SUSTAINABILITY ANALYSIS, REPORT AND STATEMENT

G. JORDAAN AND Z. UWAH

Abstract

The vision of CUT is to transform itself into a sustainable university, by incorporating sustainable development in its teaching, research and learning environment, and by maximizing and mainstreaming environmental, economic and social sustainability in all its operations and educational activities. For this reason it launched a sustainable development (SD) project in February 2011. This process is being managed by the Office of Technology and Innovation and executed according to a project plan, which is continually rolled-out as progress is being made with the project. This article is a brief summary of progress that has been made during the first year of implementation of the plan.

Keywords: Sustainable development, responsible university, responsive, sustainability indicators.

1.   CUT SUSTAINABILITY STRATEGY

The Central University of Technology, Free State (CUT) has decided to implement sustainable development as central to its strategy and everyday operations. This is not something new, but the consequence of the university's responsibility for the region, the country and the world, as well as our Vision 2020, which is to make CUT an "isle of innovation" that will help to shape the future.

It has been decided to implement sustainability in the university and to convert CUT to a university of sustainable development within the next five years. This is not to be a marketing label, but will change the way of operation, thinking and acting inside and outside the campus.

Within its fields of activity, the following four major areas have been identified in which CUT will be active in fostering socio-economic development and the protection of resources and the environment:

- Analysing and optimisation of operations and all activities that may have a direct impact on the economic and social life on campus and on the consumption of energy and resources, as well as the environmental quality of the campus.
- Optimisation of the direct impact on the community and region, local schools and regional education by the direct interaction of staff and students and by organisational support for local and regional organisations at any level with respect to sustainable development.

- Education for sustainable development is considered to be the most important potential impact of a university in this regard. Methods and contents of teaching and learning will be reconsidered and where necessary adapted to enable and encourage students/graduates to act in support of sustainable development.
- There will be engagement in research to support sustainable development. Research activities will be enhanced in fields that are relevant to the impact on a livable future by the university, its students and the community it serves. The knowledge created at CUT will support sustainability by means of publications, knowledge transfer, incubation and projects.

2. SUSTAINABILITY MANAGEMENT APPROACH

2.1 The responsible University

The natural environment influences all living and non-living components thereof. Thus it impacts human life, social systems, business systems, and depending on the way we interact with the environment, even the air that we breathe and the food that we eat.

South Africa, coming from a non-sustainable dispensation, needs to adapt its ways if it is to ensure a sustainable future for future generations. The responsibility that CUT has with respect to this is enshrined in the South African Constitution which pledges an environment which is not harmful to health or wellbeing, that is protected for use by current and future generations. Hence there are clear business and legal reasons for CUT to take measures to limit its environmental impact and the CUT Board is responsible for ensuring that the university develops an overarching sustainability policy and strategy that articulates the standards it will strive to achieve in relation to its environmental impact.

CUT is a responsible university by being responsive to the needs of all stakeholders, both within and outside the university. It strives to align all its operations, including its educational activities, with the principles of sustainable development by being responsive to the needs of all stakeholders, now and in the future.

Students and graduates of CUT function on campus, within their different communities, as well as in the economic and the scientific world. Hence, their inputs are experienced at all these levels. This relationship of CUT and its graduates with the environment is shown in figure 1 below.
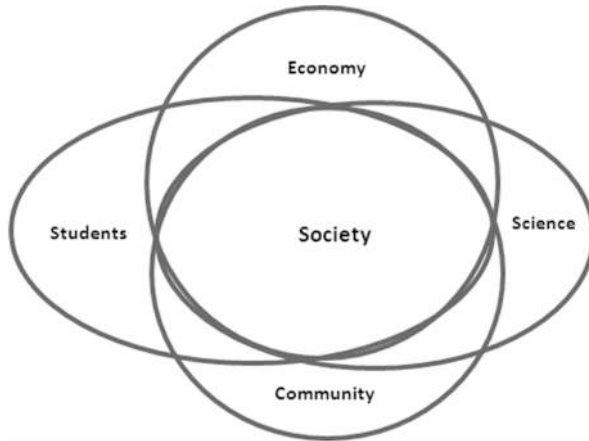
Figure 1: CUT as a responsible university

The effect of CUT as an educational entity, and its educational involvement in sustainable development, takes place by means of the dissemination of knowledge, the contents of its curricula, community engagement and applicable research. This is shown diagrammatically in figure 2 below and is aimed at ensuring excellence in sustainable development both on and off campus, whilst the importance and underlying principles thereof are inculcated in all its students through the academic process.

