic and local access as criteria, but the weighting is skewed towards economic viability, so consideration to strategic and local access, together with other social and socioeconomic needs, is lost. DUR activities are listed, but are not linked to ITP proposals.
	Non Motorised Transport (NMT) infrastructure developed to improve affordability and accessibility for urban and rural communities – aiming for 10% of passenger movement.	NMT has been omitted.	NMT is mentioned under DUR proposed activities, but not linked to the ITP proposals. No specific coverage of NMTs importance in rural areas, while in urban areas it is a glancing reference.
	A bulk goods transportation strategy developed based on specific user needs, identifying critical investments in the rehabilitation of railway and inland waterways infrastructure.	No strategy developed for bulk goods transportation.	ITP should have developed the strategy for bulk goods transportation. Some reference has been made to ongoing railway studies, and there are no proposals for inland water transport. There is only reference to rationalisation between BOST and VLTC operations.
	Government shall play a lead role in the development and maintenance of aviation infrastructure in the regions in Ghana, satisfying socio-economic needs and encouraging new patterns of trade and travel.	Proposals for improving physical infrastructure at regional airports are mentioned in a general way in Section 4.3, but no details are presented.	
	Utilisation of inland water bodies and maritime facilities increased by developing transport facilities that promote tourism and sporting activities.	None proposed in the Plan.	
	Accessibility for women, children, the aged and physically challenged considered in transport facilities.	Not mentioned in the Plan.	This is a critical component in terms of poverty/transport dimensions and, as previously highlighted by the SEA, there is a need for ITP to address it.

NTP/SMTDP Goal	Main Requirements	ITP Proposal	Findings/Comments
Policy Goal 3: Integrated land use, transport planning, development planning and service provision	Transport planning fully integrated with development planning and service provision.	The ITP process focussed on integrating economic planning with transport planning. However, it has been limited to economic planning not development planning.	Development planning goes beyond economic planning in that it considers opening up untapped areas within the country. The plan has focussed on development (socio economic activities) driving transport needs. However, transport is also the facilitator of development, and this has not been considered in the plan. Development plans may not be there in hard copy, but there should have been more research done on the latent potential within the country. (Refer SADA). The ITP should have elaborated on more specific framework for guidelines for integrated land use and transport planning.
		ITP has proposed creating a working group to develop procedural guidelines for implementing land use and transport planning. So while it hasn't elaborated on this, it has proposed a working group as a first step to address this requirement of the policy.	The Town and Country Planning Dept is under the Ministry of Environment, Science & Technology, and should be involved in the working group.
Policy Goal 4: Vibrant investment and performance based management environment for public and private sector investors	The private sector encouraged to invest in transport infrastructure and services where commercially viable.	ITP proposes PPP for the two railway projects (Western and Eastern), but indicates that this is subject to feasibility studies. The Plan indicates that there is not enough road traffic to support private sector investment.	There is no national framework for PPP in transport sector. It could have looked at PPP options on Volta lake?
	The "user pays" principle applied to all transport services and maintenance of infrastructure.	ITP proposes increasing fuel levies (US$ 0.10 annually) and road tolls progressively to support maintenance for roads. It is silent on the other modes.	It is assumed that the other modes have self pricing mechanisms for covering maintenance costs, but ITP needs to elaborate on this.
	Government will invest in transport infrastructure and subsidise transport services where they provide mainly social and environmental benefits.	The ITP infrastructure proposals are based on economic viability, where government subsidies for enhancing environmental and social benefits have not been considered.	One of the scenarios could have been to vary the MCEM weighting skewed in favour of social and environment aspects, to see how the priority infrastructure projects would have scored.
	A performance-led approach, based on clear goals and measurable performance targets, evaluated and rewarded accordingly, applied throughout the supply chain of transport infrastructure and services	There are proposals for performance improvement (Section 4.2), but there are no clear goals and targets specified, apart from setting up the working group and inter ministerial committee and data survey, where timelines are specified.	There is a need to elaborate on most proposals with specific goals and targets to be achieved within the plan period. For example, there should be terms of reference (and associated costs) for any surveys, or guidelines or frameworks to be developed.

NTP/SMTDP Goal	Main Requirements	ITP Proposal	Findings/Comments
Policy Goal 5: Comprehensive and integrated policy, governance and institutional frameworks	Transport sector policies promote synergy between the requirements of international, regional, national development, inter-sectoral and modal objectives and the needs of transport users.	The ITP mentions but does not analyze international and regional requirements. Inter-sectoral objectives have been looked at, but the analysis is not presented so it is not apparent how ITP proposals support this. Needs of transport users has been equated to easing of capacity constraints on main routes, and therefore is influenced by economic viability (influences of social, livelihood and health needs are ignored). With regard to user needs, the ITP proposes that market regulation will improve transport choice, through introducing standards.	ITP should set a framework within which the other transport sub-sectors should develop their policies, and not the other way round.
	An institutional framework established, separating functions of policy formulation, regulation, asset management and services.	Implementation of an institutional framework is underway, and ITP recommends that this be continued.	No evaluation of this ongoing process has been done, or further recommendations made to improve the institutional framework.
Policy Goal 6: Sustainable development in the Transport Sector	Strategic Environmental Assessments (SEA) will be carried out on all transport policies, plans and programmes.	Reference is made to emissions reductions (Section 4.2.7) but not further developed here. Proposals are made for SEA, EIA and resettlement to be implemented across all transport sector agencies.	Most of the recommendations made are not new, and are already part of national SEA, EIA, RPF requirements. The RPF that has been developed has been adapted by the TSDP, but not yet adopted by other modal sectors apart from road.
	All transport infrastructure development and maintenance projects (above a certain threshold) comply with existing environmental, health and safety regulations.	Recommendations cover health and safety.	
	Health and safety of communities, operatives and users assured in all modes of transportation.	Recommendations cover health and safety.	
	Fuel efficiency, conservation and pollution control measures promoted for road transportation.		The SEA of the NTP has made a number of recommendations for fuel efficiency and emissions control. The ITP should endorse these.

NTP/SMTDP Goal	Main Requirements	ITP Proposal	Findings/Comments
Policy Goal 7: Develop adequate human resources and apply new technology	Key skills and competencies will be developed to meet the needs of the transport sector.	Proposals made here reiterate the need for the development of HRD, ICT strategies listed in the NTP, but there is no deeper development. Proposals are made for contractor training and capacity building, but details are lacking.	ITP needs to develop these proposals further.
	Research on all aspects of transport sector performance will be carried out and applied by public and private sector organisations.	Proposal to develop a comprehensive research strategy, again reiterating the policy measure, but this has not been developed in any detail.	ITP needs to develop these proposals further

D.2. Assessment of Environmental Sustainability

In assessing the Sustainability of the ITP, the basic question asked by the SEA is: to what extent, if at all, do the draft ITP proposals (Transport Infrastructure, Institutional and Regulatory Framework) support the aims/objectives defined by the sustainability criteria?

The Sustainability tool in its use and application is found to be more suitable for evaluating policy/plan statements, objectives and measures rather than infrastructure items and projects.

The findings/comments of the SEA Team's analysis are presented in the matrix below.

Table D.2: Assessment of the Environmental Sustainability of the Draft ITP

Sustainability Pillars	Criteria	Aspects	ITP Proposals	Findings/Comments
NATURAL RESOURCES OR BIO-PHYSICAL	Air quality	Emission of greenhouse gases from all transport modes Dust from construction of transport infrastructure	Air quality or dust has not been directly considered in ITP (nor in MCEM) but has been mentioned but not developed in the Section 4.2.7.	The Scoping Report mentioned that air quality had not been included in the MCEM, apart from a discussion on the economic benefits of reduction in air pollution and green house gas emissions under the evaluation for rail projects. Proposals for the supervision of contracts will help control impacts of dust emissions. Intermodal differences with respect to emissions are scarcely mentioned.
	Land degradation	Land degradation from acquiring materials used for transport infrastructure (borrow pits, quarries)	This is embedded in the process of identifying infrastructure projects through the MCEM.	The ITP proposal for better supervision of the projects will help to control degradation.
	Loss of biodiversity / Loss of habitat (of flora and fauna)	Effects on sensitive areas	This is embedded in the process of identifying infrastructure projects through the MCEM.	The ITP proposal for better supervision of the projects will help to control loss of biodiversity and habitats.
	Water quality	Sediment pollution of rivers and streams	This is embedded in the process of identifying infrastructure projects through the MCEM.	This criterion was limited to road and rail, and is not considered for inland water or maritime.
SOCIAL AND CULTURAL	Transportation safety	Road Accidents Boat Disasters Derailments	There are a number of broad proposals to enhance safety and regulation in the different modes, and audits have been proposed as additional studies.	However, ITP should have analysed accident figures, and proposed targets to reduce the number of accidents over the plan period. ITP should have come up with a TOR for safety audits for all sectors.
	Relocation and involuntary resettlement	Project Affected Persons	ITP proposes operationalising the RPF across all the transport sectors.	The recommendation on RPF inclusion into contract documents is not entirely accurate, as it should not be the responsibility of the contractor
	Accessibility by ALL to basic social and technical services through transportation	Access to schools, health facilities, markets	This is embedded in the process of identifying infrastructure projects through the MCEM. However, the ITP infrastructure proposals do not address micro-level accessibility to social and technical services.	Indirectly the institutional proposal for the inter-ministerial committee could support facilitating access to these basic services.

