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Development from Tobacco?

A Study of the Malawian Tobacco
Industry and its Impacts on Sustainable
Development in Malawi

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**DEVELOPMENT FROM TOBACCO?
- A study of the Malawian
tobacco industry and its impacts
on sustainable development in
Malawi**

Master Thesis in Sustainable Development
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Abstract: The aim and purpose of this report is to describe how the domestic tobacco industry is affecting sustainable development in Malawi. This is done by describing the environmental and socio-economic effects of the cultivation and selling of tobacco leaves. Together with an outlook on the future developments of the industry, this information is used to describe how the Malawian tobacco industry corresponds to sustainable development and how it can be changed to improve sustainability in the country. The report is based on a literature study and two interviews. Theories on sustainable development and developmental concepts form the theoretical background for the report. The conclusion of the report is that the situation regarding the Malawian tobacco industry is a complex one, where direct economic benefits are the main motive, but various socio-economic and environmental effects combine to make the situation unsustainable in a number of aspects. The suggestion of this report is to turn away from the current high dependence on tobacco to a more diversified agriculture, where different types of food crops substitute tobacco as the main source of income, while at the same time providing more food in a country where poverty and malnutrition are problematic issues.

Keywords: Sustainable Development, tobacco, Malawi, environmental effects, socio-economic effects

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Utveckling från tobak? - En studie av den Malawiska tobaksindustrin och dess inverkan på hållbar utveckling i Malawi

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Sammanfattning: Tobak nämns ofta när man pratar om folkhälsa, och är för många synonymt med lungcancer och andningssvårigheter. Som en följd av detta har restriktioner kring rökning och tobaksanvändning införts i allt store utsträckning i många industrialiserade länder, och i vissa fall har kritik framförts mot dessa regler för att de diskriminerar tobaksanvändare. Tobaksberoendet tar sig däremot ett helt annat uttryck i Malawi, där andelen rökare är relativt lågt, men runt 90 % av befolkningen är på något sätt beroende av tobak för sin inkomst. Det starkt jordbruksinriktade afrikanska landet får mellan 50 och 70 % av sina exportinkomster från tobak, och det "gröna guldet", som grödan kallas, ger nästan en fjärdedel av landets skatteintäkter. Dessa ekonomiska argument används då tobak förespråkas som drivkraft för utveckling i Malawi. Fördelarna kommer dock med en rad sociala såväl som ekonomiska och ekologiska problem. Att vara kraftigt beroende av en enskild gröda gör Malawi som land, såväl som de enskilda bönderna känsliga för svängningar i den globala tobaksmarknaden, torra och andra omständigheter som påverkar inkomsten. Sjunkande tobakspriser och ett stelbent försäljningssystem har inneburit lägre och försenade utbetalningar för många tobaksodlare.

Själva odlingen av tobak innebär också bekymmer, då behovet av ved för torkningen av tobaksbladen bidrar till en redan svår avskogning. Avskogningen och uppodlingen av mark leder i sin tur till erosion, och bördiga jordar tillsammans med industrigödsel och bekämpningsmedel från odlingarna sköljs ner i floder för att slutligen hamna i Malawisjön där de bidrar till övergödning, förgiftning och slammar igen lekplatser för fiskar i sjöns unika ekosystem. Dessa miljöproblem får även konsekvenser för befolkningen, eftersom jordbruksmarkernas bördighet utarmas, och fiske och ekoturism drabbas av förändringarna i Malawisjön. Användningen av bekämpningsmedel, svåra arbetsförhållanden och fall av barnarbete är andra problem som kopplats samman med tobaksproduktionen i Malawi, och den utvecklingspotential som tobaken sägs ge kan därmed ifrågasättas. Dock kvarstår faktum att tobak är en väldigt viktigt ekonomisk gröda för såväl Malawi som dess befolkning, och en övergång till alternativa grödor är inte så enkel.