Figure 2: The relationship between educational activities at CUT and excellence in sustainable development

2.2   Development and Implementation of a Sustainability Policy

CUT developed an environmental policy. This should be institutionalized by integrating its standards by means of the SD project, forming part of the business performance and risk management strategies of CUT. The management programme, with direct accountabilities with regard to resource efficiency, waste management and pollution, should ensure that internal stakeholders are aware of the university's impacts and responsibilities.

At the end of the first year of the SD project CUT conducted a baseline assessment of its educational, societal and environmental impacts to aid in the identification of relevant sustainability risks and opportunities. However, environmental risks should not be considered in isolation, but should be integrated with financial and social risks. This study informed this article.

The following are typical issues to be considered with respect to sustainable development:

* Assessment of the financial, infrastructural and staffing situation at the University with respect to the continued successful functioning of CUT in meeting its statutory obligations.
* A possible reduction in the amount of electrical energy and fossil fuels used.
* The local generation and use of alternative, clean energy.
* Waste reduction and optimal use of recycling.
* The comprehensive integration of sustainable development into the curricula of all academic programmes taught at CUT.
* Doing business with likeminded companies.
* Striving towards the functional integration of the utilization of the environment to achieving sustainability.
* Development of, and contribution towards technologies that reduce adverse environmental impacts.

An appropriate environmental management system should be developed over time and implemented effectively. This should include the following aspects:

* Provision of the proper assessment of the university's environmental impact, with particular reference to its impact on waste and pollution, effectiveness of resource utilization and climate change.
* The functional integration of the management of environmental issues in all aspects of its operations. The university's environmental management systems should be relevant, functional and effective as well as integrated into all aspects of the university's activities.

- An appropriate format of reporting should be compiled and availed to Council and other internal structures, as well as to external stakeholders. Over time, reporting should include an outline of the environmental management system and independent verification.

This should be complemented with a sound financial and operations sustainability programme and monitoring mechanism. However, this would only become possible once the required monitoring system for the assessment of CUT's carbon footprint has been developed, installed and implemented successfully.

2.3 Initial SD Project Plan

Table 1: SD Project Plan

Activity	Date
Project defined	November 2010
Kick-off meeting and launch of project team	February 2011
Analysis of present situation	March 2011
Compilation of Project plan	March 2011
Definition of sustainability policy	April 2011
Sustainability programme compiled for 2011	April 2011
Sustainability programme compiled for 2012	December 2011
Approval of sustainability framework	March 2012
Preliminary sustainability report for 2011	March 2012
Sustainability report 2011 published (external)	May 2012
Preliminary Sustainability report 2013	February 2013
Sustainability report 2013 published	February 2014
University for Sustainable Development	January 2014

2.4 SD Portfolio

The role of CUT as a responsible university is to positively affect the environment in terms of sustainable development in four concentric circles of influence as represented in the following schematic diagram:

Figure 3: Diagrammatic representation of CUT's role in sustainable development

The following table represents a more comprehensive representation of the manner in which the SD portfolio is being implemented.

Table 2: The SD portfolio of CUT

	Overall Holostic Intergenerational	Environment Resources	Economics Management	Social Political Intrageneration al
Site Level **Campus**	**Sustainability@CUT**	**Green Campus**	Economic Sustainability	**Blue Campus**
Local/ Regional Community **Development**	**Cooperation programmes**	**Climate protection programme**	**Entreprenurship Sustainable Economy**	**Community Engagement**
Regional/ National **Education** Cooperation	**ESD in curricula**	**Energy Engineering for Sustainability**	**Entrepreneurship**	**ESD in teachers education**
National/ Global **Research** Cooperation	**Cooperation programmes** SD in Research	**Sustainable Energy Water**	Corporate Social Responsibility	Research in socio-economic aspects of sustainability

2.5   Sustainable development indicators

Core performance indicators have been derived from the inputs of institutional sub-teams. These have been populated inconclusively in this report and will be much more complete with the gradual roll-out of the project.