Sustainability Pillars	Criteria	Aspects	ITP Proposals	Findings/Comments
	Public health, including STD/HIV/AIDS, noise, air quality	Public awareness of health effects	Proposals are made for developing guidelines for STI/HIV/AID and malaria across the sectors.	These guidelines are available in the Road Sector, and should have been adapted/developed by the ITP for all sectors.
ECONOMIC	Economic growth and stability	GDP growth	The core philosophy of the plan is that it only responds to projected growth.	However, it does not promote economic growth or facilitate the geographical spread of benefits.
	Job creation and income generation through investment	Transport related jobs Investments facilitated by improved transport	Job creation is assumed to be covered in the process through cost benefit analysis and the poverty reduction criteria in the MCEM. In addition proposed transport infrastructure in the ITP should generate some construction jobs, especially if linked with strengthening capacity of local contractors.	Evaluation of facilitated investment is severely restricted by concentration of ITP infrastructure proposals on national routes where transport already exists. Increasing the number of toll stations and privatising toll stations would increase jobs, particularly for local people.
	Poverty reduction	Access to farm inputs/ markets Access to BASIC services Affordability of transport	The MCEM process considers poverty as a social criterion, and the ITP talks about addressing poverty as the government's development agenda. But access to farm inputs/markets is not developed, and affordability or subsidies for transport are not considered.	This should be a key element of the ITP, especially in terms of developing infrastructure and pricing strategies. This aspect was a prime concern of stakeholders at the SEA consultation workshops. Again, weighting of the MCEM process appears to have skewed the importance placed on poverty.
INSTITUTIONAL	Good governance	Participation, Transparency and Accessibility by all	ITP recognises that the NTP is a key driver for good governance in Ghana.	The ITP does not come up with clear specific proposals to promote good governance in relation to accessibility, transparency and participation. Stakeholders said that because of poor roads or poor access, people in rural areas are disenfranchised.
	Institutional strengthening and capacity building	GoG Budgetary allocation to support institutions	There are proposals in the ITP for capacity building and institutional strengthening in HR, ICT and research as exists in the NTP; but these have not been detailed and costed.	It is likely that these proposals will not be implemented as no TORs have been prepared for developing strategies for them.

Sustainability Pillars	Criteria	Aspects	ITP Proposals	Findings/Comments
	Inter/cross sectoral institutional collaboration and coordination roles and mandates	Effective integration and coordination within Transport sector and with other sectors	The ITP has addressed these in their institutional proposals.	ITP proposals will help to advance inter / cross sectoral institutional collaboration. However, the proposals could have been elaborated upon in terms of costs and resources. For land use planning, the Town and Country Planning Dept should be involved in the working group, while the Ministry of Environment, Science and Technology should be represented in the inter-ministerial committee
	Private sector participation and protection of investment	Facilitation of local private sector participation in transport projects and services	The ITP has recommended PPP for rail. ITP points to opportunities for providing port facilities and local investments in supply-chain logistics to support the oil and gas sector.	ITP assumes private investment in aviation and maritime services

D.3. Assessment of Poverty Reduction

For the SEA analysis of the draft ITP, various transport related components of poverty in Ghana were identified. Therefore in the assessment of the poverty reduction effectiveness of the draft ITP, the basic question asked by the SEA is: to what extent, if at all, do the draft ITP proposals (Transport Infrastructure, Institutional and Regulatory Framework) support the components defined by the poverty-transport matrix?

The findings/comments of the SEA Team's analysis are presented in Table D.3 below.

Table D.3: Assessment of Poverty-Transport Dimensions

Poverty Dimension	Transport Related Components	ITP Proposals	Findings/Comments
LIVELIHOODS in relation to productivity and income generation of the poor who are mostly rural dwellers engaged in crop farming as well as the urban poor who live in slums on outskirts of urban centres and have to travel long distances to get work.	**Access to farm inputs and services** The extent to which ITP facilitates access of the poor to farm inputs (fertilizer, seeds, tools etc) and services like extension, mass spraying etc, to boost productivity/incomes	Poverty is embedded in the process of identifying infrastructure projects through the MCEM. The MCEM process considers poverty as a social criterion, and the ITP talks about addressing poverty as the government's development agenda. But access to farm inputs/markets is not developed, and affordability or subsidies for transport are not considered. ITP infrastructure proposals do not address micro-level accessibility to social and technical services.	Indirectly the institutional proposal for the inter-ministerial committee could support facilitating access to these basic services. Poverty should be a key element of the ITP, especially in terms of developing infrastructure and pricing strategies. This aspect was a prime concern of stakeholders at the SEA consultation workshops. Again, weighting of the MCEM process appears to have skewed the importance
	Access to markets The extent to which ITP facilitates access of the poor to markets/storage facilities for their farm produce to enhance sales and reduce post-harvest losses		

Poverty Dimension	Transport Related Components	ITP Proposals	Findings/Comments
	Affordability of Transport services and facilities How ITP interventions lead to appreciable reduction in costs of transport services so as to support livelihoods of the poor – i.e. cost of goods and services, access to jobs etc		placed on poverty. Access to urban markets will be facilitated by the proposed roads, but this will not benefit poor farmers living in remote areas and use rural roads.
	Job creation by and in transport The various opportunities afforded by the ITP to create jobs – mostly unskilled that can be accessed by the poor.	Job creation is assumed to be covered in the process through cost benefit analysis and the poverty reduction criteria in the MCEM. In addition proposed transport infrastructure in the ITP should generate some construction jobs, especially if linked with strengthening capacity of local contractors.	Evaluation of facilitated investment is severely restricted by concentration of ITP infrastructure proposals on national routes where transport already exists. Increasing the number of toll stations and privatising toll stations would increase jobs, particularly local people. The type of ITP infrastructure proposals do not allow for promoting labour based construction which would provide job opportunities for the poor, including women.
HEALTH AND WELL-BEING in relation to the general state of physical and mental well being arising from risks and hazards associated with poor state of transport infrastructure and services	**Access to health facilities and services** The extent to which ITP facilitates access of the poor to health facilities and services in general.	No specific proposals for access to health facilities are made. Maintenance of feeder roads is not addressed by the Plan.	The institutional proposal for the inter-ministerial committee should include the Ministry of Health.
	Drudgery of walking long distances for basic needs How ITP interventions lead to appreciable reduction in distances walked by the poor to access basic needs like water, kerosene, etc	This issue is not addressed since access for the rural poor is not facilitated.	There are no proposals for NMT which could benefit the both the urban and rural poor.
	HIV/AIDS/STDs spread How ITP deals with the issue of construction workers and long-haul drivers propensity to catch and spread HIV/AIDs and STDs along transport corridors and the risk to the poor are especially girls	There are proposals for developing guidelines for HIV awareness raising.	These should have been developed further, by adapting existing guidelines developed by GHA.

Poverty Dimension	Transport Related Components	ITP Proposals	Findings/Comments
	Travel challenges and risks How ITP addresses travel risks and challenges such as accidents, robberies, long delays etc.,	There are some institutional proposals to deal with transportation safety, both on roads and lake transport which will help the poor. Long delays should be assisted by infrastructure proposals to relieve congestion on national highways. The NTP provides for accessibility for women, children, the aged and physically challenged to be considered in transport facilities, but the ITP is silent on this.	The proposals are fairly generic, and could be developed further.
VULNERABILITY how the poor are exposed to risks associated with transport and how lack of transport makes them vulnerable	**Access to disaster relief** The extent to which ITP facilitates access of the poor and vulnerable to disaster relief.	No proposals address this issue, nor has it been considered in the MCEM.	Disaster relief would facilitated close to the main roads.
	Risks of HIV/STD How ITP facilitates reduction in spread HIV/AIDs and STDs among the poor and vulnerable e.g. access by social workers	There are proposals for developing guidelines for HIV awareness raising.	These should have been developed further, by adapting existing guidelines developed by GHA.
	Accidents How ITP improves transportation safety among all modes	There are some institutional proposals to deal with transportation safety, both on roads and lake transport which will help the poor.	The proposals are fairly generic, and could be developed further.
	Insecurity How ITP addresses threats to security of users of transport facilities and services	This is not addressed since the Plan does not propose options for travel which would help the poor.	Access to transport and access to transport choices is limited by ITP infrastructure proposals which are centred on national highways.
INSTITUTIONAL ARRANGEMENTS in relation to the systems, data, regulations and other similar factors that influence decision making in the transport sector and how these affect the poor	**Participation** How ITP facilitates participation generally, e.g. access to voting, or access to district durbars required by the NDPC planning process, and thereby contributing to the national or local decision making	ITP recognises that the NTP is a key driver for good governance in Ghana.	The ITP does not come up with clear specific proposals to promote good governance in relation to accessibility, transparency and participation. Stakeholders said that because of poor roads or poor access, people in rural areas are disenfranchised.

Poverty Dimension	Transport Related Components	ITP Proposals	Findings/Comments
	Discrimination How ITP addresses equity across board in terms of job opportunities in the transportation sector	This is not addressed by the ITP.	The type of ITP infrastructure proposals do not allow for promoting labour based construction which would provide job opportunities for the poor, including women.
	Corruption How the ITP addresses the issue of corruption especially in transport infrastructure contracts and other aspects of transport service provision	This will be facilitated to some extent by the proposed recommendations on improvement in contract management.	However the proposals should have been developed further.
	Collaboration How ITP proposes measures to ensure collaborative system that enhances transport planning to reduce poverty	The ITP proposes institutional measures to enhance collaboration under cross sectoral planning. This should help promote poverty reduction strategies.	There is a need to develop more specific proposals. The institutional proposal for the inter-ministerial committee should include the Ministries of Health, Education and Women and Children, and Employment and Social Welfare.

D.4. Assessment of Secondary, Cumulative and Synergistic Effects

For the purpose of this analysis, the scenarios of the ITP considered are “With Plan” and “Without Plan”. The anticipated effects, both adverse and beneficial, on environmental sustainability are determined as follows:

- Secondary/indirect effects: those effects that are usually less obvious, occurring further away from the source or later in time.
- Cumulative effects: those effects that accumulate incrementally (i.e. added on effects) from various sources.
- Synergistic effects: those effects that interact to produce more significant effects .

