1. Classification:

1.1 The project is classified as **Category II**. Mitigation measures have been prescribed for the effects of the rehabilitation and extension of existing 3 university campuses and 5 technical colleges. The eight institutions will have their learning environments improved through the rehabilitation and expansion of learning areas mainly ICT infrastructure, workshops, laboratories and libraries for TEVET institutions and faculty buildings, laboratories and library extensions for HE institutions to expand access for about 286,290 (out of which 7,157 will be females) post-secondary school graduates within the five year duration of the project and provide up to date equipment, books and furniture. Water supply and sewage systems in some TTI's will be rehabilitated. All the structures will be Information and Communication Technology (ICT) compliant. Moreover, there will be no displacement of people by the project. The activities supported by the project will be taking place in existing institutions. The project’s environmental issues and management/mitigation measures are provided in the Environmental and Social Management Plan (ESMP) summary below.

1.2 Brief description of the project and key environmental and social components:

The operation is an investment project. It will assist in financing the implementation of activities to increase access and improve the quality and relevance of Higher Education (HE), Science and Technology (STE) and Technical, Entrepreneurship and Vocational education and Training (TEVET) delivery in Zambia. The project has four components and has a national coverage. The key environmental and social components of the project include; Improving Access to STE, Improving Quality and Relevance of STE, Enhancing Work-Based and Entrepreneurship Skills and conducting an Impact Evaluation and setting up a Monitoring and Evaluation system including project management.

1.3 The key environmental and social components are:

1.3.1 Increasing access to STE. **This component will focus on increasing access to TEVET (5 TTI's) and HE (3) and also improving the level of participation in these institutions.** It will cover the rehabilitation and expansion of learning areas mainly ICT infrastructure, workshops, and libraries for TEVET institutions and faculty buildings, laboratories and library extensions and provide equipment and furniture. Water supply and sewage systems in a number of TTI's will be rehabilitated. It will help to improve and expanding STE in three (3) public universities, Copperbelt University, Mulungushi University and the University of Zambia (UNZA) and five (5) Technical Colleges (Nkumbi Trades, Northern Technical College, Luanshya Crafts Training School, Lukashya Trades and Choma Trades).

1.3.2 Improving Quality and Relevance of HE and TEVET. **This component will provide training for 200 (80 women) under-qualified teaching staff in HE and 300 (120 women) TEVET lecturers.** Their qualification will be upgraded to Masters and Ph.D. levels to address
the challenge of low teaching quality and relevance of output of the higher education system. Educational equipment, institutional & learning materials including for ICT will be provided to enhance the quality and efficiency of HE and TEVET education to become accessible to a large school-going population group. The intervention will also provide for the review and development of tertiary and TEVET curricula in partnership with the industry to make training more demand driven and able to meet the requirement of the labour market Building capacity in public STE institutions.

1.3.3 Enhancing Work-Based and Entrepreneurship Skills. The component will support the capacity building of at least two thousand (2,000) school leavers and out-of-school youths. These will participate in TEVET work-based skills transfer in construction, agriculture, manufacturing and tourism sectors (Source: TEVETA). 800 of the beneficiaries will be females and 5% of those selected will be young people leaving with disabilities from the poorest rural communities of the 10 provinces. The component will also build the capacity of an additional two thousand (2,000 of which 800 will be women) school leavers and out-of-school youths, in innovate skills in partnership with the private sector, NGOs and other development partners through the PPP Initiative.

1.3.4 Project Management. This component will fund the operating cost of project implementation and conducting an impact evaluation. The impact evaluation using the randomized phase-in methodology will assess the achievements of the SSTEP and the impact of work-based and entrepreneurship skills transfer on job creation and reduction of unemployment among youths especially females in Zambia. The impact study is expected to generate knowledge that will inform future Bank interventions in this domain.

