



Sustainability Issues in the Geography Curriculum for an Undergraduate Programme: The case of Addis Ababa University, Ethiopia

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Abstract

The Lucerne Declaration on Geographical Education for Sustainable Development proposes that the 'paradigm of sustainable development' be integrated into the teaching of geography at all levels and in all regions of the world. This study is aimed at assessing the extent to and ways in which sustainability issues have been addressed in the revised undergraduate curriculum for Geography at Addis Ababa University, Ethiopia. The study also attempts to critically examine the methods of delivery suggested in the curriculum. Content analysis has been used as a principal technique. Twenty (sustainability) issues have been identified for analysis from the first and second sections of the United Nations Agenda 21. Courses offered in the Department have been put under four categories: physical/environmental; social/economic; interdisciplinary/integrative and foundational/skills. Attempt is then made to show the extent to which sustainability issues have been integrated into the first three categories of courses. Results indicate that the three pillars or building blocs of sustainable development are duly represented in the curriculum, with more courses dealing with social/economic issues. Moreover, a noticeable attempt has been made to take an integrative approach. It is, however, clearly evident that classroom-based approaches occupy proportionally more space and remain the dominant modes of delivery across the course categories.

Introduction

The UN Decade of Education for Sustainable Development (UNDESD) proposes that 'all levels of the education and training system need to be re-oriented towards a more sustainable model of development that meets the needs of the present generation, without compromising or jeopardizing the capacity of future generations to meet their needs' (UNEP, 2008:9). Higher education institutions (HEIs) are often considered as crucial for the creation, transfer and application of knowledge as well as for the training and re-training of highly qualified professionals and managerial staff (Shihab-Eldin, 1998). One of the major aims of sustainability education at this level is to help prospective graduates to not only develop a broad conceptual framework but also to gain specialised knowledge and technical skills which could, in turn, be applied in natural resource management and environmental protection (Belal & Springuel, 1998).

Tertiary level academic institutions vary in the way they approach sustainability (Beringer & Adomssent, 2008; Togo & Lotz-Sisitka, 2008). Some concentrate on minimising their ecological impact through emphasising operational practices; while others focus on sustainability in

the curriculum and take up the question of sustainability into their teaching, research and community service activities (Togo & Lotz-Sisitka, 2008). Beringer and Adomssent (2008) indicate three different types of projects related to sustainability in higher education. The first are what they call 'traditional', 'first generation' greening the campus initiatives (including campaigns and initiatives that seek to change one or a limited number of operational or academic aspects). On the other end of 'sustainability in higher education' spectrum are the sustainable university research and development projects. These are scientific projects, usually externally funded and targeting the entire institution. In between the two are those greening the campus projects that work primarily on the practical domain but target the entire institution. Such projects work on the level of systematic change and have a theoretical-conceptual framework or underpinning (Beringer and Adomssent, 2008).

A strategy of education for sustainable development in sub-Saharan Africa was developed in 2006 (UNESCO, 2006a). This strategy encourages states to adopt policies and practices to ensure the mainstreaming of education for sustainable development (ESD) in education. It has been noted, on the other hand, that mainstreaming ESD requires developing, revising and adapting curriculum and learning support materials (Lotz-Sisitka, 2006). The 'strengths model' appears to offer a useful conceptual entry point for possible development and revision of curricula to address sustainability issues.

The Strengths Model

'No one discipline can or should claim ownership of ESD.' (UNESCO, 2006b:27)

The strengths model is based on the recognition that many topics inherent in ESD are already part of the formal education curriculum though these topics may not be identified or seen to contribute to the larger concept of sustainability (UNESCO, 2006b; Gough & Scott, 2007). The model 'respects existing disciplines but alters the detail of what is taught within them to have a particular focus' (Gough & Scott, 2007:44). What is more, each discipline is believed to have associated pedagogical techniques. The combined pedagogical techniques and strategies of each discipline could, in turn, contribute to an expanded vision of how to teach for creativity, critical thinking, and a desire for lifelong learning.

The strengths model assumes that every discipline and every teacher can make an indispensable contribution to sustainability education. An empirical study conducted in South Africa seems to support this assumption to a certain extent (Togo, 2008). It was found that each of the three surveyed departments accommodates sustainable development issues 'as far as they interrelate with the core purpose and orientation of their discipline' (Togo, 2008:160). What are the strengths of Geography as a discipline? How do geographers approach sustainability? The next section of the paper explores these issues.