However the expected benefits may not all be realised if the Draft ITP is not significantly improved to facilitate effective implementation particularly of the institutional and regulatory measures.

The assessments of secondary, cumulative and synergistic effects are presented in Tables D.4 and D.5 for the “With Plan” and “Without Plan” Scenarios, respectively.

Table D.4: Secondary, Cumulative and Synergistic Effects of the Draft ITP

"With Plan" Scenario	Description of Effects		
	Secondary / Indirect effects	Cumulative effects	Synergistic effects
REGULATORY AND INSTITUTIONAL MEASURES			
Strengthening Existing Management and Supervisory Measures	Improved supervision of contracts may lead to better compliance with EIA/EMP/RPF provisions	Beneficial cumulative effects that may result from implementing the proposed institutional regulatory measures together (as a whole package) particularly for the road sub-sector include: • Reduced negative effects of construction of transport infrastructure on the natural and biophysical environment (SEA,EIA, contract supervision, trained contractors etc.) • Improved handling of resettlement and compensation issues (EIA/RAP) • Improved compliance could enhance performance and sustainability of transport infrastructure projects • Improved planning and decision-making especially by well trained, multi-skilled staff supported by relevant data and research findings • Improved transportation safety, reduced costs and higher performance from effective mainstreaming of EHS in the whole sector	
Strengthening Management of Public Finances in Transport Sector	Improved public financial management may make funds available for more maintenance of infrastructure and possible subsidies for transport services		
Development of Transport Sector Institutional Framework	Strengthened institutional framework may improve performance, enhance planning, coordination and collaboration.		
Implement New Decision-Making Methods, Planning Tools and Data Collection	More objective decision-making may lead to better sector performance, planning for access to production centres and basic services.		
Filling of Skills and Knowledge Gaps	Improved skills and relevant research may lead to better performance of the sector		
Mainstreaming of Environmental and Safety Issues	More sustainable transport sector programmes and projects enhance overall performance		
Maritime and Inland Water Regulation and Standards	Improved safety of inland water transport may lead to increased patronage and lower costs	No significant effects	No significant effects
Maritime Training and Education Services	Training targeted at oil and gas sector may lead to jobs for nationals – but this may be a limited effect overall	No significant effects	No significant effects
Institutional and Capacity Building Measures for Railways	Improved management of Rail sector may lead to better performance even of limited rail infrastructure and services	No significant effects	No significant effects
Road Safety, Standards and Regulations	Improved road safety standards and measures may reduce accidents, reduce costs and enhance performance		No significant effects

"With Plan" Scenario	Description of Effects		
	Secondary / Indirect effects	Cumulative effects	Synergistic effects
Improvement of Road Transport Services	BRT pilots in Accra and Kumasi may lead to reduced congestion and related effects such as exhaust emissions and urban transport costs	Some incremental beneficial effects on safety and emissions could occur if standards and regulations are enforced for both highways and urban transport.	No significant effects
BASELINE + NEW INFRASTRUCTURE			
Roads	Some improvements on National routes but worsening urban and rural roads with dire consequences for exhaust and dust emissions, safety		Some synergy of benefits may result if both road and rail infrastructure are implemented as proposed, particularly within an improved institutional framework setting. However this may not be achieved especially if finance challenges are not adequately overcome.
Rail	Improvements on Western and Eastern lines eases negative effects of bulk road haulage and provides options for passengers and traders	May lead to reduced emissions and reduced accidents if significant reduction in bulk road haulage is achieved.	
Inland Water	No significant changes	No significant effects	No significant effects
Air	**No significant changes**	**No significant effects**	**No significant effects**

Table D.5: "Without Plan" Secondary, Cumulative and Synergistic Effects

"Without Plan" Scenario	Description of Effects		
	Secondary / Indirect effects	Cumulative effects	Synergistic effects
BASELINE INFRASTRUCTURE			
Roads	Effects arising from the concentration of roads in the south and centre of the country Pull of migrants from northern parts to the south Increased pressure on natural resources and infrastructure in the south and centre	Concentration of population and activities in the south and centre lead to further worsening road conditions, increased congestion, emissions from vehicles and dust from roads, accidents etc	Delays and worsening roads lead to increased costs of operations and maintenance and increased overall transport costs and worsening poverty situation
Rail	Without any significant improvement in rail bulk haulage by road increases. Encroachment and loss of rail land assets	Worsening road conditions and accidents related to bulk haulage	Same as stated above for roads
Inland Water	Weak compliance and enforcement regime, poor safety conditions	More boat accidents, worsening the plight of the poor who depend on inland water transport	Deepening poverty for those dependent on inland water transport
Air	Limited domestic access means more pressure on road transport	Same as stated above for roads	Same as stated above for roads

Appendix E. Assessment of Significant Effects

E.1. Risk Assessment Methodologies

In assessing risk with regard to the Draft Integrated Transport Plan, we have considered the following:

- What are the risks to the sustainability of the proposed Draft Integrated Transport Plan?
- What are the risks posed by the Draft ITP to environmental sustainability issues?

E.2. Qualitative Risk Assessment

We ask the following questions:

- What (is the worst thing that) might happen?
- How might it happen?
- Will it be serious if it happens?
- How likely is it to happen?
- How can it be averted, eliminated or controlled?
- What is the risk?

Steps in the risk assessment are summarized in Table E.1 below:

Table E.1: Risk Assessment Steps

Steps	Risk Assessment Terminology	Questions Asked:
1	Establishing the effect, identifying the cause	What (is the worst thing that) might happen? How might it happen?
2	Magnitude of consequence	Will it be serious if it happens?
3	Probability of consequence occurring	How likely is it to happen?
4	Risk management	How can it be averted, eliminated or controlled
5	Significance of the risk	What is the risk?

In order to establish what adverse effect may arise from a particular proposal or action, it is useful to adopt a source-pathway-receptor analysis approach in order to determine what might happen as a result of an action or proposal, or as a result of not implementing an action or a proposal. There is also need to understand how and why the effect may occur. Once the consequence of an action or proposal is established, then its magnitude is determined, together with the likelihood of it occurring; in other words how serious is the effect and how likely it is to occur. This allows the risk to be determined using Figure E.1 below.

Figure E.1: Risk Determination Matrix

Likelihood ↑	Highly Likely	MEDIUM	MEDIUM	HIGH	HIGH
	Likely	LOW	MEDIUM	MEDIUM	HIGH
	Unlikely	NEGLIGIBLE	LOW	MEDIUM	MEDIUM
	Highly Unlikely	NEGLIGIBLE	NEGLIGIBLE	LOW	MEDIUM
		Marginal	Minor	Intermediate	Major
	Consequence →				

The qualitative assessment of the risk posed by the draft ITP is presented in Table E.2 below.

Table E.2: Qualitative Risk Assessment of the Draft ITP

Sustainability Criteria	What might happen? How might it happen?	Will it be serious if it happens?	How likely is it to happen?	How can it be averted, eliminated or controlled?	What is the risk?
NATURAL AND BIOPHYSICAL RESOURCES					
Air quality Provision of transportation infrastructure, facilities and services should be controlled such that emission of pollutants to air including exhaust from all forms of transportation, greenhouse gases, foul odours and dust, etc., are minimised.	Construction activities will generate large quantities of dust due to earthworks. This will make general atmospheric conditions dusty.	In terms of general air quality there will be an intermediate detrimental effect	Highly likely	Through rigorous supervision of contractors	High in short term, because of lack of compliance and enforcement due to attitudinal problems and lack of capacity and resources for supervision.
	Driving on unpaved roads will also cause dust emissions		Highly likely	Upgrading unpaved roads to sealed surface; Improving maintenance regimes for both unpaved and paved roads	
	VOCs , SOx, NOx and GHG emissions will increase from all modes of transportation. There will be more vehicles on the road as travel choices for mass transit are limited. As income levels increase the demand for transport services would increase, and therefore exhaust emissions will increase. A diesel run railway from Tema to Kumasi will be an additional source of air emissions	In the global context, this will have an intermediate effect. It is expected that the diversion of transport of bulk goods from road to rail should have a net lowering of emissions.	Highly likely	Emissions can be reduced through: Introducing low sulphur fuels Ensuring that fuel efficient vehicles are imported into the country Enforcing legislation on exhaust emissions from road vehicles. Providing incentives for low carbon vehicles Encouraging and enabling mass transit of people and goods, by rail and road Electrification of the railway EIAs to be done on specific rail and road projects should evaluation air emissions	High, because the likelihood of mitigation measures being introduced and regulations enforced is low.

Sustainability Criteria	What might happen? How might it happen?	Will it be serious if it happens?	How likely is it to happen?	How can it be averted, eliminated or controlled?	What is the risk?
Adaptation to Climate Change The effects of climate change on the provision of transport infrastructure and services are minimised	Roads: Damage to road surfaces due to extreme changes in temperature; excessive rain damaging or overwhelming drainage structures, since drainage and bridge structures are designed to withstand certain flood probabilities, and climate change may increase the frequency of these floods occurring. Low lying sections of roads, those traversing areas having many streams and rivers (Asikuma-Nkwanta-Hohoe), or those running along the coast (Tema-Aflao) could be inundated.	Intermediate to major consequences	Likely	Cannot be averted, but measures for adaptation can be implemented: Reviewing monitoring and maintenance regimes; Review of design standards and specifications in order to improve the resilience of infrastructure; Consider major upgrading or re-routing; Avoid new development in 'at risk' locations; Develop a risk assessment methodology that can be applied across the transport sector, which would culminate in the preparation of a risk management strategy.	High, in the immediate to near term, as strategies need to be developed and implemented. This will take at least 5 years.
	Rail: Damage to tracks due to extreme changes in temperature. Embankments and soil under the tracks washed away by excessive rain. Bridges may be washed away by floods. Coastal infrastructure could be affected due to sea level rise.				
	Inland water transport: could be affected by low lake levels Ports: infrastructure affected by sea level rise.				
	Aviation: unpredictability of storms affecting airline schedules and safety.				