Table 3: Sustainable development indicators

Description	Responsible Unit	Value
Organisation of SD activities:		
Staff and resources devoted to SD	Technology and Innovation	1 Dedicated member of staff and 2 part time
Number of people actively involved in the sustainability project	All institutional units	Selected representatives of all units are involved
Operations:		
Electric energy consumption per student	Operations	Since the electrical energy usage cannot be measured individually, this characteristic will become properly quantifiable only once a university-wide Building Management System (BMS) has been implemented
Water consumption per student	Operations	Since the water usage cannot be ascribed to individual activities or buildings, this characteristic will become properly quantifiable only once a university-wide water management system is in place
Access for all (barrier free campus)	Operations	Five buildings require lifts to provide access to such
SD culture and awareness amongst staff and students	Student Affairs	60% of respondents in a survey on student perceptions on SD indicated that they are familiar with the concept.
Cleanliness of the campus (survey result)	Operations	This aspect was not formally assessed

Direct impact:		
Number of SD projects	All units	15 projects including that 40% of all CUT computer servers are virtualised
Number of community engagement projects with a substantial element of SD	Community Engagement	Three projects
Education for SD:		
Relevant Course subjects and topics	Faculties, Academic Development	22% of respondents in a staff survey indicated that a substantial part of CUT's teaching includes topics related to SD. 10 qualifications include a substantial element of SD
WIL done in the community on SD issues	Faculties	None yet
SD done as an element of Service Learning	Faculties	Two programmes formally include elements of SD as part of service learning
CUT portrayed to feeder schools as an SD University	Student Affairs	To be included as a standard element of marketing
Research and knowledge transfer:		
Number of research projects linked to sustainability that were completed	Faculties	One
Technology transfer activities	Technology and Innovation	One project completed
Communication:		
Number of press releases on sustainability	Marketing with the help of SD Office	One
Quality of SD information on CUT website	Marketing	Only one article on SD is displayed on CUT website
Number of SD posters distributed	SD Office	None

It is imperative that monitoring methods and management control systems are implemented to determine the effectiveness of steps taken in support of SD in general and the project in particular. The effectiveness of such can only be ascertained through the definition and use of a comprehensive set of SD indicators covering all aspects of the Universities operations.

3.   SUSTAINABLE DEVELOPMENT REPORT

3.1   Sustainable Development Project Team

A Sustainable Development Project Team with representation from all operational units has been established to manage the implementation of the project with the support of the Sustainable Development Office. Each unit established a separate sub-team to drive the process in its area of responsibility.

3.2   General Management and Monitoring of Project Execution

The Sustainable Development Project is managed by the Technology and Innovation Office with external assistance in the form of an overall project leader, Prof. Ulrich Holzbaur from Aalen University of Applied Science. During the period of reporting the SD Office developed the following documents to be used with regard to the SD Project:

Table 4: SD documents developed and distributed.

Description	Status
An information booklet on the Sustainable Development Project.	Distributed amongst all operational units.
Sustainable Development Policy. This initial document has since been replaced by a second generation document that was approved by the relevant institutional structures.	An official policy has been approved.
Annual SD Report.	Report completed, but never officially considered for possible approval.
Application form for the possible approval of funding of SD projects.	Completed and distributed on campus.
Assessment criteria for determining a benchmark for SD at CUT.	To be comprehensively populated as benchmark is developed after the implementation of suitable monitoring tachnology..
Determination of the awareness of staff and students of SD and its importance.	Two surveys were done and its results processed.

At its spring meeting, the German National Committee of UNESCO has awarded the title of a "Project of the United Nations Decade for Education for Sustainable Development" for 2011/12 to the project "Sustainability@CUT".