Geography and Sustainable Development

Bridging the social and natural sciences

Geographers study how the geosphere provides resources and living space for society and how society exerts an impact on the system 'earth' (Haubrich, 2007:28). In this way, geographers build a bridge between the natural and human sciences and seek to understand the whole 'human-earth' system. A potential strength of this disciplinary culture is, according to Wallace (2002:100), that geographers 'should be better equipped than many other academics to treat complexity and difference seriously, and to appreciate the value of questions about things which interest them that come from "outside the box" of their own particular theoretical framework'.

More specifically, a geographical education is expected to promote sustainable development by:

...providing students with basic knowledge of the ecological, economic, social and cultural dimensions of sustainable development; skills and methods for evaluating and analyzing changes in natural, built and social environments; an understanding of sustainable ways of living and of environmentally friendly and ecologically effective production; the skill and willingness to work for sustainable development in their everyday lives; the skill to participate in the planning of their own environment; the capacity to develop the aesthetic response to the environment; and the ability to act with conviction in questions affecting the surrounding world and to adopt the role of world citizens working on behalf of sustainable development and for better future at local, regional and international levels. (Houtsonen, 2004:147)

A role beyond bridging

Geographers are also aware that their role goes far beyond conceptually linking the social and natural sciences. Wilbanks (1994:553) argues that geographers should 'advocate the principles of economic fairness and nature-society balance' through their roles as teachers and as citizens. Wilbanks also calls for going an extra mile to do extraordinarily well:

In addition to integrating knowledge in order to meet pressing social needs and helping to unify our various traditions as a discipline, sustainable development focuses our attention on a great problem of mutual concern that can help to integrate the various pieces of our individual professional lives – to integrate them in the interest of a problem that we care enough about to go that extra mile to do extraordinarily well, not only in our scholarship but in every aspect of the ways that we live as experts in something the world needs very badly. (Wilbanks, 1994:553)

Despite wide ranging recognition of Geography's position as an 'ideal discipline for the academic advancement and promulgation of the concept of sustainable development', there is still a sense that geographers have missed the opportunity to be at the forefront of research and

teaching on sustainable development (McManus, 2004:218). In fact, the environmental studies units that emerged in Australian universities in the 1970s were believed to have been established in order to 'fill a vacuum which emerged as Geography neglected society-environment relationships and applied studies to pursue more narrowly specialized research and teaching' (Harvey, Forster & Bourman, 2002:30).

The brief review on the role of Geography thus reveals two things. First, Geography, given its integrative tradition, can play an important role in addressing sustainability issues. Second, Geography may fail to use the opportunity by excessively focusing on the multiple sub-divisions (e.g. bio-, cultural-, economic-, human-, medical-, physical-, social-, urban-, etc.) that equally characterise the discipline. It seems, therefore, exciting to investigate whether and how Geography curricula are responding to the growing call for academic disciplines to demonstrate their 'strengths' with regard to addressing sustainability issues. This paper focuses mainly on the degree to and ways of integration of 'sustainability issues' as defined in Agenda 21, the UN's action plan on sustainable development.

Objectives

In Ethiopia formal discussions to mainstream environment and sustainability into universities started in May 2010 and were linked to the United Nations Environment Programme (UNEP) Mainstreaming Environment and Sustainability in African Universities Programme (Eshetu, 2010). Does this imply that not much has been done, prior to this initiative, to address concerns about environment and sustainability? This paper tries to answer this question by analysing the degree to and ways in which sustainability issues have been addressed in Geography curriculum for undergraduate programme at Addis Ababa University. The paper also attempts to critically examine the methods of teaching suggested in the curriculum.

Methodology

ESD focuses largely on the major social, economic and environmental issues that threaten the sustainability of our planet. Many of these key issues were identified at the 1992 Earth Summit in Rio de Janeiro and outlined in Agenda 21 (UNESCO, 2006b). Agenda 21 is a document with 40 chapters grouped under four broad sections: (1) social and economic dimensions; (2) conservation and management of resources; (3) strengthening the role of major groups; and (4) means of implementation. It has been argued that understanding and addressing the issues identified in Agenda 21 lie at the heart of education for sustainability (UNESCO, 2006b). In line with this, the present study selected 20 issues, which are more likely to be addressed in Geography curricula, for analysis from the first and second sections of Agenda 21 (see Table 1).