Sustainability Criteria	What might happen? How might it happen?	Will it be serious if it happens?	How likely is it to happen?	How can it be averted, eliminated or controlled?	What is the risk?
Land degradation Provision of transportation infrastructure, facilities and services and other related activities should not lead to degradation of land and soils including depletion of nutrients, adverse change of soil structure or soil pollution.	Earthworks and construction activities will lead to soil erosion, loss of productive land, nutrient depletion and pollution of soil, especially by oil and oil products.	Consequences could be intermediate	Likely	Can be mitigated through: Close supervision of contractors' activities ensuring best environmental management practices during construction (including clean up after construction); Proper and regular maintenance during operation; Regular environmental auditing during construction and operation of railway yards and workshops, bus depots, weighbridges, airports and ports, and pipeline terminals.	Medium in short term, because of lack of compliance and enforcement due to attitudinal problems and lack of capacity and resources for supervision.
Loss of biodiversity (also implying loss of habitat) Provision of transportation infrastructure, facilities and services should minimise loss of biodiversity and be managed with due respect to the natural character of ecosystems and overall ecosystem functions. Habitats upon which species of fauna and flora depend should not be jeopardised as a result of the implementation of the ITP and other related activities. This applies to terrestrial ecosystems and to aquatic ecosystems, including wetlands.	Widening of roads and setting up camps for railway construction may require the clearance of vegetation, resulting in loss of habitat and therefore loss in biodiversity. Induced activities related to human activity and settlement along the transport routes will also have an effect on loss of habitat and biodiversity	Minor – assuming that the projects do not pass through forests and road reservations exist and rehabilitation works will be confined to these reserves.	Highly likely	Cannot be averted. EIA of individual projects will have to determine if any sensitive sites are affected, and if they are then alternative route options may have to be sought	Medium risk

Sustainability Criteria	What might happen? How might it happen?	Will it be serious if it happens?	How likely is it to happen?	How can it be averted, eliminated or controlled?	What is the risk?
Water quality Provision of transportation infrastructure, facilities and services should not result in discharges, disposal of waste or other loads on the environment that deteriorate the quality of ground and surface water resources.	Water quality will be affected by construction activities, especially in terms of sediment loading and oil pollution During operation, accidents involving transportation of hazardous substances (chemicals and oil products) will cause spillage resulting in polluting water sources.	Major consequence, because many rural communities depend on rivers, streams, and lakes for sources of domestic and potable water.	Highly likely	Can be averted during construction by supervision of construction activities, and instituting environmental best practices. Risks in the operational phase cannot be averted since they are accidents, but can be minimized through: Stricter enforcement of existing regulations; Measures that have been or are currently being developed to improve transportation safety should be implemented and enforced. Rec: Regular environmental auditing during construction, also during operation of railway yards and workshops, bus depots, weighbridges, airports and ports	High risk, because factors leading to these accidents will continue. ITP does not have any new proposals for reducing the causative factors.
SOCIAL AND CULTURAL					
Transportation safety Health and well-being of people should benefit from the provision of transportation infrastructure, facilities and services and contribute to reducing health and safety risks especially road, rail, and boat accidents.	If ITP proposals are NOT implemented, then there is a risk of accidents occurring in all modes. For example, substantial accident cost savings known to arise from dualisation will not be realized. Similarly lack of maintenance of infrastructure, as well as lack of enforcement of regulations, serve to increase health and safety risks. On heavily trafficked roads the impact is exponentially more serious	The consequence is major.	Likely	Risks can be reduced if ITP proposals are implemented, although regulatory and institutional proposals have not been adequately developed.	High, as implementation could be slow due to funding and institutional constraints.

Sustainability Criteria	What might happen? How might it happen?	Will it be serious if it happens?	How likely is it to happen?	How can it be averted, eliminated or controlled?	What is the risk?
Relocation and involuntary resettlement Issues related to relocation and involuntary resettlement should be handled in accordance with the approved involuntary resettlement and compensation framework and consistent with the constitutional requirements.	Projects may go ahead without following the required procedures for compensation and resettlement. Currently the framework only exists for roads; the ITP proposes that the other sectors should adopt this framework.	Major consequences, especially if other transport sectors do not take on these requirements.	Likely	Projects cannot be allowed to proceed unless RAPs are done and implemented, and the requirements of the RPFs have been fully complied with.	High, because the RPFs do not exist for other modes of transport, and also ITP proposals must be developed further to cover the transportation sectors.
Accessibility by ALL to basic Social and Technical services through transportation The whole population should have adequate transportation to access basic social services. ALL means "with no discrimination" to ensure that the needs of men, women, children and the vulnerable and physically challenged are taken care of. Basic Social Services includes education, health, markets, and administrative (civic responsibilities) services. Technical services includes agricultural extension (farm inputs) and financial (credits) services.	The infrastructure proposals in the plan do little to facilitate accessibility to basic social and technical services, especially in rural areas. If regulatory / institutional measures proposed by the ITP for cross-sectoral planning are not implemented then there will be no improvement in rural health, education levels or agricultural productivity.	The effect will be intermediate	Highly likely	In term of infrastructure, including in the plan provision for feeder roads and facilitating transportation services to poorly served areas in the country, eg the northern regions, and east of Lake Volta. Ensuring that cross-sectoral planning including land use planning is properly enforced	Risk is high if recommendations are not implemented.

Sustainability Criteria	What might happen? How might it happen?	Will it be serious if it happens?	How likely is it to happen?	How can it be averted, eliminated or controlled?	What is the risk?
Public health issues – STIs/HIV-AIDS Provision of transportation infrastructure, facilities and services, should not create conditions that promote the spread of STIs/ HIV/AIDS and other public health risks.	If plan proposals are not implemented, then: The incidence of STIs/HIV/AIDS may increase as a result of setting up construction camps, and resultant social interaction with local communities. Similarly, during operation, increasing trucking flows, long delays at terminals and transit points, will increase the spread of STIs/HIV/AIDS.	Major consequence.	Highly likely	Ensuring that ITP proposals and awareness campaigns are implemented, and HIV/AIDS Awareness and Prevention guidelines followed	High, because ITP proposals need to be developed further and need to cover all transport sectors.
ECONOMIC CONSIDERATIONS					
Economic growth and stability Provision of transportation infrastructure, facilities and services should support growth objectives of the economy including agriculture, industry, tourism and other sectors and the attainment of related MDGs. This would among other criteria require appropriate arrangements for investments in the transportation sector for the benefit of all sectors.	Economic development in rural areas and areas to the north and north-east of Ghana may be inhibited due to continuing poor transport infrastructure. The transport sector will not improve substantially as there is no clear investment strategy provided for this.	The effect will be intermediate in that there will be limited improvement in living standards, since agriculture and tourism in rural areas will not be supported	Likely	By including in the plan infrastructure provisions for feeder roads and NMT, and facilitating transportation services to poorly served areas in the country, eg the northern / north-eastern regions, and east of Volta Lake, and to potential tourist destinations, as well as considering the need for infrastructure to the oil and gas sector. Also by having an investment plan for the transport sector.	Medium

Sustainability Criteria	What might happen? How might it happen?	Will it be serious if it happens?	How likely is it to happen?	How can it be averted, eliminated or controlled?	What is the risk?
Job creation and income generation through investments Implementation of the ITP and its related activities should increase possibilities of employment of local people, in particular, women and youth; and also enhance opportunities for investment to stimulate growth of local economies.	The ITP proposals offer some opportunities for job creation and income generation, but limited opportunities for investment. Local economies will be stimulated to a very small extent because of difficulties in access and delivery of goods.	Minor to intermediate.	Likely	By implementing the ITP recommendation for strengthening capacity and use of local contractors. Also, the Plan needs to be revised to include opportunities for investment. Implementing the ITP infrastructure proposals will avoid congestion, and therefore contribute in some measure to enhancing productivity.	Medium
Poverty reduction Provision of transportation infrastructure, facilities and services should promote poverty reduction in support of national development objectives.	ITP proposals will not promote poverty reduction, because existing infrastructure is severely restricted in its capacity to meet the needs of both the rural and urban poor.	Major consequence	Highly likely	The plan needs be revised to give greater weight to poverty reduction.	High
INSTITUTIONAL CONSIDERATIONS					
Good governance Provision of transportation infrastructure, facilities and services should respect the basic tenets of good governance including equity in access, principles of democracy, respect for human rights, participation, transparency and accountability.	Good governance will not be achieved to any great extent in terms of equity of accessibility, participation, transparency and accountability because existing difficulties in transport access for most of the country will scarcely improve as a result of ITP proposals.	Intermediate	Likely	The plan must develop specific proposals on good governance in relation to equity of accessibility, participation, transparency and accountability.	Medium

Sustainability Criteria	What might happen? How might it happen?	Will it be serious if it happens?	How likely is it to happen?	How can it be averted, eliminated or controlled?	What is the risk?
Institutional strengthening and capacity building The ITP should promote measures aimed at strengthening related institutions and building capacity including training, providing logistics and systems for integrated transport planning, implementation and management.	Plan proposals may not be implemented since they have not been developed any further, nor have the cost of the proposals not established.	Intermediate	Likely	Plan proposals for institutional strengthening and capacity building need to be detailed in order to facilitate timely implementation.	Medium
Inter/cross-sectoral institutional collaboration and coordination of roles and mandates Collaboration and coordination among various institutions is required for effective management of transportation issues. The ITP and its related activities should therefore promote inter/cross-sectoral institutional collaboration within clearly defined roles and mandates.	Collaboration and coordination continues to be inadequate and ineffective because the proposed inter ministerial committee may not be established or operate effectively. Progress towards integrated transport planning will be impeded.	Minor to Intermediate, as things will continue as they are	Likely	Through strong and elaborate recommendations in the ITP with detailed specific actions for coordination and collaboration, including identifying and including other relevant sectoral agencies.	Medium

Sustainability Criteria	What might happen? How might it happen?	Will it be serious if it happens?	How likely is it to happen?	How can it be averted, eliminated or controlled?	What is the risk?
Private sector participation and protection of investments Initiatives should be aimed at attracting private sector participation in the provision of transportation infrastructure, facilities and services and should include provisions for protecting investments.	The PPP framework is not yet developed, so there will not be sufficient interest in investment in rail and other transport infrastructure. The environment is not conducive to investment in rail.	Intermediate	Likely	By developing a clear and attractive PPP framework, particularly making clear GOG's intention to develop specific railway proposals.	Medium

E.3. Quantitative Risk Assessment

In this section, a detailed analysis of the established effects is presented under the four pillars of sustainability, ie. natural / bio-physical resources, social/cultural conditions, economic considerations and the institutional (including regulatory and administrative) framework.