Nyckelord: Hållbar Utveckling, tobak, Malawi, miljöpåverkan, socio-ekonomiska effekter

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ACRONYMS

ACP-EU	Africa Caribbean Pacific – European Union
ADMARC	Agricultural Development and Marketing Corporation
AHL	Auction Holdings Limited
AIDS	Acquired Immune Deficiency Syndrome
ASAP	Agricultural Sector Assistance Programme
ASIP	Agricultural Input Subsidy Programme
BAT	British American Tobacco
BUR	Burley Tobacco
CAN	Calcium Ammonium Nitrate
CDC	Centers for Disease Control
CIA	Central Intelligence Agency
CO ₂	Carbon Dioxide
COP-15	Conference of the Parties, Fifteenth Session
COP-16	Conference of the Parties, Sixteenth Session
DAC	Development Assistance Committee of OECD
DDT	Dichloro Diphenyl Trichloroethane
ENSO	El Niño-Southern Oscillation
EU	European Union
FAO	Food and Agriculture Organization of the United Nations,
FCV	Flue Cured Virginia Tobacco
GDP	Gross Domestic Product
GHG	Green House Gas(es)
GTS	Green Tobacco Sickness
Ha	Hectare
HIPC	Heavily Indebted poor Countries
HIV	Human Immunodeficiency Virus
IMF	International Monetary Fund
IUCN	International Union for the Conservation of Nature and Natural Resources
Kg	Kilogram
MaSwe	Malawi-Sweden
MK	Malawian Kwachas
MT	Metric Tonnes
N	Nitrogen
NASFAM	National Smallholder Farmers’ Association of Malawi
NGO	Non-Governmental Organisation
NTB	National Tobacco Board
OECD	Organisation for Economic Co-operation and Development
OEHHA	Office of Environmental Health Hazard Assessment in California
ORI	Oriental Tobacco
P	Phosphorus
PPP	Purchasing Power Parity
SAP	Structural Adjustment Programme
TAMA	Tobacco Association of Malawi
UN	United Nations
UNDP	United Nations Development Programme
US	United States (of America)
USA	United States of America
USAID	United States Agency for International Development
USD	United States Dollar
USDA	United States Development Agency
US\$	United States Dollar
WCED	World Commission on Environment and Development
WHO	World Health Organisation

1. INTRODUCTION

Tobacco is a common product all around the world, and has been so for several hundred years. Indigenous to the Americas, tobacco was first used by the native peoples as part of rituals. The “discovery” and exploration of the “New World”, by Christopher Columbus and other explorers, introduced tobacco to the Europeans. It soon became popular and the use of tobacco spread, as European trade and colonialism connected the different parts of the world. Fitting well in the colonial trade, tobacco was grown in many European colonies, and shipped to Europe and other destinations to be processed and sold. During the 20th century, the tobacco industry grew to become a multi-billion dollar business, dominated by a few big corporations such as Philip Morris and British American Tobacco.

In 1891 the British claimed what today is Malawi, naming it Nyasaland. It was during the British rule, that tobacco was introduced to Malawi in the early 1920's. In 1963 Nyasaland gained independence and was renamed Malawi. The country was then ruled by dictator Hastings Banda until 1994, when the first free elections were held. Today Malawi is one of the poorest countries in the world, and heavily dependent on economic aid, mainly from IMF and the World Bank. Corruption, poverty and a problematic HIV/AIDS-situation are big problems for Malawi. The country's economy is dominated by agriculture, which employs 90 % of the labour force and stands for 90 % of its export earnings (CIA, Internet, 2010-03-09). Tobacco production is, and has for a long time been the most important business. Standing for 70 % of Malawi's export income, tobacco has been acclaimed as an important engine for development (Nsiku & Botha, 2007).

There are several issues worth noting concerning the Malawian tobacco industry. One is the fact that a country struggling with poverty and malnutrition is allotting a big part of its agricultural areas for production of a non-edible cash crop. Also, being so heavily dependent on one single crop makes the country very vulnerable to shifts in the market. The burdens of work for farmers and tenants in the tobacco field affect their physical health and have many long-term effects on the Malawian society. As there is a general trend towards non-smoking in many of the western countries, the demand for tobacco is decreasing, leading to lower prices for the growers. Combined with general problems with the system of selling the tobacco, the profitability of tobacco is in question. A bad growing year due to weather conditions, insect invasions or other circumstances can also be devastating for an economy based on a monoculture. Furthermore, the effects on the environment are evident, as deforestation is aggravated when fuel wood and building material is needed in the tobacco industry. Also adhering to the tobacco industry are the impacts of soil erosion, and the use of pesticides and industrial fertilizers. The long-term environmental effects can be of major importance in an agriculturally dominated country. In addition, there are also socio-economic problems such as child-labour and low school attendance to consider.