Table 1. Key issues addressed in Agenda 21 and identified for analysis

Section/ chapter	Issues/themes	Section/ chapter	Issues/themes
I/3	Combating poverty ¹	II/13	Sustainable mountain development
I/4	Changing consumption patterns	II/14	Sustainable agriculture and rural development
I/5	Demographic dynamics and sustainability	II/15	Conservation of biological diversity
I/6	Protecting and promoting human health	II/16	Management of biotechnology
I/7	Promoting sustainable human settlement development	II/17	Protection of the oceans, all kinds of seas and coastal areas
I/8	Integrating environment and development in decision-making	II/18	Protection of the quality and supply of freshwater resources
II/9	Protection of the atmosphere	II/19	Management of toxic chemicals
II/10	Planning and management of land resources	II/20	Management of hazardous wastes
II/11	Combating deforestation	II/21	Management of solid wastes and sewage
II/12	Combating desertification and drought	II/22	Management of radioactive wastes

(Source: United Nations, 1992)

As indicated earlier, the major aim of this study was understanding the extent to and ways in which sustainability issues have been addressed in Geography curriculum at undergraduate level. To this end, content analysis has been used as a principal technique. Content analysis is defined as ‘a research technique for objective, systematic and quantitative description of the manifest content of communication’ (Berelson, 1952, quoted in Asgedom, 1998:18). Leedy and Ormord (2005) and Neuendorf (2002) presented the technique as ‘a careful, detailed, systematic examination and interpretation of a particular body of material in an effort to identify patterns, themes, biases, and meanings’ (Leedy & Ormord, 2005, and Neuendorf, 2002, quoted in Berg, 2007:303–304). The technique is often accomplished through the use of objective language, categorisation, and systematic surveys (Burns-Bammel *et al.*, 1988, quoted in Norris & Jacobson, 1998:39).

The recently revised Geography curriculum for undergraduate programme at Addis Ababa University has been analysed based on the following steps:

Step one: Determining analytical categories

- The major area/core courses (excluding general education courses) offered in the Department have been divided into four categories: physical/environmental geography;

social/economic geography; interdisciplinary/integrative courses; and foundational/skill courses. The first three categories have been considered in this paper for analysis. The fourth category is not expected to address any specific issue like the one investigated in this paper.

Step two: Establishing units of analysis

- The specific courses related to the first three categories, indicated in step one, have been used as units of analysis. The courses in the three categories account for 67.4% of the core courses; and 56.9% of the total course requirement for graduation.

Step three: Determining criteria for sorting data into analytic categories

- The criteria used here is having sustainability issues clearly (manifestly) mentioned in the statements of objectives and/or corresponding course descriptions. Twenty such issues likely to be addressed in Geography curricula have been identified (see Table 1).

Step four: Counting the number of entries in each of the three categories

- This has been undertaken by counting cases (specific courses with objectives and/or contents related to sustainability issues).

Findings

Programme background, objectives and graduates' profile

The undergraduate programme of the Department of Geography has a history that goes back to the beginning of tertiary education in Ethiopia. The teaching of Geography started in 1950 at the University College of Addis Ababa, the only tertiary-level institution in the country at the time. Initially, Geography was offered as a field of study to Arts students. Since 1958, the Department has been offering courses at the undergraduate level leading to the Bachelor of Arts Degree in Geography.

A major revision of the curriculum took place at the beginning of 2000 which led, among others, to a change in the name of the Department from 'Department of Geography' to 'Department of Geography and Environmental Studies (DeGEES)'. Other aspects of the change include strengthening of geographic tools and techniques and putting greater emphasis on environment and land use in response to the emerging realities and corresponding challenges at global, country and disciplinary levels. One can thus note here that the Department has given due attention to recent developments at global and national levels and responded to them by making major revisions to its curriculum. According to this revised curriculum (DeGEES, 2008), the objectives of the undergraduate programme are to produce professionals who are able to:

- Distinguish facts about and patterns of spatio-temporal processes underlying the human and physical phenomena and their interactions.
- Identify and explain spatio-temporal problems of the physical and human environment.
- Distinguish the risks, potentials, and prospects of Ethiopia's environment in isolation as well as in global perspective.

- Generate, analyse, and present spatio-temporal data of the physical and human environment using different scientific procedures, models, tools, and techniques.
- Demonstrate confidence and conviction that enable them to become positive role models to society, committed to change and development.
- Participate in community development: provide professional trainings; mobilise the public for positive actions; and provide professional consultancy services with a view to accelerate environmental, social and economic development.
- Conduct research in different areas (environment, development, society, economy, etc.) that would help in solving societies' problems and disseminate results thereof.

The revised curriculum also outlines the graduates' profile (DeGEES, 2008). Accordingly, the graduates of the Department are expected to:

- Demonstrate knowledge and understanding of spatio-temporal distribution of both the physical and human phenomena; and use geographic and environmental perspectives to evaluate issues, processes and events.
- Identify, collect and compile information through household and field surveys, aerial photographs and remotely sensed satellite images so as to alleviate spatio-temporal problems of physical & human environment.
- Demonstrate ethical values, and set a leadership role model in national, regional and local development.
- Work cooperatively for the common good of society.
- Initiate and participate actively in community services and developmental activities.
- Apply modern tools and techniques like Geographic Information System (GIS) and Remote Sensing (RS) in managing resources and protecting environment for sustainable development.
- Develop her/himself through continuous acquisition of knowledge and experience; and to be able to survive in a dynamic environment and rapidly evolving society.
- Conduct research beneficial to society and present results in clear and coherent manner.
- Demonstrate basic understanding about fundamental national issues and sustainable development.