For each effect, the level of risk for each environmental sustainability criteria has been determined using the risk significance weighting methodology described below. For the purposes of this task, a rating score has been used based on the likelihood of an effect occurring and its consequence. Significance of a risk has been calculated as follows:

Risk Significance = Consequence X Likelihood

Likelihood

Likelihood is the frequency of an effect occurring, and is weighted as shown in Table E.3 below:

Table E.3: Weighting of Likelihood

Unlikely	1
Possible, less than annually	2
Can occur occasionally, at least annually, fairly likely, likelihood uncertain (no evidence to establish likelihood)	3
Frequent, at least monthly, very likely	4
Continuous, inevitable, daily	5

Consequence Rating

Consequence is determined in terms of the following parameters:

- Duration
- Location
- Magnitude / Severity
- Reversibility
- Cumulative character of the effect
- The ability to prevent / mitigate the effect
- Potential or existing public concerns.

It must be borne in mind that all weighting systems are subjective to a large extent, and professional judgment plays an important part in allocating ranks or scores to specific weighting criteria. Even then, a particularly adverse characteristic can be offset by scores given to other criteria. To address this issue, a "criticality adjustment factor" has been allocated to effects that could potentially have extremely serious implications. In addition, where an effect is regarded as being possible, but there was lack of evidence as

to its likelihood of occurring, a precautionary approach was taken, and the likelihood rating was increased by a point. Table E.4 shows weighting allocated to each of the consequence parameters.

Table E.4: Weighting Allocated to Consequence Parameters

Duration of effect	long / not certain 3	medium 2	short 1
Location of effect	wide / not certain 3	intermediate 2	specific 1
Magnitude of effect	high / not certain 3	medium 2	low 1
Is the effect reversible?	no / not certain 3		yes 1
Is the effect cumulative?	yes / not certain 3		no 1
Can the effect be mitigated?	no / not certain / 3	partially / 2	fully 1
Will there be public concerns?	high / not certain 3	medium 2	low 1
Criticality adjustment factor - based on professional judgment, allocated for effects that could present very severe risks to identified sustainability criteria	3	2	1

In calculating the consequence rating the scores given to each of the above criteria are allocated based on professional judgment. These scores are added to give an aggregate consequence score.

E.4. Determination of Risk Level

In determining risk levels, any effect receiving a score equal to or greater than 70 is considered to be significant (high risk), effects of scores of 31-69 inclusive are considered to be medium risk, and those equal to or less than 30 are considered to be low risk, as illustrated in Table E.5 below.

Table E.5: Risk Level Scoring

Risk Level		Score
Low Risk	(L)	≤30
Medium Risk	(M)	31 - 69
High Risk	(H)	≥ 70

Table E.6 shows the results of the risk assessment for each of the sustainability criteria.

Table E.6: Risk Levels of Environmental Sustainability Criteria

Risks to	Duration	Location	Magnitude	Reversibility	Cumulative	Mitigation	Public Concerns	Criticality adjustment	Consequence Rating	Likelihood	Significance Rating	Risk Level	Ranking
NATURAL / BIOPHYSICAL RESOURCES													
Air quality	3	2	2	3	3	2	2	1	18	5	90	H	2
Climate change	3	3	3	3	3	2	2	3	22	4	88	H	3=
Land degradation	1	1	2	1	1	2	2	2	12	4	48	M	8=
Loss of biodiversity (implies loss of habitat, flora and fauna)	3	1	1	3	1	2	1	2	14	3	42	M	9=
Water quality	1	1	2	3	3	2	3	3	18	4	72	H	6
SOCIAL AND CULTURAL													
Transportation safety	3	3	2	3	1	2	3	3	20	4	80	H	4=
Relocation and involuntary resettlement	3	1	3	3	1	2	3	3	19	4	76	H	5
Accessibility by ALL to basic social and technical services through transportation	2	3	2	1	1	1	3	3	16	5	80	H	4=
Public health, including STD/HIV/AIDS, noise, air quality	3	2	3	3	3	2	3	3	22	4	88	H	3=
ECONOMIC													
Economic growth and stability	3	3	2	1	1	2	3	2	17	3	51	M	7
Job creation and income generation through investment	1	1	2	1	1	2	2	2	12	4	48	M	8=
Poverty reduction	2	3	2	1	3	2	3	3	19	5	95	H	1

Risks to	Duration	Location	Magnitude	Reversibility	Cumulative	Mitigation	Public Concerns	Criticality adjustment	Consequence Rating	Likelihood	Significance Rating	Risk Level	Ranking
INSTITUTIONAL													
Good governance	2	3	2	1	1	2	2	3	16	3	48	M	8=
Institutional strengthening and capacity building	2	3	2	1	3	2	1	2	16	3	48	M	8=
Inter/cross-sectoral institutional collaboration and coordination of roles and mandates	2	3	1	1	3	2	1	1	14	3	42	M	9=
Private sector participation and protection of investment	2	1	2	1	1	2	1	1	11	3	33	M	10

Appendix F. List of References

Addai-Yeboah, Alice; Transport Sector Development Programme; Road Sector Resettlement Policy Framework; Ministry of Transportation (January 2007).

AEA Technology; Safety Implications of Weather, Climate and Climate Change: Final Report (April 2003)

Ahmed Kulsum, R.J Mercier, R Verheem; Strategic Environmental Assessment- Concept and Practice; Number 14 (June 2005).

Appiah Noble John , National Policies and Plans of Action, A Case Study of Ghana, African Road Safety Congress 5-7th Accra; February 2007

Atkins; Institutional Review of Mainstreaming of Environment; Social, Health and Safety Issues in the Road Sector of Ghana; Final report (June 2005)

Atkins; Institutional Review of Mainstreaming of Environment; Social, Health and Safety Issues in the Road Sector of Ghana; Final report (January 2005)

Atkins; Institutional Review of Mainstreaming of Environment; Social, Health and Safety Issues in the Road Sector of Ghana; Recommendations Action Plan (to accompany Final Report) (August 2005)

BEACON; European Commission; The SEA Manual; A Sourcebook on Strategic Environmental Assessment of Transport Infrastructure Plans and Programmes; (31 October 2005)

Bina, Olivia; Strategic Environmental Assessment of Transport Corridors; Lesson learned comparing the Methods of Five Member States; Final Report (January 2001)

Buydens, Walter; Strategic Impact Assessment Guidelines Final Report; African Development Bank (September 2003)

Centre for Environment & Health Research & Training; Environmental and Social Management Framework (ESMF) for the Transport Sector Development Programme Road Sector; Ministry of Transportation (January 2007)

Consortium STTE (SAFEGE-TECHNUM / TRACTEBEL ENGINEERING); The European Union's 9th EDF Programme for Ghana; Mid-Term Evaluation of the TSPIP Draft Final Report, (January 2010)

COWI A/S; Study Concerning the Report on the Application and Effectiveness of the SEA Directive (2001/42/EC) Final Report, (January 2009)

Dalal-Clayton, Barry and Barry Sadler; International Institute for Environment and Development; Strategic Environmental Assessment; An International Review; With a special focus on developing countries and countries in transition; Final Draft (19 July 2004)

Department for Transport Analysis Guidance (TAG); Strategic Environmental Assessment for Plans and Programmes TAG Unit 2.11 (December 2004)

DHV in association with Municipal Development Collaborative; Urban Transport Planning and Traffic Management Studies for Greater Accra Metropolitan Area (GAMA); Sekondi- Takoradi, Cape Coast and Koforidua Final Report Volume 1, Overview (June 2005)

DHV in association with Municipal Development Collaborative; Urban Transport Planning and Traffic Management Studies for Greater Accra Metropolitan Area (GAMA); Sekondi- Takoradi, Cape Coast and Koforidua Final Report Volume 2, GAMA (June 2005)

DHV in association with Municipal Development Collaborative; Urban Transport Planning and Traffic Management Studies for Greater Accra Metropolitan Area (GAMA); Sekondi- Takoradi, Cape Coast and Koforidua Final Report Volume 3, Sekondi- Takoradi (June 2005)

DHV in association with Municipal Development Collaborative; Urban Transport Planning and Traffic Management Studies for Greater Accra Metropolitan Area (GAMA); Sekondi- Takoradi, Cape Coast and Koforidua Final Report Volume 4, Cape Coast (June 2005)

DHV in association with Municipal Development Collaborative; Urban Transport Planning and Traffic Management Studies for Greater Accra Metropolitan Area (GAMA); Sekondi- Takoradi, Cape Coast and Koforidua Final Report Volume 5, Koforidua (June 2005)

European Commission; Directive 2001/42/EC; the Assessment on the Effects of Certain Plans and Programmes on the Environment; For the European Parliament and the Council of the European Union Directive (27 June 2001)

Del Campo, Ainhoa Gonzalez; GISEA Manual (Current practice and Potential on the Application of Geographic Information Systems as a Support Tool in SEA of Irish Land use Plans (April 2009)