In a time when environmental concern and fear of climate change are raising the awareness of energy-consumption, land-use and food-security, it is interesting to study the effects of the tobacco industry in Malawi. A crop that is commonly connected to severe health-issues and high costs for the society is being grown in one of the poorest countries in the world. This can be compared with the discussion concerning bio fuel production from crops such as maize. It competes with food production, driving up food prices. Also there is the fact that new areas are annexed as the demand for agricultural land increases, which in turn drives deforestation, destruction of ecosystems and resettlement of people. Looking at the possibilities for changes within the tobacco dominated agriculture of Malawi there is potential both for reducing the demand for new agricultural expansion, and for gains to be made from a more stable and useful crop-production.

2. AIM AND PURPOSE

The aim of this study is to find out and describe how sustainable development in Malawi is affected by the country's tobacco industry. The effects of the Malawian tobacco industry will be divided into two subgroups: environmental effects –concerning the effects on nature, plants and animals, and socio-economic effects – looking at the effects that the industry has on human society, health and the economy of individual farmers and the Malawian national economy. This approach has been taken in order to cover the three main aspects of sustainable development: ecological, social and economic. In order to break down the purpose of the paper, the aim is to answer the following questions:

- What are the environmental and socio-economic effects of the Malawian tobacco industry?
- What is the outlook for the future of the Malawian tobacco industry and its role in Malawi's development process?
- Based on the answers given to these questions, how does the Malawian tobacco industry correspond to the concept of sustainable development, and how can the situation be improved in order to better facilitate a sustainable development in Malawi?

The first question will be answered in parts 5 and 6 of this paper, which gives a background on the Malawian tobacco industry, and a description of its effects. Part 7 will be concerned with answering question no. 2, while the results presented in parts 5,6 and 7 will be discussed in part 8, and subsequently forming the answer for question no. 3. In part 3 the methods of the study will be described and evaluated, while part 4 presents the theoretical approaches used in the study.

3. METHOD

This study is based on literature concerning tobacco, the country of Malawi, environmentalism, sustainable development and subjects concerning globalization and developing countries. The literature has been found on the Internet, and at libraries. The literature-study on the subject of Malawi's tobacco industry has been complemented with two interviews. One of the interviews, made with a Malawian tobacco farmer, was conducted via a proxy-interviewer on site in Malawi. The answers from this interview were recorded in writing. Additionally, an interview was made with a representative for the Sweden-based NGO MaSwe, together with a friend of his – both emigrated Malawians. The work of MaSwe involves development and aid at local levels in Malawi. Born and raised in Malawi, and having emigrated from the country made these two interviewees rather unique, as they had first-hand knowledge and experience from Malawi and the situation of the tobacco industry, but also able to give an “outside” perspective on their previous home-country. The representative is referred to by name, while a fictive name has been used for his friend. This interview was conducted in a semi-structured manner and recorded digitally. Together with the information and data found in the literature, these two interviews give a broad description of the situation of the tobacco industry in Malawi.

3.1. Limitations and criticism of the methods

It can justly be argued that a “by-proxy-interview” cannot offer the same quality of data as an interview conducted by the author personally. The lack of direct interviews and the hands-on experience that a field trip to Malawi would have provided are weaknesses in this study. However, a field trip was not possible due to budgetary constraints. Without the references of a field trip and/or more interviews with different people, it can be hard to determine whether or not the interviewees of the second interview were giving a very biased picture of the situation in Malawi. However, bias is something that cannot be excluded from an interview with a person, and should also be valued for the personal opinion it presents. The limitation of this study is rather the lack of more interviews to compare against.

Another limitation is the literature used for research. It has been very difficult to find the most recent data, and as the entire situation of Malawi's tobacco production is very sensitive to the many factors affecting supply and demand for tobacco on the international market, there is potential for quite big changes over the course of a few years. Such changes having occurred in the last few years are not visible in most of the literature used. The interviews are hopefully providing more balance to this issue, as they are based on more recent knowledge.

This study views the issues concerning Malawi's tobacco industry from a broader, cross-disciplinary perspective compared to other studies on the subject known to the author. As such it can be lacking more in-depth information on some of the issues covered. Since the study looks at the topic from a sustainable development point of view, it is instead intended to provide a basis for further, more specific research in some of the topics covered.