Herewith UNESCO acknowledged the joint effort of Aalen University of Applied Sciences in Germany and Central University of Technology, Free State, to implement a system for sustainable development at CUT. This award was the result of implementing sustainable development as a central characteristic of the educational strategy and everyday operations of CUT. The long-term aim of the project is to transform CUT to a University of Sustainable Development, supporting sustainable development internally, locally and globally.

Discussions with all important stakeholders within the university have led to an initial institutional project plan and the different organisational units are now refining their implementation concepts. Four major fields of activity have been identified to give a common structure to the efforts of organisational units and faculties to foster socio-economic development and to contribute to the protection of resources and environment, viz.:

1.   To analyse and optimise operations and all activities that may have a direct impact on the economic and social life on campus and on the consumption of energy and resources, as well as the environmental quality of the campus. This will also involve students' activities.
2.   To optimise the direct impact on the community and region, local schools and regional education by immediate interaction of staff and students with such in the implementation of sustainable development activities. Organisational support is to be given in this regard to local and regional organisations at any level.
3.   To aggressively introduce Education for Sustainable Development into the curricula. To rethink and revise methods and contents of teaching and learning to enable and encourage the students to act in support of sustainable development.
4.   To engage in research in support of sustainable development. To support sustainability by means of publications, knowledge transfer, incubation and projects.

In 2002 the United Nations (UN) proclaimed the years 2005 to 2014 the World Decade of Education for Sustainable Development. International initiatives in this regard are aimed at helping to embed the principles of sustainable development in education worldwide. UNESCO has been appointed the international Sustainable Development lead agency for the Decade.

3.3   Mission of Sustainability

Whilst there are various definitions of sustainable development being used by students of sustainability – most of which are very similar in essence - the following is considered as representative of CUT's understanding of this field of study and activity:

Sustainable development meets the needs of the present generation without compromising the ability of future generations to meet their own needs. It offers a vision of progress that integrates immediate and longer-term objectives, local and global action, and regards social, economic and environmental conservation and protection issues as inseparable and interdependent components of human progress.

3.4   Marketing and Communications

Sustainability Indicators

The following sustainability indicators have a direct bearing on this operational unit:
•   Number of press releases on sustainability
•   Quality of SD information on CUT website

Programmes and Actions

•   One newspaper article on renewable energy was published during the period of reporting.
•   An introductory article on the launch of the Sustainable Development Project can be accessed on the CUT website.

There is a serious need to upgrade the CUT website so as to include more evidence of SD as a central theme of the university whilst it may be beneficial to compile a funding proposal to partially finance the long-term roll-out of the project. In addition a series of posters on the topic is to be developed by arts students and displayed on notice boards around campus.

3.5   Operations, IT and Logistics

Sustainability Indicators

The following sustainability indicators have a direct bearing on this operational unit:

•   Electric energy consumption per student
•   Water consumption per student
•   Access for all (barrier free campus)

- Cleanliness of the campus
- Number of SD projects executed by unit

Programmes and actions

Use of Electrical Energy on Campus

A walk-through survey on the usage of electrical energy on campus that was done in 2010 did not provide adequate information to determine which strategies would provide the highest cost saving impact. Hence the appointment of consultants to do a full audit of electricity usage and advising on savings measures and the implementation thereof took place. Their inputs will inform possible implementaton of measures that can be taken to decrease the use of electrical energy by CUT to heat water (particularly in residences). Such measures may include implementation of building management systems and the use of alternative energy, heat pumps, power factor correction, etc.

Recycling

Good progress has been made in the placement of recycle bins on campus. This practice, linked with an awareness campaign, commenced early in 2012. The target is to eventually cover 30% of both campuses with recycle bins.

Information and Communication Technology (ICT)

Server Virtualisation:
During 2011 ICT have decommissioned 12 physical servers and converted its function to a virtual environment. This move cut down on power and cooling requirements. Currently 40% of CUT servers are virtualized.

Computer Management:
A tender was issued for a system to automate computer management on campus. It was approved in January 2012 and will allow for the central determination of policies regarding power saving on computers when it is not in use – such as PCs going automatically into sleep mode if not used for an extended period of time.