McManus (2004:229) suggests that sustainable development is 'a challenge to higher education and, possibly, to geography more so than many other disciplines'. The list of objectives and the graduates' profile shown above clearly indicate that the Department of Geography and Environmental Studies at Addis Ababa University takes sustainability issues seriously. All the key components of sustainability education (environmental protection, social justice and economic growth) seem to be duly recognised. Moreover, desired characteristics of sustainability education like change in a value system; aspiring to be role model; active participation in community mobilisation and development endeavours; preparing to manage changes and uncertainties in society and the physical environment; capacity to work cooperatively, etc. have been clearly articulated in the graduates' profile. One can thus see that the programme objectives and graduates' profile, as they stand in the revised curriculum, have the potential to guide both the

selection of appropriate content for sustainability education and approaches thereof.

Programme content

As indicated earlier, the Department needed to revise its curriculum in order to address some of the shortcomings both in content and modes of delivery. The revision had two aspects: new courses were added and the content of some of the existing courses were modified in such a way that they properly address current economic, social, cultural and environmental problems (DeGEES, 2008). The changes affected all four categories of courses (see Methodology). Accordingly, seven courses (20 credits) were newly added and five courses (15 credits) modified. This paper attempts to relate all the core courses offered by the Department to the so-called three pillars or building blocks of sustainable development (see Table 2).

Table 2. Major areas/core courses offered in the Department by category

Category ²	Course title	Credit hours	Status	Methods of teaching suggested
CI/1	Biogeography	3	Old	Not indicated
CI/2	Geomorphology	3	Modified	Lecture, illustrations (slides, diagrams, photographs) and fieldtrip
CI/3	Fundamentals of Climatology	3	Modified	Lecture, discussion, and field visit
CI/4	Applied Climatology	3	Modified	Lecture and field trip
CI/5	Environmental Hydrology	3	New	Lecture and field visit
CI/6	Soil Geography	3	Old	Lecture, discussion, field visits, and laboratory work
	Total	18		
	Percentage	19.6		
CII/1	Introduction to Economic Geography	3	Old	Lecture, audio-visual resources, and discussion
CII/2	Social and Cultural Geography	3	Old	Lecture, audio-visual resources, student presentations and discussion
CII/3	Geography of Population and Settlement	3	Old	Lecture, student presentations and discussion

CII/4	The Geography of Transport and Development	3	Old	Lecture, student presentations and discussion
CII/5	Urban Geography	3	Old	Not indicated
CII/6	Gender Geography	2	New	Lecture, student presentations, dialogue and discussions
CII/7	Livelihood and Food Security	3	New	Lecture and student presentations
CII/8	Political Geography	3	Old	Lecture
CII/9	Economic Geography of Ethiopia	3	Old	Lecture, student presentations and discussions
CII/10	Urban and Regional Services Planning	3	New	Not indicated
	Total	29		
	Percentage	31.5		
CIII/1	Fundamentals of Regional Planning	3	Modified	Lecture, student presentations, discussion, guest lectures, and field visits
CIII/2	Seminar on Africa and the Middle East	3	Modified	Lecture, student presentations
CIII/3	Agro-ecology and Farming System	3	Old	Lecture, student presentations and field visit
CIII/4	Global Environmental Issues	3	New	Lecture and seminars
CIII/5	Terrain Analysis and Land Use Planning	3	Old	Lecture, practical laboratory work and field trip
	Total	15		
	Percentage	16.3		

Physical/environmental Geography

Inkpen (2009:378) argues that 'physical geographers have made substantial contributions to sustainable development by providing understanding about the nature of the physical environment and how it changes'. The curriculum analysis shows that six courses (19.6% of the core courses) fall under the category 'physical/environmental' Geography. One can see from the list of the courses that the essential components of the bio-physical environment are all included (Table 2). It is also important to note that most of the courses in this category have

been modified during the revision, with only two retained from the old curriculum. A course entitled 'Environmental Hydrology' is newly introduced.

Social/economic Geography

Ten courses (accounting for 31.5% of the core courses) fall under social/economic Geography (Table 2). The list of issues treated in this category is quite diverse. Society, culture and economy; population and settlement; transport and development; urbanisation; gender; livelihood and food security; politics; and regional planning are all addressed. Three of the ten courses – namely, 'Gender Geography'; 'Livelihood and Food Security'; and 'Urban and Regional Services Planning' – are newly introduced following the curriculum revision. This group of courses is intended to create a comprehensive understanding of the social and political roots of sustainability issues and concerns.