4. THEORY

The theoretical approach of this report is based mainly on the concept of sustainable development, but also looks at the situation in Malawi from the perspective of socio-economic geography and development theories. This approach provides the appropriate broad and cross-disciplinary take on the subject that is required to properly cover the many aspects of the Malawian tobacco production.

4.1. Sustainable Development

Sustainable development is a term that today is being used more and more commonly. As concern for the environment and the impact of human activities on the nature has increased, the struggle for sustainability has come of interest to people all over the world. The concept of sustainable development came into existence in the wake of the rising concerns for the environment in the 1960's and 70's. Rachel Carson's book "Silent Spring" from 1962 is often pointed out as the start of the environmental movement (Carson, 1962 / Lear, 2002). In 1972, the first UN conference on the Human Environment was held in Stockholm and a series of conferences and meetings concerning the human impact on the environment has been held since. In 1980 Sustainable Development as a term came to public awareness in the 'The World Conservation Strategy' report presented by the International Union for the Conservation of Nature and Natural Resources (IUCN) (Baker, 2006). At that point sustainable development was mainly about ecological sustainability. The concept later evolved to include human society as well, when it had its break-through in 'Our Common Future by The World Commission on Environment and Development (Commonly known as "The Brundtland Commission Report") presented in 1987.

In 'Our Common Future', sustainable development was defined as "...development that meets the needs of the present without compromising the abilities of future generations to reach their own needs." (WCED, 1987:43 Ch 2). This commonly recognized definition has later been the basis for subsequent UN-meetings and agreements. In 1992 the UN conference on Environment and Development and the Earth Summit in Rio de Janeiro resulted in a number of commissions, committees and frameworks based on the concept of sustainable development. Agenda 21 is probably the most well-known result of the Rio conference (WCED, 1987:43). Subsequent UN Conferences have continued to build on this foundation. The Kyoto Protocol, the Conferences of Johannesburg in 2002, Bali in 2007 and recently the COP-15 and COP-16 Conferences on Climate Change in Copenhagen, 2009 and Cancún, 2010, are all part of this legacy, where the concept of sustainable development has been a common thread.

Sustainable development has thus been an important part of much of the international work on the problems of human development, economy and its effects on the environment. But what does it mean? The above-mentioned definition of sustainable development from 'Our Common Future' is perhaps the most commonly used, but given its simplicity and clarity it is also quite vague. The term "Sustainable development is made up of two individual words or terms deriving from two different schools of science. In its original ecological meaning, sustainability refers to an ecosystem's ability to maintain itself (Baker, 2006). Development in the context of human societies involves, as described in 'Our Common Future', '...a progressive transformation of economy and society' (WCED, 1987:43). The union of these two terms, "sustainable" and "development" results in a concept where environment/ecology is taken into account in decisions concerning changes in the economy and/or society (Baker, 2006).

Overexploitation of resources is an important issue within the field of sustainable development, as is pointed out in the Brundtland Commission report. The term 'resources' in this case includes both resources for basic everyday survival such as food, water and air and man-made resources that are needed for the society to function such as infrastructure, education and health-care which are all imperative for the development and maintenance of progress in human society. In addition to this, the importance of biological diversification and the survival of species of plants and animals are also brought forth as there are scientific, ethical, cultural as well as aesthetical and economic values to such features (WCED, 1987:43). Baker (2006) points out that 'Our Common Future' argues that there is a connection between economic growth and both the environment and society. For example it is pointed out that economic growth has positive impacts on the environment, as more advanced technology can help alleviate the pressure on nature and well-off people can afford more environmentally friendly alternatives in their every-day life. The opposite correlation, where a healthy and functioning environment has a positive effect on the economy is also noted (WCED, 1987:43 / Baker, 2006). The Brundtland Commission Report describes

sustainable development as a strategy that "...aims to promote harmony among human beings and between humanity and nature". In order to reach the described goal, seven requirements are listed as necessary:

- A political system that secures effective citizenship participation in decision-making.
- An economic system that is able to generate surpluses and technical knowledge on a self-reliant and sustained basis.
- A social system that provides for solutions for the tensions arising from disharmonious development.
- A production system that respects the obligation to preserve the ecological base for development.
- A technological system that can search continuously for new solutions.
- An international system that fosters sustainable patterns of trade and finance.
- An administrative system that is flexible and has the capacity for self-correction.