General

There is currently no formal SD awareness program within the Facilities Unit, but all planning take into consideration sustainability, both in terms of financial and environmental aspects.

A major challenge faced is the inability to measure power usage against targets since buildings do not have separate meters. With the BMS system (described above) it is also being planned that buildings will have separate meters to measure building utilisation. It is also planned that airconditioners, power outlets and lights be separated to allow for separate management.

The possible replacement of geysors, including the fitting of special shower heads to ensure the use of less water, by solar powered heating are being considered. This will include the heating of water on the sport fields. These activities are planned with the assistance of Eskom.

3.6   Faculty of Engineering and Information Technology

Sustainability Indicators

The following sustainability indicators have a direct bearing on this operational unit:

- Relevant Course subjects and topics
- Number of students registered for subjects with a substantial SD component
- WIL done in the community on SD issues
- SD done as an element of Service Learning
- Number of community engagement projects with a substantial element of SD
- Number of research projects linked to sustainability that were completed

The following projects were executed in the different schools of the Faculty:
School for Mechanical Engineering & Applied Mathematics

Commercial Solar Greenhouse Project – use solar energy to heat greenhouse in winter and blackout techniques to reduce solar energy in summer. The school for Electrical Engineering and Computer Systems collaborates in this project.

School for Electrical Engineering & Computer Systems

The following projects were done:
- Development of a sun follower system for optimal efficiency of solar energy collectors.
- A project on solar and wind energy.

A new academic programme is under development and has been approved for phasing-in, viz.

- Higher Certificate in Renewable Energy Technologies

School for Civil Engineering & Built Environment

During the 2011 academic year the School initiated the following research clusters with sustainable development issues in mind:

- Sustainable Water Resources and Environment: Currently there are on-going research projects and two postgraduate students are working in this area.
- Sustainable Highways and Transportation Engineering: Currently there are two postgraduate students working in this area.
- Sustainable Urban Planning and Intergarated Infrastructure Development: Currently there is one postgraduate student working in this area.

General

The sustainable development project, and the effective integration of its principles into all engineering programmes, is an opportunity to elucidate the fact that engineering can have a nett positive effect on the socio-economic situation, without neccessarily causing a substantial deterioration of the evironment.

3.7 Faculty of Management Sciences

Sustainability Indicators

The following sustainability indicators have a direct bearing on this operational unit:

- Relevant Course subjects and topics.
- Number of students registered for subjects with a substantial SD component.
- WIL done in the community on SD issues.
- SD done as an element of Service Learning.
- Number of community engagement projects with a substantial element of SD.
- Number of research projects linked to sustainability that were completed.

School of Government Management

- One Unit in the second semester year module Public Service Delivery I PSD12AB focuses on Sustainable Development.
- A Clean CUT Campus campaign was launched. A group of students compiled an action plan for the implementation of the Clean CUT Campus Campaign.

Tourism Management

*   Four Tourism Management subjects include components of sustainable development.
*   One MTech project in sustainable development is being done.

Hospitality Management

*   One subject of this course has got a substantial SD contents.

Tourism, Hospitality & Sport Projects

Table 5: SD projects executed by Tourism, Hospitality and Sport.

Title of Activity	Description	Status
Recycling of waste paper	Waste paper donated to community organisations	Ongoing
Used Arch file donation	BDC Travel: recycled to students	Oct 2011
Strongbow	Capacity building project in eco-tourism and sustainability	2011-2014
Strongbow workshop	Industry experts from all over SA addressed delegates	Aug 2011
Conference attendance:	Three staff members attended the Sustainable Tourism Summit	July 2011

School of Entrepreneurship, Business Development and Accounting

*   The SD infusion in the current programs is low and to a certain extent difficult to separate from the normal subject specific contents.
*   The program in Project Management is largely based on SD principles.
*   The program Internal Auditing, with special reference to the KING 3 reporting system on corporate governance, is largely aligned with the over arching SD characteristics.