Interdisciplinary/integrative courses

Geography often aspires to have an integrative understanding of the earth 'as the home of humanity' (Wallace, 2002:101). It is further suggested that such a perspective gives the discipline a unique opportunity to 'respond knowledgeable to some of the most pressing issues confronting individuals and societies in our time' (ibid.). Table 3 indicates that five courses fall under the third category. The courses in this category are aimed at integrating issues of the bio-physical and socio-cultural environments, and, hence, most appropriate to address sustainability as it requires an integrated approach to understand complex problems. For instance, one of the courses in this category, 'Global Environmental Issues', could be readily used to initiate and conduct discussions on any issue at a global level. It is also important to note here that this particular course is a result of the recent curriculum revision (Table 2).

Foundational/skill category

Wilbanks (1994:549) argues that in this age of 'information superhighways' our skill in GIS – emphasising connections with subject-matter knowledge – will be part of our contribution to the art and science of sustainable development. McKeown-Ice (1994:42) also suggests that 'Cartography and map interpretation offer a strong analytic component to environmental education'. In view of these arguments, the revised Geography curriculum could earn more than a satisfactory 'grade' for incorporation of courses related to geographic skills. Nearly one third of the courses (32.6%) fall under the foundational/skill category. The courses cover skills in areas ranging from map reading to digital image processing and interpretation. As indicated in the methodology section, courses in this category are not expected to be linked with any specific aspect of sustainability. However, they can facilitate understanding and application of concepts directly related to sustainability. The fact that ten courses are allotted to this category indicates a clear tendency to focus more on skill development, perhaps to address the growing need for 'vocationally focused degrees' (Holmes, 2002:16). Four of the ten courses are committed, for instance, to skills related to remote sensing and geographic information system.

Table 3. Integration of sustainability issues into different courses

Issues from Agenda 21		Category of courses				Specific courses
Section/Chapter	Issue	CI*	CII*	CIII*	Total	
I/3& I/4	Poverty and consumption patterns	0	1	0	1	CII/7**
I/5, I/6 & I/7	Demographic dynamics, human health and human settlement	0	5	0	5	CII/2, CII/3, CII/5, CII/6, CII/10
I/8	Integrating environment and development	0	1	2	3	CII/9, CIII/1, CIII/4
II/9	The atmosphere	2	0	0	2	CI/3, CI/4
II/10&II/14	Land resources, agriculture and rural development	1	0	2	3	CI/6, CIII/3, CIII/5
II/11& II/12	Deforestation, desertification and drought	0	0	1	1	CIII/4
II/13	Mountain development	0	0	0	0	
II/15	Biological diversity	1	0	0	1	CI/1
II/16	Biotechnology	0	0	0	0	
II/17&II/18	Freshwater, oceans, seas and coastal areas	1	0	0	1	CI/5
II/19&II/20	Toxic chemicals and hazardous wastes	0	0	0	0	
II/21& II/22	Solid wastes and sewage; and radioactive wastes	0	1	0	1	CII/10
	Globalisation	0	4	1	5	CII/1, CII/2, CII/4, CII/8, CIII/2
	Total	5	12	6		

CI* (Category I): Physical/environmental Geography

CII* (Category II): Human/economic Geography

CIII* (Category III): Interdisciplinary/integrative courses

CII/7***: The course numbers are as given in Table 2

Integration of sustainability issues

As noted earlier, this study tries to examine the extent to which sustainability issues have been integrated into the revised curriculum for undergraduate Geography programme. To this end, 20 issues have been identified for analysis from Agenda 21. Another issue, 'globalisation', has been added to this list (Table 3). Some of the issues have been combined for the sake of brevity.

Table 3 shows that 15 out of the 20 issues (75%) have been integrated to a larger or smaller extent. The five issues that have not been adequately addressed in the curriculum are mountain development, biotechnology, toxic chemicals, hazardous wastes, and radioactive wastes. Category I of the Geography courses, physical/environmental geography, addresses aspects of six of the 20

issues: the atmosphere; land resources, agriculture and rural development; biological diversity; freshwater, oceans, seas and coastal areas. The second category of Geography courses, social/economic Geography, addresses aspects of eight of the issues from Agenda 21 and globalisation. The issues addressed in Category II courses are: poverty and consumption patterns; demographic dynamics; human health and human settlement; integrating environment and development; and solid wastes and sewage. Courses under category III, interdisciplinary/integrative, address five issues from Agenda 21 and globalisation. The issues addressed in Category III are: integrating environment and development; land resources, agriculture and rural development; and deforestation, desertification and drought.