Castro (2004) argues that sustainable development came into existence as a response to the increasing demands from radical environmental movements in the 1970's and 80's. He describes sustainable development as it is defined in 'Our Common Future' as "...a political compromise between growth and environmental sustainability that the pro growth delegations at the United Nations could accept". Castro points out that the UN sees poverty as the underlying cause of environmental degradation and promotes economic growth, freer markets and the transfer of technologies to poor countries as important matters for coming to terms with the environmental problems. Castro also describes a similar view on sustainable development, promoted by the World Bank, and calls this the "mainstream" view on sustainable development.

The concept of sustainable development is often depicted as being based on three pillars – the social, the economic and the ecological. This model, implies that the social, ecologic and economic aspects are equally important and should be balanced so that one of the aspects or dimensions is not favoured at the cost of the others. Sustainable development in this sense means building a society which is sustainable in the long run – over the course of both present and future generations, where basic human needs such as food, health and shelter are fulfilled, a long term working economy both in regard to material and human resources, while at the same time the production capacity of the environment is maintained. This involves the use of resources such as soil, water and also parts of and entire eco-systems. Also, damaging impacts on the environment and humans should be reduced to a level that is manageable (Johansson, 2008).

While this model of sustainable development forms the basis for the Brundtland commission report, and the one most commonly referred to, there are other views and takes on sustainable development. Since 'Our Common Future' several new terms have come into existence, trying to specify or give new, alternative definitions of sustainable development. In terms of explaining sustainable development, there are several models and visualizations. A slightly more advanced model of the three pillars is the model showing the three dimensions of sustainable development as three intersecting circles, as shown in Figure 1. While this is essentially the same concept, there is room for more elaboration as the adoption of only two of the dimensions is described in the intersecting areas.

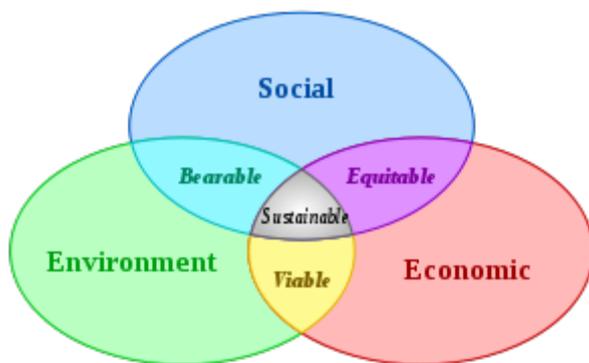


Fig. 1. Sustainable Development depicted as three equally big, intersecting rings – social, economic and environment. The intersecting areas show different forms of development. A sustainable development requires all three dimensions (Giddings et al. 2002 / New World Encyclopedia, Internet, 2011-05-02).

Another model using circles is the so-called nested sustainability-model (Giddings et al 2002), in which economy is nested in society and the environment as shown in Figure 2. This model also contains three circles representing economy, society and environment. However, in this model environment-circle is the biggest, and the smaller society-circle is nested in it. In turn, the economy-circle is nested in the society-circle. This represents the understanding that the environment forms the fundament for human society, and subsequently the economy. Humans live in and off the resources available in the environment, and human society is shaped by the geographic conditions at its certain location. In turn, economy is sprung from human society. *“The production and exchange of goods is a social relationship, dependent on many non-monetary activities”* (Giddings, et al. 2002). Without the cultural and societal frameworks developed in human society, economy could not exist. Economy is the trade of resources, which in one way or another is derived from the environment. In contrast to the “three rings-model” nested sustainability gives the environment greater importance as it is the fundamental prerequisite for human society and subsequently the economy.

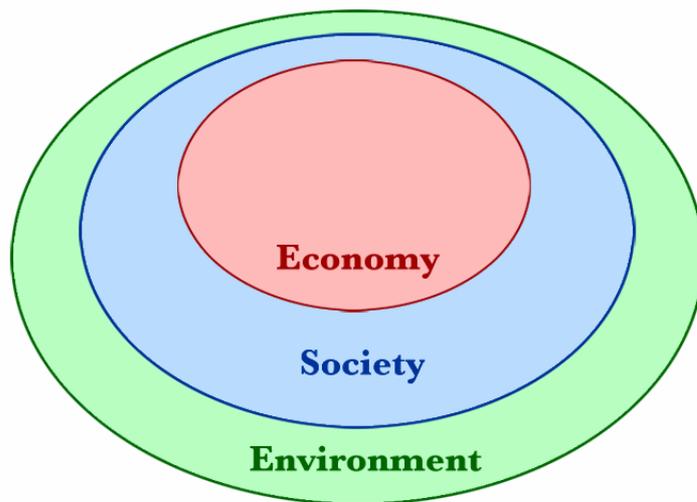


Fig. 2. Nested Sustainability. The environment is fundamental for the existence of human society, as human live in and off the environment. Economy is dependent on the society and the environment (Giddings et al. 2002).