3.8   Faculty of Health and Environmental Sciences

Sustainability Indicators

The following sustainability indicators have a direct bearing on this operational unit:

*   Relevant Course subjects and topics.
*   Number of students registered for subjects with a substantial SD component.
*   WIL done in the community on SD issues.
*   SD done as an element of Service Learning.

- Number of community engagement projects with a substantial element of SD.
- Number of research projects linked to sustainability that were completed.

3.9   Faculty of Humanities

Sustainability Indicators

The following sustainability indicators have a direct bearing on this operational unit:

- Relevant Course subjects and topics
- Number of students registered for subjects with a substantial SD component
- WIL done in the community on SD issues
- SD done as an element of Service Learning
- Number of community engagement projects with a substantial element of SD
- Number of research projects linked to sustainability that were completed

Table 6: SD actvities executed by the Faculty of Humanities.

Academic Unit	Design Technology and Visual Art
Project name:	Saving Planet Earth from an Art and Design student's perspective
Description of project:	The students formed groups of no more than 4 students per group and created their own version of a super hero to save planet earth. This super hero's design must have strong South African and CUT roots. This part of the project will contribute to their subject Two Dimensional Design. The final stage of this project was the 3D building of the "super hero" consisting of used material in group format to teach the students how to work in a group which is a graduate attribute of this university. The final project is displayed at the School of Design Technology and Visual Art.

Results achieved

The following photograph shows the so-called "aqua trash super hero" constructed by arts students from recyclable material collected from campus. Its purpose is to remind everybody that passes to implement the three R's in their everyday life, viz. Re-use, reduce and recycle.

Academic Unit	National Diploma: Fine Art
Project name:	Humanity's misappropriation of the environment
Description of project:	Students were tasked to expose the abuse of the world by humans. It was to consist of at least three paintings. This series will be of such a nature that it will reflect a progression that alludes to man's gradual destruction of the environment.
Details of Sustainable Development elements of the project	The project brief regards social, economic and environmental conservation and protection issues as inseparable and interdependent components of human progress and is therefore in line with the definition of sustainable development.

Teachers Education

General

Emphasis was placed on informing staff of this unit about the importance of educating their students in the principles of sustainable development since it will be incumbent on these graduates to establish an awareness of SD amongst their learners once they are teachers.

3.10 Curriculum Development

Sustainability Indicators

The following sustainability indicators have a direct bearing on this operation unit:

- Number of staff actively involved in the sustainability project.
- Number of research projects linked to sustainability that were completed.
- Relevant Course subjects and topics introduced into curricula.
- The presence of WIL done on SD issues.
- The presence of SD in Service Learning.

Programmes and actions

This unit should monitor the integration of SD principles in all curricula. It has also been decided that SD should form part of the core curricula of all qualifications which are to be implemented in future. This should preferably include at least one programme offering with a strong element of sustainable development, normally supplemented by additional subject-specific course content. To ensure that this issue receives the neccessary attention some SD content must be specified in the curricula and formally assessed.

The possibility of defining a certain awareness of sustainability by CUT students as an additional graduate attribute is being considered.

3.11 Students Affairs

Sustainability Indicators

The following sustainability indicators have a direct bearing on this operation unit

- CUT portrayed to feeder schools as an SD University?
- SD culture and awareness amongst students.
- Cleanliness of the campus.
- Number of SD projects done by students.
- Number of community engagement projects with a substantial element of SD done by students.

This operational unit was involved as follows in the SD projects:

Table 7: SD involvement by Student Services.

Project / Activity	Project/activity objective	Target / Partners	Indicator /Outcome
Community service sustainability meeting	Deepening SD culture and awareness amongst students; Encouraging them to support projects relating to SD.	All student associations.	Close to 30 organisations out of 55 attended; This is an on-going developmental matter and associations will be funded based on relevance and responsiveness of the projects to SD.
Induction meeting on SD.	To introduce the SD office with the view of raising awareness on issues of Sustainable Development; SRC was encouraged to adopt projects that are relevant to the latter in their year plan-2012	SRC-BFN Campus	14 SRC members including one outgoing President attended; SRC understood and contextualized principles for the insertion of SD programme in the year plan-2012.
Community work focusing on environment: Cleaning campaign	To instill a sense and culture of community service and involve student leadership in community work initiatives.	Bochabela Location next to Pelonomi Hospital 28 students from different associations and all officials of the Governance and Student Life Unit volunteered; (*coverage in local newspaper: Free State Bulletin November 2011 publication*)	Students cleaned a portion of the stream running between the Hospital and the residential area; Residents residing opposite to the stream were encouraged to keep the area clean.