1.4 Major environmental and social impacts

The main environmental and social impacts anticipated include the following:

1.4.1 Positive Impacts:

The Positive environmental and social impacts will include;

- Increased capacity for the teaching of STE and policy development.
- Improved school environment through: better school facilities and equipment; improved sanitation; a more environmental friendly environment; improved access for disabled. The increased use of ICT after the project will reduce paper usage thus enhancing cleanliness of the institutions’ grounds.
- Better opportunity for female and students from under-served areas to access STE.
- Increased opportunity for female instructors to upgrading their skills.
- Social benefits for the surrounding communities through: immediate benefits through job creation during construction for skilled and unskilled labourers; permanent job creation through the increase of activity in the institutions; after the rehabilitation and expansion of learning areas mainly ICT infrastructure, workshops, laboratories and libraries for TEVET institutions and faculty buildings, laboratories and library extensions for HE.
- Anticipated increased earnings to the students who succeed in completing STE training.
- Capacity building of school staff, workers and students in sustainable development including waste management, maintenance and sanitation.

1.4.2 Potential Negative Impacts

The Potential negative environmental impacts include:

- Possible pollution from workshop and laboratory waste;
- Accidents in workshops and laboratories; and
- During site clearance, rehabilitation and construction of the facilities at almost all centres and demolition of an existing building at one centre, the main environmental impacts will be typical for most building sites, namely loss of top soil and vegetation, the generation of dust, noise emissions and vibration, disposal of construction debris and general solid waste, disturbance of the public and hazards posed by construction work and traffic, sanitation and occupational health and safety concerns for construction workers.

1.5 Enhancement and mitigation program

1.5.1 The enhancement and mitigation program to address environmental issues was discussed and agreed. The project team visited all the eight beneficiary sites. The institutions were sensitized on environmental issues. The ESMP was shared with the Zambian Environmental Management Authority (ZEMA) for its vetting, and the appraisal mission already provided to the department the concept note with information on the likely environmental impacts of the works and the mitigation measures that will be put in place which led to the classification of the project as category II.

1.5.2 The following mitigation measures represent the main outlines of the EMSP and will form an integral part of the project:

(i) Waste management

The project will generate waste from workshops, laboratories and from the increased ICT activities. Items such as obsolete workshop equipment, batteries, computers, copiers, lamps, electronic parts, printer cartridges, electronic parts are hazardous and will be disposed of in line with National Environmental Act of 2011. Lab solvents and other chemicals, waste oil, and antifreeze are hazardous waste that will be disposed of in line with National Environmental Act of 2011. The project provides capacity building in waste management to identify each waste type in order to be able to store, handle, dispose of and monitor it in consultation with the municipalities and ZEMA. The project will rehabilitate and upgrade sewage systems at required institutions.

(ii) Security in workshops and laboratories

The rehabilitation works for workshops and laboratories will include: emergency response facilities/equipment in case of accidents; a fire evacuation plan with fire-fighting equipment and
emergency exits; appropriate ventilation systems; pre-treatment facilities for wastewater and sewerage before discharge amongst others.

(iii) Construction activities:
   a) During construction, land cut and landfill are to be reduced to minimum. In addition, steep slopes will be grassed or lined; top soil will be preserved and affected areas re-vegetated; movement of construction trucks and equipment will be limited; trucks carrying sand, cement and soil will be covered; use of sand and crushed stones will be regulated; and the construction site will be boarded.

   b) A number of institutions are located in urbanised areas and the proposed buildings will fit on to the existing grounds. Nkumbi, and Lukashya (TTI's) are situated in agricultural areas while Northern Technical College is located in a residential area but is acquiring land for the new library building. Safety of the workers and communities will be guaranteed through: providing Personal Protective Equipment (PPE) to the workforce; sensitizing the local communities about construction hazards and possible disruptions of traffic as well as utility services through signage and notices; and making arrangements for the workforce to access sanitation facilities. Diligence on the part of the contractors and proper supervision during construction are critical in mitigating adverse impacts. The contractors will comply with the relevant legislation stipulating occupational health and safety conditions particularly Cap 441, Factories Act on Construction Healthy and Safety as required by the National Council for Construction (NCC). Contractors will submit a Construction Site Safety Plan and employ a Safety Officer to ensure worker’s safety on site. MOESTEE will assign an officer to work with Zambia Environmental Management Authority (ZEMA) to oversee the implementation of EMSP.