A way to differentiate the many views and understandings of sustainable development is to place them on a “ladder” or a scale, as described by Baker (2006). By placing the most anthropocentric approach to sustainable development, focusing mainly on human needs and human society at one end of the ladder and the most ecocentric, which puts nature and the environment in first place at the other end, a scale is created. Any other views can then be placed along this ladder at the appropriate position compared to the two defining ends. In Bakers ladder, the most ecocentric take on sustainable development is referred to as the “Ideal model” and promotes bottom-up governance, decentralized politics and most importantly placing the environment first, not allowing any substitution of natural or biological values with economic values. The other extreme in Bakers model is “Pollution control” in which natural values and even the well-being of the environment are recognized, but only as the basis for society and exploitable resources. The environment is viewed as “natural capital” that can be used by humans and bought with monetary resources. This take on sustainable development is based in the belief in a capitalistic worldview and the ability of humans to overcome any difficulties, such as environmental degradation or extinction of species. The understanding is that when a negative side effect of an industry is no longer accepted, people will stop buying the products of the industry or develop a way of operation or a technology to overcome the side effect. In short, an industry will continue its production and environmental degradation, as long as the benefits of the production outweigh the benefits of the environment.

4.2. Critique on Sustainable Development

Development has become a popular standard, which is being promoted by different institutions in society, but the concept has been criticized from both ends of Baker’s ladder. From the mainstream economist side sustainable development has been accused of hindering economic growth and development by putting the environment in front of human needs and economy. “Deep ecologists” on the other hand, criticize the concept for not giving environmental aspects enough consideration (Baker, 2006). The fact that sustainable development has been

understood in such different ways, together with new definitions and connected terms leaves the concept inconsistent and hollow. As there are so many different ways of describing it, almost anything can be claimed as being “sustainable” and within the realms of sustainable development. This also makes it difficult to set up criteria and define if a certain developmental scheme is actually sustainable development or not (Baker, 2006).

Castro (2004) criticizes Sustainable development as it was presented in the Brundtland Commission Report. While ‘Our Common Future’ recognized environmental problems as important issues to be resolved, the solution presented was a revitalization of the global economic growth, because poverty was identified as the underlying reason for the environmental degradation. In the report, this economic revitalization was described as:

“...economic growth in both industrial and developing countries, freer market access for the products of developing countries, lower interest rates, greater technological transfer, and significantly larger capital flows, both concessional and commercial.”

(WCED, 1987:43, p. 96).

Castro’s critique is that this sustainable development-solution does not in fact offer any new, revolutionary ways of dealing with the problems. *“...Sustainable development sounds suspiciously like plain old development.”* (Castro, 2004). As had been promoted as the solution for third world countries to overcome their economic and developmental issues during the decades leading up to ‘Our Common Future’, the solution in the report was still for the poor countries to reform their economies by allowing freer markets and trade liberalisation. The transfer of technologies, knowledge and capital would keep the developing countries dependent on the industrialised countries. The only thing that sustainable development added was that the environmental issues were considered (Castro, 2004).

Castro elaborates on his opinion by stating that an approach that promotes both economic liberalization and environmental sustainability at the same time is self-contradictory. Castro argues that a free market does not even promote economic growth. Therefore an argument based on the belief that environmental degradation will be reduced if poverty is reduced – that is by economic growth, does not work. Instead of this approach, based on a capitalist system, Castro promotes Marxism as a better alternative, and argues that Marxism has taken environmental issues, though not environmental degradation as such, into consideration since Marx himself. It is also pointed out that Marxism has more concern for cultural differences and thus allows for the old sustainable ways of indigenous people who have been living in coexistence with their local environment. This is the opposite of the “mainstream” conception of universal development that can be implemented in the same way anywhere.