			Standing relations established with the Municipality: Department of Solid Waste Management.
Collaborating with SD on engaging the municipality	Building sound relations with Municipality on ecological sustainability projects.	SD Office partnered with Municipality	CUT is due to receive coded bins for recycling purpose from the Municipality.
Committee for Clean Free State Campaign	To create public awareness in fighting littering; Promotion of cleaning the vicinity (home & workplace); To practice recycling; caring for natural environment and assisting in reducing carbon footprint.	Stakeholders (hawkers, business, education institutes, students, NGO's).	Manager: Governance and Student Life Unit was elected as a member of a steering committee to deal with operational aspects.

4.   PARTNERSHIPS

CUT actively pursues intellectual interaction with other universities both in Africa and elsewhere. This forms the foundation of inter-institutional co-operation in research and other academic matters – such as the Sustainable Development Project and curriculation of new qualifications in alternative energy.

Moderate progress has been made in establishing external partnerships with non-academic entities with respect to the SD Project. Examples of this are discussions that have been held with Eskom on possible assistance in implementation of measures to reduce CUT's use of electrical energy, as well as Manguang municipality which indicated a preparedness to furnish CUT with a number of recycling rubbish bins and possibly solar panels for supplementary heating of geysors on campus.

5.   SUMMARY

Better synchronisation is required between the sustainable development initiatives that are taken by the different organizational units in order to reap the benefits of synergy, as well as to avoid unnecessary duplication of effort and expense. An effective, uniform, campus-wide marketing image must be established to optimise buy-in by the CUT community as a whole. This will be enhanced if sustainable development is introduced as a CUT philosophy to all new staff during their induction programmes.

February 2011 was the starting date of the Sustainable Development Project of CUT. Much has been accomplished during this time, but much more still needs to be done to convert CUT into a truly responsible university with sufficient educational SD input for its graduates. It is expected that the sustainability indicators will be improved upon and better quantified in future.

- The general response to the launch of the SD project was very positive.
- One of the primary expected outcomes of the SD project is a fundamental change in the CUT curricula,. Hence its timing is critical and any delay in the roll-out of this project will largely nullify its purpose.
- Vision 2020 describes the long-term aims of CUT, stipulating its transformation into an institution focussing on social and technological innovations in the socio-economic nature of our region and country. This also implies innovation aimed at economic and environmental sustainability of the community. Hence, it is expected that, considering the importance of Vision 2020 to the future of the university and as innovation receives increasing attention, it will be reported on more comprehensively in future – neccessitating a substantial revision of the sustainable development indicators.
- A preliminary set of SD evaluation criteria has been defined. This now needs to be assessed comprehensively to establish a benchmark against which to determine progress with the project. This would only be possible with an increased awareness by operational units of the importance of the SD project to CUT and their active involvement in its implementation. In addition specific target dates should be set for attaining the primary elements of the criteria.
- There is a challenge of introducing an integrated system of key quantified targets of CUT's effect in the areas of the ecology, ecomony and social spheres. The present unavailability of such unfortunately limits the scope of reporting of this report.
- Official Sustainable Development documents should increasingly be used as source documents for the development of an environmental management system. In this manner aims can be formulated for the university regarding a possible reduction in the use of energy and other resources, the decline of emissions and the avoidance of waste, as well as   documenting the converting, storage and use of polluting

substances – including the specifications of required disposal. This would neccessitate the centralised planning and implementation of a series of projects at addressing these issues.

- The project team has to ensure increased efforts at marketing SD principals across campus. The university's sustainable development efforts should be promoted such that it is perceived by external bodies as an important player in the SD community.   This might serve as a springboard for CUT to position itself with respect to external financial support in this regard.