(v) Other measures to improve the learning environment

   a) The project will improve sanitation of the learning environment by renovating outdated water supply and sewerage systems. Mulungushi University will have individual/isolated sewage disposal systems to the single main sewage treatment ponds. New facilities will be accessible for disabled including the construction of wheel chair ramps where applicable. Site layout plans will include: landscaping, roads and car parks; waste collection and storage areas; storm water drainage; stockpiling of topsoil; rehabilitation of worked areas; landscaping and replanting; sound proofed generator shed.

   b) At completion of the project, most communication will be via the net and due to the connectivity within each and among all the institutions; physical movement to these centers by staff and students will be minimized resulting in reduced emissions, further reducing the negative impacts on climate change.

1.6 Climate change
1.6.1 Outdated workshop and laboratory equipment will be replaced with modern equipment that has less impact in the environment. Disposal of outdated equipment will be done in accordance with the ZEMA National Environmental Policy. The risk of flooding and soil erosion due to excessive heavy rainfall will be mitigated through the provision of storm water drains of adequate capacity and for erosion through landscaping.

1.6.2 The project promotes sustainable energy and sustainable building technologies. ICT accumulates extra heat and uses electricity. The use of natural cooling techniques and renewable energy has been discussed as an alternative for using air-conditioning units. Hiring design consultants and engineers knowledgeable in sustainable technologies is recommended. Local firms are encouraged to team up with renowned international firms in this field. The Ministry of Transport, Works and Supply should be consulted to advice on local solutions. Zambia has a moderate sub-tropical climate and most areas are generally hot in summer. Sustainable building technologies to be used are: the use of natural light and ventilation, solar and wind energy. Education institutions have an exemplary function and should sensitize and enhance the students’ knowledge on sustainable development by constructing “green” buildings.

1.6.3 The cost of buildings using sustainable building technologies is higher than those of conventionally designed buildings. Recurrent cost will however be drastically reduced depending on the measures taken and the savings generated in energy, water, maintenance, operations, and health costs offer quick investment returns. Sustainable development includes efficient use of financial resources. The institutions are encouraged to perform a feasibility study at building design stage to optimize the use of the existing facilities and to explore localized technical solutions. Standardization of a concept for the ICT center and/or library is recommended.

1.6.4 The revised curriculum for STE will incorporated climate change aspects like energy conservation, the design of buildings that are energy efficient, use of building materials that has less impact on climate change, water conservation and renewable energy education for all TEVET trades.

1.7 Monitoring program and complementary initiatives

During the implementation period, monthly site meetings will be held. These meetings will monitor the implementation of the environmental mitigation plans. The management of the institutions will lead the environmental monitoring activities and will provide regular reporting to project management and the EPIU. In addition, Bank supervision missions will follow up on the implementation of the ESMP. The Civil Society Education Coalition was consulted during the appraisal mission and committed to assist in the monitoring of the project’s activities including environmental mitigation issued from their angle.

1.8 Institutional arrangements and capacity building requirements

The MoESVTEE will supervise the implementation of the ESMP. As the executing agency, the overall responsibility for the implementation of the project ESMP will rest with the MoESVTEE. In addition, environmental education will be provided by the institutions as part of the regular curriculum.
1.9 Public consultations and disclosure requirements

The project is designed to operate in a participatory manner. All activities will be implemented in close collaboration with the beneficiary institution and the decentralized local government structures to increase their sense of ownership of the improved facilities to be introduced under the project.