Document of the World Bank Report No. 36985-GH; Ghana Country Environmental Analysis (November 2, 2007)

Egis BCEOM International & ACON Consultants; Integrated Transport Plan for Ghana, Progress Report No. 15(March 2009)

Egis BCEOM International & ACON Consultants; Transport Integration Plan of Ghana Inception Report (April 2008)

Egis BCEOM International and ACON Consultants; Integrated Transport Plan for Ghana; Progress Report No.13 (January 2009)

Egis BCEOM International and ACON Consultants; Transport Integration plan for Ghana; Modal Report on Inland water Transport (October 2008)

Egis BCEOM International and ACON Consultants; Transport Integration plan for Ghana; Modal Report on Pipeline (October 2008)

Egis BCEOM International and ACON Consultants; Transport Integration plan for Ghana; Modal Report on Ports (October 2008)

Egis BCEOM International and ACON Consultants; Transport Integration plan for Ghana; Modal Report on Railways (October 2008)

Egis BCEOM International and ACON Consultants; Transport Integration plan for Ghana, Modal Report on Road Infrastructure (October 2008)

Egis BCEOM International and ACON Consultants; Transport Integration plan for Ghana; Modal Report on Road Motorised and Non Motorised Transport (October 2008)

Egis BCEOM International and ACON Consultants; Transport Integration plan for Ghana; Modal Report on Aviation (October 2008)

Egis BCEOM International and Associated Consultants; Integrated Transport Plan-Ghana; Diagnosis Report Abridged Version (February 2009)

Egis BCEOM International and Associated Consultants; Integrated Transport Plan – Ghana Multi-Criteria Evaluation Manual 1st Draft (March 2009)

Egis BCEOM International and Associated Consultants; Integrated Transport Plan – Ghana Multi-Criteria Evaluation Manual 3rd Draft (November2009)

Egis BCEOM International; Integrated Transport Plan of Ghana Report on Transport Model Calibration (April 2009)

Egis BCEOM International; Integrated Transport Plan, Economic Analysis and Forecasts (January 2009)

Environmental Protection Agency; Ghana Climate Change Impacts, Vulnerability and Adaptation Assessments; in association with the Netherlands Climate Assistance Programme (NCAP) (May 2008)

Environmental Protection Agency (EPA), Ghana State of Environment Report 2004 (April 2005)

Environmental Resource Management Ltd; European Commission; Strategic

Environmental Assessment of the Transport Corridors, Lessons Learned Comparing the Methods of Five Member States Final Report (January 2001)

FEMCONSULT; TRANSTEC; Feasibility Study on Civil Society Support in Ghana (September 2008)

European Environmental Agency; TERM 2001 38 EU — Uptake of strategic environmental assessment in the transport sector (no date)

European Commission; Aid Delivery Methods, Supporting Effective Implementation of EC External Assistance, Project Cycle Management Guidelines Volume 1, (March 2004)

European Commission; United Nations; Mainstreaming Gender within the Ec Road Programme in Cameroon- A Reflection Forum a Brief by Unifem-Cameroon (2007)

Hifab Golder Associates, AY& A Consult and SGS; Mining Sector Support Programme; National EIA&SEA Project; Mitigation Measures, Indicators and Monitors; Report (June 2008)

Hifab, Golder Associates, AY& A Consult and SGS; Mining Sector Support Programme; National EIA&SEA Project; Evaluation of Policies, Legislation and Institutions; Main Report (April 2008)

Hifab, Golder Associates, AY& A Consult and SGS; Mining Sector Support Programme, National EIA&SEA Project; Defining Baseline Conditions 2D; Review of EIA Results (June 2008)

Hifab, Golder Associates, AY& A Consult and SGS; Mining Sector Support Programme; National EIA&SEA Project; Defining Baseline Conditions 2E; Human Health Risks Associated with Mining Related Contamination. (June 2008)

Dalkmann, Holger, Olivia Bina and Andrea Ricci; SWOT-Analysis: Provincial Transport Plan (9 July 2007)

I T Transport Limited in Joint Venture with Scott Wilson; Ghana Roads Sub-Sector; Review of Axle Load Control Policy and Assistance in the Implementation of the Action Plan; Final Report (2004)

Government of Ireland; Implementation of SEA Directive (2001/42/EC); Assessment of the Effects of Certain Plans and Programmes on the Environment, Guidelines for Regional Authorities and Planning Authorities (November 2004)

Jacobs Babtie; Local Transport Plan 2, SEA Final Environmental Report: West Berkshire Council; (March 2006)

Jacobs Babtie; Local Transport Plan; Strategic Environmental Assessment; Final Environmental Report; West Berkshire Council; (March 2006)

Japan International Cooperation Agency; Country Profile on Environment Ghana (November 1999)

Manmohan, Parkash; Promoting Environmentally Sustainable Transport in the Peoples Republic of China; Asian Development Bank (2008)

Partidário, Maria Rosário; Strategic Environmental Assessment (SEA); Current Practices, Future Demands and Capacity-Building Needs (no date)

Marsden .G, Kimble .M and Nellthorp .J; Appraisal of Sustainability in Transport; Institute of Transport Studies; Faculty of Environment, University of Leeds; Final Report (15th January 2007)

Mott MacDonald in association with Municipal Development Collaborative Ltd; Strategic Environmental Assessment of the Transport Integration Plan of Ghana; Analysis Report (April 2010)

Mott MacDonald in association with Municipal Development Collaborative Ltd; Strategic Environmental Assessment of the Transport Integration Plan of Ghana; Scoping Report, (July 2009)

Mott MacDonald in association with Municipal Development Collaborative Ltd; Strategic Environmental Assessment of the Transport Integration Plan of Ghana, Scoping Report; (July 2009)

Mott MacDonald in association with Municipal Development Collaborative Ltd; Strategic Environmental Assessment of the Transport Integration Plan of Ghana; Interim Report (December 2009)

Mott MacDonald in association with Municipal Development Collaborative Ltd; Strategic Environmental Assessment of the Transport Integration Plan of Ghana; Proceedings of the SEA Workshops of 2010(March 2010)

Mott Macdonald in association with Municipal Development Collaborative Ltd; Strategic Environmental Assessment of the Transport Integration Plan of Ghana; Inception Report (March 2009)

MVA Limited; The Integration of Regional Transport Strategies with Spatial Planning Policies, (March 2004).

Nathan Associates Inc in Association with Plan Consult Accra; Development of National Transport Policy in Ghana (September 2005)

NEA; Transport Research and Training; Follow-Up Study of the Joint Evaluation of the Road Sub-Sector Programme 1996-2000 Ghana; (November 2005)

Nippon Koei Co. Ltd; The Development Study of Ghana SEA Ports.(February 2002)

ODPM; Sustainability Appraisal of Regional Spatial Strategies and Local Development Documents (November 2005)

ODPM, A Practical Guide to Strategic Environmental Assessment Directive (2005)

Osei-Asamoah J; Overview of the Implementation of the Road Sector Development and Status of the Sector; Annual Donors Conference (2005)

Osei-Asamoah J; Transport Sector Development Programme; Annual Donors' Conference (2005)

Overseas Development Institute (ODI), in association with the Centre for Policy Analysis (CEPA); Economic Growth in Northern Ghana; DFID Ghana; October 2005.

PriceWaterHouseCoopers; Preparation of the Economic, Financial, Technical and Administrative Framework for Road Concession Projects in Ghana; Ministry of Roads and Transport and World Bank; Interim Report (November 2004)

Republic of Ghana; A New Approach to Public Sector Reform under the Office of the President (December 2009)

Republic of Ghana; Implementation of the Growth and Poverty Reduction Strategy (GPRS II) 2003-2005 (2008 Annual Progress Report); National Development Planning Commission (NDPC) (September, 2009)

Republic of Ghana; Sector Medium-Term Development Plan (SMTDP); 2010 – 2013, Main Report; National Development Planning Commission (NDPC), (August, 2009)

Republic of Ghana; Guidelines for the Preparation of Sector Medium-Term Development Plan 2010-2013; National Development Planning Commission (NDPC) (July 2009)

Republic of Ghana; Transport Indicators Database; Statistical and Analytical Report 2000-2008; Ministry Of Transport and Ghana Statistical Service (June 2009)

Republic of Ghana; National Transport Household Survey Report; Transport Sector Programme Support; Phase II (TSPS II) Transport Indicators Database Project; Ministry of Transportation & Ghana Statistical Service (February 2009).

Republic of Ghana; National Transport Policy (December 2008)

Republic of Ghana; Transport Indicators Database; Statistical and Analytical Report 2000-2007; Ministry Of Transport and Ghana Statistical Service (December 2008)

Republic of Ghana; Status Report on the Jubilee Filed Oil and Gas Development - Tano Deepwater and West Cape Three Points; Ghana National Petroleum Corporation (GNPC), (June 2008)

Republic of Ghana; Transport Sector Development Programme (TSDP) 2008-2012; Ministry of Aviation, Ministry of Harbours and Railways, Ministry of Transportation (March 2008)

Republic of Ghana; Environmental Integration Handbook for EC Development Co-operation, (2007)

Republic of Ghana; Review of Strategic Environmental Assessment (SEA) in Ghana: Environmental Protection Agency (June 2007)

Republic of Ghana; Strategic Environmental Assessment of the Transport Sector; Environmental Protection Agency ;(June 2007)

Republic of Ghana; Food and Agriculture Sector Development Policy (FASDEP II); Ministry of Food and Agriculture (August 2007)

Republic of Ghana; Ghana Millennium Development Goals 2006 Report (2006)

Republic of Ghana; Guidelines for the Preparation of Sector Medium-Term Development Plan Under the Growth and Poverty Reduction Strategy (2006-2009); National Development Planning Commission; (November 2006)

Republic of Ghana; Guidelines for the Preparation of Sector Medium-Term Development Plan Under the Growth and Poverty Reduction Strategy 2006-2009; National Development Planning Commission (NDPC), (November, 2006)

Republic of Ghana; Strategic Environmental Assessment (SEA) of the Transport Sector; Scoping Report (June 2006)

Republic of Ghana; Implementation of the Ghana Poverty Reduction Strategy 2003-2005 (2005 Citizen's Assessment Report); National Development Planning Commission (NDPC) (March 31, 2006)

Republic of Ghana; Ghana National Transport Policy; Green Paper (February 2006)

Republic of Ghana; Growth and Poverty Reduction Strategy (GPRS II) 2006-2009; National Development Planning Commission (NDPC) (November 2005)

Republic of Ghana; Ghana Road Transport and Transit Facilitation Program (RTTFP) Preparation Mission (September 2005).