It is important to emphasise that all the courses in three of the categories, except a course entitled 'Geomorphology', address sustainability issues as defined in this study. Obviously, some courses address the issues more extensively than others. Comparatively, courses in Category II have addressed larger number of issues than courses in other categories (Table 3). Details as to the extent to and ways in which the courses addressed specific sustainability issues are presented in the next section.

Extent to and ways of integration

This section presents a detailed account of how sustainability issues have been addressed in the curriculum by examining each of the issues in turn following the order of their presentation in Agenda 21.

Poverty and consumption patterns

These two important issues have not been adequately addressed in the revised curriculum. They have not been dealt with clearly and directly. The only course that addresses issues closely related to poverty and patterns of consumption is 'Livelihoods and Food Security'. The topics suggested for coverage in the course include vulnerability and food security; livelihood assets and strategies of poor households in developing countries; and intensity and patterns of food insecurity over space and time.

Demographic dynamics, human health and human settlement

These are issues that enjoy the highest coverage in the curriculum. There are a number of courses that address these issues both directly and indirectly. A course entitled 'Geography of Population and Settlement' seems to be most directly related. The topics proposed to be covered in this course include factors related to spatial population distribution; theories related to population and population-resource relationships; fertility and mortality patterns and migration of population; impacts of population growth on development and environment; and population planning and types and patterns of settlement.

Issues related to human health and settlement are also touched on in a course entitled 'Social and Cultural Geography'. The topics suggested for coverage in this course include changing human-environment relations; spatial inequalities in distribution and access to resources at local, regional and global levels; social planning and public policy; role of civil society in social welfare; role of culture in transformation of the earth; human settlements and spatial patterns

of language and religion; cultural unities and diversities; and multiculturalism and globalisation. A course entitled 'Urban Geography' also contains issues related directly to human settlement (and indirectly to human health). The topics suggested in this course include characteristics of urban settlements; contemporary world urbanisation patterns; the role of cities in national and regional economic development; urban land use patterns and the evolution of functional zones; the quality of urban life, urban labour-market structure, urban poverty and access to housing and urban services (with a focus on characteristics of urban places in developing countries).

A course entitled 'Gender Geography' seems to have huge potential to address issues surrounding demographic dynamics in developing countries. As it stands, however, the course only skirts the issue. Topics suggested for coverage in this course include geographies of gender and the gendered nature of spatial relations; feminism and feminist geography, relation of gender and geographical studies; gender as a structuring principle in all human activities; history of women (feminist) movement and academic feminism; relationship between gender and rurality; women and environment; differences in the lives of men and women over space; identity, power and sexuality.

Integrating environment and development

Courses in Category III generally take a more integrative approach to the issue of environment and development. For instance, the course entitled 'Fundamentals of Regional Planning' addresses issues like the role of environmental and human resources in regional development; theories of regional development; and instruments of regional development policy. Another course in the same category, entitled 'Global Environmental Issues', is one of the courses in the entire curriculum best suited to bring together issues from the bio-physical and socio-cultural environments (see details about this course under 'Deforestation, desertification and drought'). Another course entitled 'Economic Geography of Ethiopia' also attempts to show the link between use of environmental resources and economic development. Topics suggested for coverage in this course include population-environment interactions and the resource base of Ethiopia, among others.

The atmosphere

This is one of the issues in the physical environment which are thoroughly presented in the curriculum. Two courses entitled 'Fundamentals of Climatology' and 'Applied Climatology' address the issue. Topics suggested for coverage in the first course include composition and structure of the atmosphere; climatic elements; temperature; pressure; winds; atmospheric moisture; and climatic classification and types. The second course sets out to cover such issues as evaporation and evapotranspiration; water balance/budget; rainfall-coefficient and rainfall regimes; and methods of analysing the trends of temperature and rainfall as well as global climatic changes. It is interesting to see that global climate change has been specifically mentioned as one of the topics for discussion in 'Applied Climatology'.

Land resources, agriculture and rural development

Three courses address these issues to a different degree. The course entitled 'Soil Geography' focuses, for instance, on issues related to land and land resource management. Topics suggested

include the physical, chemical and biological properties of soil; processes and factors of soil formation and development; principles and methods of soil classification; distribution of major soil groups with emphasis on Ethiopian soils; soil degradation and its forms; and conservation and management of soils. Another course entitled 'Agro-ecology and Farming System' offers a more comprehensive basis for dealing with issues related to land resources, agriculture and rural development. Among the issues suggested to be covered are physical bases of agriculture; land degradation, pollution and its protection; agro-climatology and hydrology; climate and soil moisture regions; climatic requirements of crops and livestock; weather hazards; world water resource and water budget; crop and animal pests and diseases; cultural bases of agriculture; people as producers and consumers; crop and livestock domestication; the science and technology factor; the social and political factor; farming systems; and agriculture and environment.