1.10 Estimated costs: Project environmental components

The main environmental improvement falls under (i) sensitization on environmental issues and capacity building and (ii) the improvement of access to STE with a budget of UA 1,551,993.33 that includes the following:

ZM STE - Cost of Mitigating Measures in UA

A Mitigating measures costed separately
Capacity building in sustainable development (TA, including waste management, maintenance and sanitation) 50,000
SUBTOTAL A 50,000

B Mitigating measures that are included in other activities
Sanitation works 851,993.33
Site works (roads and car parks, landscaping, waste depots, incinerators) 590,000.00
Security in workshops and laboratories 50,000
Safety of construction workers 10,000
SUBTOTAL B 1,501,1993.33
TOTAL 1,551,993.33

1.11 Implementation schedule and reporting

The environmental management and monitoring will be implemented following the same project schedule as all activities were mainstreamed in the project design. Achievements and problems will be reported in the project quarterly progress reports and will be timely addressed by the project management and the Bank.

1.12 Social Analysis

1.12.1 The project will have a critical impact for the roadmap towards implementation of the social pillar in Zambia’s SNDP and MTEF. Investments in higher education and skills development will derive more economic and social benefits by enabling Zambia to raise productivity in SNDP key production sectors and to compete in the global market. The enhanced skills development in partnership with the Mining Sector through collaboration with ZCCM-IH will build the required qualified local skills for the mining sector thereby reducing dependence on imported skills. The impact will be more economic growth and reduction in the cost of doing business in the Country. In addition, the enhanced university education and skills development will contribute to a knowledge based economy through skilled manpower. The collaborative
strategy that the project will adopt in its implementation will create a platform for increased collaboration between the target participating universities, TEVET institutions and workplace to bridge the gap between training and the world of work. The development of good quality and relevant skills training through the S&T intervention will address vicious circle of low education and skills that leads to low productivity and poverty of most countries in sub-Saharan Africa including Zambia.

1.12.2 The policy of equitable access to higher education institutions will be reviewed under Component I and III to evaluate its desired impact to female enrolment in TEVET, Entrepreneurship Training and higher education and appropriate recommendation made for implementation under the project. The project will also contribute to the government’s efforts to develop the country’s human resource base. The project, through its support for improvements in the capacity of the university and technical education institutions and especially in trade related skills such as engineering, construction, mining, electrical and motor mechanic as well as carpentry will facilitate the building of both high and middle level skills in the country. These skills are needed for promoting sustained economic growth and social development. The project will specifically open up opportunities for the poorer sections of the Zambia population by increasing the spaces available for transiting to TEVET and HE as well as to the productive sector through the strong collaboration with industries in the economic growth sector and the work based entrepreneurship training. Consequently, at the household level, the increased individual productivity, resulting from the improved quality of education, through regular training, night and make-up courses in the technical schools can lead to increased earnings and improved quality of life especially for the females.

1.13 Gender Analysis

1.13.1 The project seeks to increase female participation in skills training especially in Science & Technology, Entrepreneurship and core technical related courses that have low female enrolment. This will be done in part through awarding of scholarships for an estimated 800 females to receive work-based and entrepreneurship training to enhance inclusive participation in both the informal and formal sectors of the economy. The total budget assigned to this component is UA4.94 million. The project resources will be used to strengthen the capacity of the staff of Gender in Development Division (GIDD) to effectively implement Zambian’s National Gender Policy (2000) currently under review. Component 1 is proposed to increase access of females in HE & TEVET from current 30% & 43%; of the total enrolment to an estimated 55% through the activity of strengthening the capacity of Ministry of Gender to promote gender responsiveness in service delivery.

1.13.2 This intervention also aims to reduce the unemployment rate that exist among Zambian youths especially females. The rates were estimated at 34% (15-19yr) and 24% (20-24 yrs.) of total population in 2008 (Labour Force Survey 2008). It will also positively contribute to effective implementation of the National Gender Policy through increasing human and budgetary resources. The project resources will also be used to strengthen the capacity of staff of Ministry of Gender to achieve gender responsive development in all the Sectors. The incorporation of Entrepreneurship Training into the work-based learner approach is flexible and will give an opportunity for more female participation in S&T and encourage them to be both self-employed and creating employment opportunities for others. It will also address the issue of
time constraint and encourage those who dropped out of the school system due to early marriage or pregnancy to acquire training.