Republic of Ghana; The Impact of Road Programme on Poverty Reduction Road Sector Development Program; Review Report, Ministry of Roads and Transport (2004)

Republic of Ghana; 2003 Core Welfare Indicators Questionnaire (CWIQ) Survey; Ghana Statistical Service (2003)

Republic of Ghana; Ghana Poverty Reduction Strategy 2003-2005; An Agenda for Growth and Prosperity Volume I; Analysis and Policy Statement (February 19, 2003)

Republic of Ghana; Environmental Assessment (Amendment) Regulations (2002)

Republic of Ghana; Ghana Living Standards Survey Report of the Fourth Round (GLSS4); Ghana Statistical Service (October 2000)

Republic of Ghana; Environmental Sanitation Policy; Ministry of Local Government and Rural Development (April 1999)

Republic of Ghana; Environmental Protection Agency Act, 1994 Act 490

Royal Danish Embassy; Evaluation of the Management and Financing Arrangements for Road Maintenance; (April 2004)

Scottish Executive; Welsh Assembly Government; A Practical Guide to the Strategic Environmental Assessment the Directive; Department of Environment (Northern Ireland) (September 2005)

Strategic Environmental Assessment; An International Review with a Special Focus on Developing Countries and Countries in Transition; Final Draft (19 July 2004)

Terry Lawrence; Review of the Potential Impact of Multi-Donor Budget Support (MDBS) on the Road Sector; Phase 1 final Report (26th September 2003)

Vision Consult Limited and Optimal Consultancy Limited; Strategic Environmental Assessment for Transport Plans and Programmes Baseline Studies and Monitoring of RSDP on Poverty Reduction; Road Sector Donors' Conference (7 December2005)

Vision Consult Limited; Baseline Studies and Monitoring of Impact of Road Sector Development; Programme on Poverty Reduction, Road Sector Development Program; Ministry of Roads and Transport Ghana; Progress Report (March 2005)

Ward, Martin and Jessica Wilson; Ward-Wilson Research; Application of Strategic Environmental Assessment to Regional Land Transport Strategies; Land Transport, New Zealand Research Report (2005)

West Africa Trade Hub: Transport and Logistics on the Tema –Ouagadougou Corridor; Technical Report # 25 (April 2010)

Weaver, Alex; EIA and Sustainable Development; Key Concepts and Tools (no date)

Wenban-Smith, Alan and Coombe Denvil; The Integration of Regional Transport Strategies with Spatial Planning Policies; MVA Ltd (March 2004)

WSP International (UK) in association with Crown Agents (UK, Ghana); Institutional Study of the Transport Sector, A Single Transport Sector Ministry; The Case for Change, Ministry of Roads and Transport Ghana (0october 2005)

WSP International (UK) in association with Crown Agents (UK, Ghana); Institutional Study of the Transport Sector; Ministry of Roads and Transport Ghana; Phase 1 Part 1, Executive Briefing (May 2005)

Websites

http://unfccc.int/files/gha-data-unfccc/gha-profiles/application/pdf/gha-gha-profile.pdf

http://hdrstats.undp.org/countries/data sheets/*cty*_ ds_ *GHA*.html

www.watradehub.com

Public awareness and behavior - Assessment published (October 2004);
http://themes.eea.europa.eu/Sectors_and_activities/transport/indicators/TERM40%2C2004.10

Uptake of strategic environmental assessment in the transport sector - Assessment published (October 2004);
http://themes.eea.europa.eu/Sectors_and_activities/transport/indicators/TERM38%2C2004.10

Institutional cooperation on transport and environment - Assessment published (October 2004)
http://themes.eea.europa.eu/Sectors_and_activities/transport/indicators/TERM36%2C2004.10

Urban spatial characteristics and transport - Assessment published (October 2003)
http://themes.eea.europa.eu/Sectors_and_activities/transport/indicators/TERM14%2C2003.10

Proportion of the vehicle fleet meeting certain emission standards (by mode) - Assessment published (September 2003)
http://themes.eea.europa.eu/Sectors_and_activities/transport/indicators/TERM34%2C2003.09

Uptake of cleaner and alternative fuels - Assessment published (August 2003)
http://themes.eea.europa.eu/Sectors_and_activities/transport/indicators/TERM31%2C2003.08

Fragmentation of land and forests - Assessment published (June 2001)
http://themes.eea.europa.eu/Sectors_and_activities/transport/indicators/TERM06%2C2002

Traffic noise; exposure and annoyance - Assessment published (June 2001)
http://themes.eea.europa.eu/Sectors_and_activities/transport/indicators/noise_exposure

Accidental and illegal discharges of oil by ships at sea - Assessment published (June 2001)
http://themes.eea.europa.eu/Sectors_and_activities/transport/indicators/TERM10%2C2002

Regional access to markets - Assessment published (June 2001)
http://themes.eea.europa.eu/Sectors_and_activities/transport/indicators/TERM15%2C2001

TERM28 - Specific air pollutant emissions - Assessment published Apr 2009
http://themes.eea.europa.eu/IMS/ISpecs/ISpecification20080704103047/IAssessment1226669488885/view_content

TERM01 - Transport final energy consumption by mode - Assessment published Apr 2009

http://themes.eea.europa.eu/IMS/ISpecs/ISpecification20070821095515/IAssessment1228899766155/view_content

TERM02 - Transport emissions of greenhouse gases - Assessment published Apr 2009
http://themes.eea.europa.eu/IMS/ISpecs/ISpecification20080704102557/IAssessment1226434796626/view_content

http://www.sd-research.org.uk/wp-content/uploads/trl-event-report-final-21-01-08.pdf

Appendix G. Terms of Reference for the SEA of the ITP

TERMS OF REFERENCE FOR THE STRATEGIC ENVIRONMENTAL ASSESSMENT OF THE TRANSPORT INTEGRATION PLAN, GHANA

1. SCOPE OF THE WORK

1.1. General

1.1.1. Project description

The project will deliver an SEA of the proposed Transport Integration Plan.

The assessment should include the magnitude and significance, in qualitative and quantitative terms, of the potential impacts (direct and indirect, temporary or permanent, positive and negative, short and long-term, transboundary and cumulative) of the transport plan.

The consultant shall, at the beginning of his assignment, liaise with EPA in order to ascertain all formal EPA requirements on preparing an SEA are taken into account within the present Terms of Reference. In case of discrepancies, the consultant will highlight these in his inception report and make recommendations to overcome them.

The project will also include:

o Evaluation of the potential impacts of the proposed policy and plan against alternatives based on the magnitude of the effects, probably of occurrence, geographical extent and duration and the value of the environment affect.

o Assessment of compliance of the proposed options for the plan with national environmental legislative and institutional requirements, standards and carrying capacities; with Ghanaian and EC environmental policy; and with international agreements and treaties; global, regional and national environmental issues and objectives such as climate change and greenhouse emissions.

o Identification of potential mitigating or complementary measures to avoid, remedy or compensate the various impacts associated with the policy and plan, including institutional aspects.

o Identification of potential opportunities to enhance beneficial environmental effects of the proposed policy and plan.

o Specification of a monitoring programme to measure and evaluate the physical, social and economic variables associated with the policy and plan, and the effectiveness of mitigating measures.

o Capacity Development and Training to implement the monitoring

o Extensive consultation with TIP consultants and other stakeholders.

1.1.2. Geographical area to be covered

The project will focus on Ghana but must also take into account the ECOWAS countries that either do, or may, require transit through Ghana or compete with Ghana for this transit traffic or as a gateway to the region.

1.1.3. Target groups

A key objective of the project is to broaden stakeholder involvement in the transport sector, particularly amongst transport users. The stakeholders to be included in the project will be the transport ministries and their agencies, coordinating ministries and agencies such as the EPA, NDPC and MoFEP, ministries responsible for activities creating transport demand (eg mining and tourism), transport users, industries generating transport demand as well as the development partners. The main beneficiaries of the project will be the NDPC and the MoFEP, together with the transport ministries and their agencies; the final beneficiaries of the project will be all the stakeholders, ultimately representing the whole of Ghana society.

1.2. Specific activities

The following main activities are foreseen:

1.2.1. Background review and scoping

The EPA has undertaken an SEA of the Transport Policy and has also been commissioned to undertake an SEA of the transport sector. The first task of the consultant will be to review the EPA's progress and identify how the previous work, including the SEA of transport policy can be incorporated into the current study.

The consultant shall, at the beginning of his assignment, liaise with EPA in order to ascertain all formal EPA requirements on preparing an SEA are taken into account within the present Terms of Reference. In case of discrepancies, the consultant will highlight these in his inception report and make recommendations to overcome them.

A national transport policy has been prepared. It provides the strategic objectives for the transport sector. The policy is to be given practical effect through a National Integration Plan, which will set the planning framework. One component of this National Integration Plan is a National Transport Masterplan, which will be the subject of the SEA. The second task will therefore be to review progress on the masterplan and to set out clearly what is to be covered by the SEA and to have this agreed by the inter-ministerial steering committee overseeing the project.