The course entitled 'Terrain Analysis and Land Use Planning' also has a huge potential to address issues related to land use and land resource management. As it stands, however, this course seems to be too technical with the following issues given more emphasis: terrain data types and sources; procuring, extracting and organisation of terrain data; analysis of attributes of terrain; terrain classification and terrain units; techniques of terrain representation; drawing cross-section; absolute and relative relief and dissection index; slope analysis and mapping; drainage system and pattern; drainage density and texture; drainage basin delineation and characteristics; terrain characteristics and their uses.

Deforestation, desertification and drought

The revised curriculum introduced an interdisciplinary course directly related to the issue of sustainability and sustainable development. This course, entitled 'Global Environmental Issues' is aimed, among others, at exposing students to the different viewpoints on interaction between environment and development. Issues proposed for discussion include the greenhouse effect; ozone depletion and climate change; destruction of habitats and biodiversity; freshwater shortage and land degradation; and the concept of environmentally sustainable development. Issues related to deforestation, desertification and drought are largely addressed in this course; and to a smaller extent in other courses analysed in this section of the paper.

Biological diversity

There is a course entitled 'Biogeography' aimed at helping students to 'appreciate the impact of man in changing his environment and his role in protection and conservation' (DeGEES, 2008). Among the topics suggested for coverage are the evolution and distribution of life; structure and function of ecosystem; and the impact of people on the environment. One can thus note that the course offers ample opportunity to discuss the current trends (both local and global) in biodiversity use and abuse.

Freshwater, oceans, seas and coastal areas

One of the newly introduced courses, entitled 'Environmental hydrology', is aimed at enabling students to 'understand the key processes of the hydrological cycle ... and its interaction with the broad environmental system' (DeGEES, 2008). The course emphasises freshwater flow

on and near the ground surface. Among the topics intended for coverage are precipitation, evapotranspiration, infiltration and soil water processes; stream flow, groundwater formation and movement; and basic concepts in water resources management. This course could form the basis for a critical assessment of issues related to water resource use and management; and the problems related to current use of water bodies, wetlands and coastal areas.

Solid wastes and sewage

An interdisciplinary course entitled 'Urban and Regional Services Planning' offers a huge opportunity to address issues related to provision of urban services including solid waste management and sewage treatment. One of the objectives of this course sets out, for instance, to provide students 'with methods associated with planning for improved municipal service delivery and facilities such as transportation, drainage, sewerage, solid waste, educational and health facilities'.

Globalisation

Globalisation is the only issue included in this study outside Agenda 21. It is strongly argued that 'socio-economic growth and the sustainable exploitation of natural resources can at present only be properly understood by taking account of globalization' (De Haan, 2000:363). The revised curriculum seems to put a marked emphasis on globalisation. A course entitled 'Introduction to Economic Geography' offers, for instance, an immense opportunity to address the pros and cons of globalisation. Among the topics suggested for coverage in this course are global patterns of distribution of industrialisation; development of transportation; internationalisation of production and role of transnational corporations in industry, trade and information and communication technology. Aspects of globalisation have also been addressed in another course entitled 'Social and Cultural Geography' (see details about this course under 'Human health and settlement').

A course entitled 'Geography of Transport and Development' tries to link development with transport and communication. The latter is further linked (though implicitly) to the process of globalisation. The other course with good opportunity for addressing globalisation is 'Political Geography'. Topics suggested for coverage in this course include frontiers and boundaries; core areas and capital cities; global strategic views; water and islands; aspects of hydro-politics of the Nile River; imperialism, colonialism and decolonisation; contemporary international relations; and political geography and foreign policy. Finally, a course entitled 'Seminar on Africa and the Middle East' creates a chance to discuss on factors that enhance and/or hinder the process of globalisation. The stated objectives of this course are creating awareness about the 'impacts of the tri-continental location of the Middle East on the economic, political and social conditions of Africa' and help students to understand the 'historical and contemporary relationships between the populations of Africa and the Middle East'.