1.2.2. Regulatory framework

The Consultant will review the relevant Ghana regulatory framework covering environmental matters and its conformity with "best practice" in the EU. The study will be undertaken within the Ghana regulatory structure but the Consultant will also be expected to make recommendations on any deficiencies in Ghanaian regulations and how these might be rectified.

1.2.3. Scoping and Baseline definition

Another task in the scoping is to identify the scope of the environmental assessment; areas to be addressed will include but not necessarily be limited to:

o Physical environment including climate/micro-climate, air quality, water quality and resources, noise and vibration, topography and soils, geology and hydrogeology and natural disaster risks;

o Ecology, including biodiversity, ecology and nature conservation including rare, endangered and protected ecosystems, habitats and species, species of commercial importance or with potential to become a nuisance or dangerous;

o Socio-economic conditions and human health including archaeology and cultural heritage, values and aspirations, recreational, landscape and visual aspects, employment and access to transport, infrastructure facilities (power/fuel sources, water supply, sewerage, flood control) agricultural development, mineral industry, tourism and other commerce and economic activity (formal and informal), and human health.

o Stakeholder consultation on scoping. The final task is to prepare a stakeholder consultation plan to involve both public and private stakeholders, also to be agreed with the inter-ministerial steering committee. The stakeholders must be clearly identified and cover the full range of interests associated with the transport sector and associated environmental matters.

Consultant shall conclude scoping phase with a scoping report, which will also describe the baseline definition.

A suitable baseline needs to be established for the existing situation. This must reflect what is “typical” but also how much variation can be expected around this norm. For the future, the baseline will be defined as the most likely evolution of the environment without the plan. For instance, air quality in an area may get better or worse irrespective of what is contained in the plan. The transport plan will have a short, medium and long-term assessment years (likely to be 5, 10 and 20 years) which may be appropriate for some environmental issues but not others (eg climate change), where a different time perspective may need to be considered.

1.2.4. Collection of baseline data

Baseline data must be collected to provide the basis for forecasting and monitoring of environmental effects, and to helps in the identification of environmental problems. Whilst the SEA is unlikely to require extensive new data (e.g. through surveys), it will involve some secondary data collection and analysis, mostly through stakeholders. For each of the potential environmental issues, data should be collected to answer the following questions:

o How good or bad is the current situation? Is it getting better or worse? How is the environment likely to change in accordance with or differently from historical trends (eg due to human pressure or climate change)?

o How far is the current situation from thresholds, objectives or targets?

o Are particularly sensitive or important elements of the environment affected: people, resources, species, habitats?

o Are the problems of a large or small scale, reversible or irreversible, permanent or temporary, direct or indirect?

o How difficult would it be to offset or remedy any damage?

o Have there been significant cumulative or synergistic effects over time? Are there expected to be such effects in the future?

1.2.5. Identify environmental problems

Collection of the baseline data will enable the Consultant to identify the nature and scale of the environmental problems associated with the transport system in Ghana.

1.2.6. Establish future scenarios

The Consultant must set up alternative scenarios for consideration, including different ways of:

o achieving the objectives of the transport plan;

o dealing with environmental problems (see 4.2.4);

o addressing the transport problems.

A hierarchy of alternatives should be considered from the strategic down to specific measures, including:

o need or demand (is it necessary?): Is the apparent demand for travel really necessary? Could it be addressed through demand management and/of fiscal means?

o mode or process (how should it be done?): Are there alternatives to the plan, perhaps using alternative technologies, which could be less environmentally damaging than traditional approaches (such as the construction of new infrastructure)?

o location (where should it go?): Are there alternative locations for key developments, again which might be less damaging to the environment?

o scale, timing and implementation: Are there alternatives in scale, phasing and methods of construction?

These need to be packaged into an appropriate number of scenarios for evaluation

1.2.7. Evaluate scenario options

Each alternative scenario should be evaluated against the “without plan” baseline, by:

- identifying changes expected to occur;
- describing the potential magnitude, time period, temporary or permanent etc.

The evaluation must answer, for each strategy or principal measure:

- Is it clear exactly what is proposed?
- Are there likely to be significant adverse effects?
- If so, can the effects be avoided or their severity reduced?
- If the effect is uncertain, or depends on how the plan is implemented, how can the uncertainty be reduced?
- How will the impact be felt by social group?

A systematic approach to assessment and documenting effects is essential. It is suggested that a worksheet is completed for each SEA objective/topic and a summary matrix used to identify the interrelationships between the effects associated with different SEA objectives/topics. Although a high level of documentation is involved, it must be remembered that the ultimate objective is not the documentation but to ensure that the transport plan is as environmentally sound as possible.

1.2.8. Assess potential mitigation

Where there are likely to be significant adverse environmental effects, measures should be considered to prevent, reduce or offset these effects through mitigation. Mitigation might include:

- changes to the measures (adding, deleting or refining);
- completely new alternatives;
- technical measures during implementation (eg buffer zones);
- requirements for preliminary EIAs for projects;
- proposals for changing other plans and programmes.

The Consultant must include mitigation concurrently with the evaluation of alternatives. Estimates must be made of the costs of mitigation and any associated monitoring, for inclusion in the comparison of plan alternatives.

1.2.9. Prepare recommendations

The recommendations must focus on the transport plan and the institutional capacity required for environmental monitoring of the plan. For each of the objectives in the transport plan, and the main measures detailed to achieve them, the Consultant will set out clearly:

- the level of environmental acceptability of the objective/measure as proposed;
- the alternatives considered to improve environmental acceptability;
- the type and cost of any mitigation;
- the proposed solution.

1.2.10. Prepare Environmental Report

The Environmental Report is the key written document produced from the SEA and must be clearly identifiable as the output from the SEA. As a minimum it must include:

- purpose of the SEA and integration with the transport plan;
- methodology used for the SEA;
- coverage of the Environmental Report with respect to plan components;
- plan objectives and principal means of achievement;
- environmental legislation and policies;
- links to other plans, programmes and environmental objectives;
- definition of the baseline and baseline data;
- existing and foreseeable environmental problems;
- scenario options;
- significant environmental effects of the transport plan;
- the level of environmental acceptability of the objectives/measures as proposed;
- the alternatives considered to improve environmental acceptability;
- the type and cost of any mitigation;
- the recommended way forward;.
- monitoring proposals.

1.2.11. Set up monitoring system

The objectives of the monitoring are to:

- allow significant adverse environmental effects of the plan to be dealt with early;
- enable the actual effects of the plan to be tested against those predicted in the SEA;
- provide baseline data for future plans;
- allow data to be assembled in advance of project EIAs, helping decision-making at that stage.

The Consultant must set up a plan for undertaking the monitoring, including details of institutional resource requirements and funding and training in how to deal with adverse findings from the monitoring.

1.2.12. Consultation

Stakeholder consultation is important throughout the project and the Consultant must carry out his stakeholder consultation plan (section 4.2.1). In addition he will need to undertake a process of public consultation on the Environmental Report to comply with EPA requirements.

1.3. Work plan

The project duration will be 12 months, divided into three phases:

1. Review
2. Analysis
3. Results and recommendations.

At the end of the review phase, the Consultant will be required to submit a comprehensive work plan for undertaking the project, to be agreed with the inter-ministerial steering committee. This will include a programme of workshops over the course of the project. The Consultant will also prepare a detailed logframe matrix for the project.

Reporting

The Consultant will provide the following reports:

a) Inception Report (end of month 1)

b) Scoping Report (end of month 2)

c) Interim Report (end of month 5)

d) Analysis Report (end of month 8)

e) Draft Final Report (end of month 10)

f) Final Report (end of month 12).

In terms of the individual components, the reports will include:

Inception Report

1. Background review

2. Regulatory framework

Scoping Report

3. Scoping and Baseline definition

Analysis Report

4. Baseline data

5. Environmental problems

6. Future scenarios

7. Evaluation of scenario options

8. Assessment of potential mitigation

Draft Final Report

10. Recommendations

11. Environmental Report

12. Monitoring system

13. Results of consultation

The consultant is expected to liaise with EPA in order to ascertain the format of the requested report is in line with the Ghanaian requirements.

The Interim Report will be more of a progress report, reporting separately on each of the study components.

The reports shall include a summary and general statement of the progress of the activities, any problems encountered, delays and areas of failures, and suggest remedial actions to be taken. The reports will contain detailed information on consultants working in the study/project, and charts on the levels of involvement in individual Consultant's staff in each month.

In submission of the final reports, the Consultant shall submit a copy of the reports in electronic form as:

- CD's in Word and/or Excel format with the final document
- Software and application models prepared by the project.

Report Despatch Table

Document	Total Reports	Contracting Authority	Steering Committee	Delegation of EC to Ghana
Inception report	10	2	8	2
Scoping Report	10	2	8	2
Interim report	10	2	8	2
Analysis report	10	2	8	2
Draft final report	10	2	8	2
Final report	10	2	8	2
CDs of the final report	10	2	8	2

1.4. Project management

1.4.1. Responsible body

The Ministry of Transportation will be responsible for managing the contract.

1.4.2. Management structure

A steering committee comprising representatives of the EPA, the NDPC and MoFEP, the transport ministries, the European Commission and transport users will be formed to monitor and advise on the progress of the study.

1.4.3. Facilities to be provided by the Contracting Authority and/or other parties

The Contracting Authority will provide:

- all relevant reports, documents and data, as listed in Attachment 1;
- assistance with access to relevant computer systems in use in Ghana;
- assistance in areas of customs and immigration whenever found necessary.

The data to be used in the study process will be provided by the Contracting Authority, government and non-Government institutions but not limited to these. In addition to the data provided officially, the Consultant shall collect pertinent data from different sources. It should be noted that discrepancies in the data to be collected should be clarified prior to the use/adoption. Any data used in the study and analysis, whose results shall be of the Consultant's responsibility, should be thoroughly checked as this determines the final output.