Delivery methods

Integration of sustainability issues is an important step but is not sufficient to achieve the goals of a sustainable future. Use of the appropriate modes of delivery is equally important. With regard to this, Eilam and Trop (2011) strongly suggest that academic learning, inter/multidisciplinary learning, multidimensional learning, and emotional learning are four essential principles of EE/

ESD pedagogy. The revised Geography curriculum assessed here suggests diverse methods of teaching for consideration by the respective course teachers/instructors. These include lecture, student presentation, discussion/dialogue, use of audio-visual resources, fieldwork, laboratory work and inviting guest speakers (Table 2). In three courses, no suggestion has been made as to methods of teaching. On the other hand, a pure lecture has been suggested in one case. In all other cases, 17 courses, a combination of two or more of the aforementioned methods has been suggested, the most frequently suggested combination being 'lecture, presentations and discussion' (Table 4).

Table 4. Delivery methods suggested in the curriculum

S/n	Method	Frequency	%
1	Lecture	1	4.76
2	Lecture, presentations and discussion (dialogue mentioned once)	7	33.33
3	Lecture, audio-visual resources, and discussion	1	4.76
4	Lecture, audio-visual resources, presentations and discussion	1	4.76
5	Lecture and field trip	2	9.52
6	Lecture, illustrations and fieldtrip	1	4.76
7	Lecture, presentation/discussion and field visit	2	9.52
8	Lecture, laboratory work and field trip	1	4.76
9	Lecture, discussion, laboratory work and field visits	1	4.76
10	Lecture, presentations, discussion, guest lectures and field visits	1	4.76
11	Not indicated	3	14.29
	Total	21	100.00

Given the traditional role of teacher dominated methodologies at universities in Ethiopia, it is not surprising that this method has been suggested for practically all the courses. On the contrary, fieldwork has been explicitly suggested only in eight of the 18 courses (44.4%) for which teaching methods are suggested. This shows that classroom-based approaches (55.6% of the courses are done this way) still dominate the teaching process despite the expressed wish of the Department to improve the mode of delivery. Such a dominance of 'old pedagogies' is not unique to the Department surveyed here as the observation by Eilam and Trop (2011:56) clearly indicates: 'For years, ESD scholars have been advocating to implement changes in pedagogies. Despite this call, while the curricula have been evolving and responding to the policy discourse, educators continue to implement old pedagogies in the service of new curricular contents.'

Summary and Recommendation

Geography is often presented as an ideal discipline for the academic advancement and promulgation of the concept of sustainable development (McManus, 2004). The Lucerne Declaration on Geographical Education for Sustainable Development proposes that 'the paradigm of sustainable development should be integrated into the teaching of geography at all levels and in all regions of the world' (Haubrich, Reinfried & Schleicher, 2007:243). This paper tried to report the

findings of a study aimed at assessing the place of sustainability issues in Geography curriculum for undergraduate programme at Addis Ababa University. Content analysis has been used as a principal method for data generation. The following points summarise the key findings of the study:

- The three 'pillars'/'building blocks' of sustainable development are duly represented in the revised curriculum, with more courses dealing with social/economic issues. Besides, the curriculum has multiple rooms for further incorporation of issues and concerns which are not adequately addressed in the existing courses. The diversity of topics covered in the courses attest to this fact.
- A remarkable attempt has been made to take an integrative approach. The Department designed a group of courses meant to integrate issues in the bio-physical and socio-economic environments. In view of this, the Department seems to have placed itself in a position to lead and contribute to environmental and sustainability education in Ethiopia. This is all the more important given the current role of Addis Ababa University to train the teaching staff needed for the newly established universities throughout the country.
- Diverse methods of teaching have been suggested in the revised curriculum. It is, however, clearly evident that classroom-based approaches occupy proportionally more space and remain more dominant. This goes against Geography's traditional claim to be a field-based and practice-oriented discipline; and signals an area for continued professional learning and growth amongst academic staff.
- The revised curriculum offers no evidence for the application of methodologies intended to help students to acquire favourable values (e.g. values clarification and values analysis); and this appears to be another area for further professional learning and growth of academic staff.

The curriculum assessed in this study is an official and legally binding document containing all the requirements for graduation. The courses examined here are all mandatory, i.e. they will have to be attended by all students. However, the way each of the courses is actually treated and the effectiveness thereof depends on several factors, including the background and competence of the course teachers/instructors. There is therefore an urgent need for a follow-up study in order to assess the effectiveness of the revised curriculum in achieving its stated objectives and factors that affect its effectiveness. Such a study, if and when conducted, should pay special attention to the balance between the four essential principles of EE/ESD pedagogy: academic learning, inter/multidisciplinary learning, multidimensional learning, and emotional learning (Eilam & Trop, 2011); and should consider issues such as values and values education more carefully than this current study has been able to do.

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Endnotes

- 1 The highlighted words or phrases represent the whole theme in the analysis of results and discussions thereof in the paper.
- 2 CI: Physical/environmental Geography; CII: Social/economic Geography; CIII: interdisciplinary/integrative courses

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