Other points of criticism against sustainable development concern the ethical questions that arise when sustainable development is examined. The “mainstream” definition of sustainable development states that the “...abilities of future generations to reach their own needs...” should not be compromised, so there is an element of ethical emphasis in the general definition. However, there are other ethical perspectives that should also be considered. McNeill (2007) argues that instead of just the issue of future generations, there are three issues that should be acknowledged:

- “The rights of the poor in the present generation as against those of the rich”
- “The rights of non-humans as against those of humans”
- “The rights of future generations as against those of present generations”

It could be argued that in terms of fairness and sustainability the rights of poor should be put before those of the rich, and that current generations should use resources in a way that does not compromise the needs of future generations. However, when considered together, the ethical standpoint is not as obvious. As McNeill (2007) exemplifies: “Should the interests of (potentially rich) future generations be served at the expense of (poor) present generations?” Other aspects could involve feeding a starving human and killing an endangered animal, and vice versa. Our readiness to defend one or the other, as McNeill explains, is dependent on the “moral distance”. This involves the social distance, as we are more prepared to argue for or defend someone that we are familiar to, than someone we do not know. It also involves a temporal distance – how far off in the future (or the past) a choice (or a person, if unborn) is, and the “species-distance” between us as humans and the plants or animals that are concerned (McNeill, 2007, Grenholm & Kamergrauzis (red.), 2007). When laid together as in the context of sustainable development, McNeill describes, there is not a smooth gradient in any of the three types of distance, as the perception differs with each individual, but rather, each individual stands at the top of a three-sided pyramid with uneven steps.

Critique has also been given to sustainable development because it does not recognize nature and other species for their own intrinsic value, but rather as resources to be managed according to humanity's best understanding. Stenmark (2007) points this out, and also draws connections to the fact that the western world-view is based on the Judeo-Christian religious beliefs and Greek philosophy in which humans - the only creatures made in the image of God, were given nature with all its resources to exploit for their own needs (Stenmark, 2007, Grenholm & Kamergrauzis (red.), 2007).

4.3. The Concept of Development

Developing countries are a group of countries roughly made up of the countries in Africa, Latin America, The Caribbean, Asia and the small island states mainly in the Pacific. These countries, also referred to as "The Third World", "Poor Countries" or "The Global South" to different extents, are by their categorical definition put as an opposite of the "Developed" or "Industrialized" Countries, consisting of most European Countries, USA, Canada, Japan and also including Australia and New Zealand. The developed countries are often called "The West", "The Global North" or "The First World". Naturally, there are exceptions, differences and changes in these definitions, their meaning and the geography of them.

The "development" used in the definition of the two groups of countries commonly refers to a speech by US president Truman in 1949, where he defined a large part of the world as being "underdeveloped areas" which it was the duty of the West to bring development to (Potter et al. 2004). This modernistic take on development meant that "traditional" countries should be transformed into modern, westernized nations and came at a point in time when the grip of the colonial powers was loosening and struggles for independence were spreading in the European colonies all over the world. The view was that the "traditional" societies of the non-western world needed the help of the West and change as such to reach the standard and ways of living of the West, which was considered the most advanced, and therefore the goal of all societies. The idea of the people of these countries being happy with their lives as they were was rejected (Potter et al. 2004).

However, there are other views on when the idea of development first started affecting the relationship between countries. The 18th and 19th centuries are pointed out as an era when the concept was used as a mandate for colonial endeavors. New philosophies, like rationalism and humanism, transformed development from a form of change to a more directed, logical form of evolution, (Potter et al. 2004). The ways of the Europeans was thought of as rational and civilized, which consequently made any other societies in other parts of the world "backward" or uncivilized. It was thus seen not only as a right, but also a responsibility of the Europeans to conquer and govern these foreign lands and civilize the "barbarians". Religious aspects were also considered, as the colonization also brought Christian missionaries to teach the gospel to the pagans. In the wake of Darwin's theory of evolution presented in the nineteenth century, social Darwinism gave mandate to expressions of the subordination of non-European peoples which needed the guidance and governance of their European superiors, and the western world as being at the top of the evolutionary ladder of civilization (Potter et al. 2004).

Comparing such views with President Truman's speech in 1949 where he stated that the poverty of the underdeveloped world was "*...a handicap and threat both to them and more prosperous areas...greater production is the key to prosperity and peace. And the key to greater production is a wider and more vigorous application of modern scientific and technical knowledge*" (Potter et al. 2004/Porter, 1995), it seems that there are many similarities between the ways of envisioning the relationship between the West and the Developing world. The Truman-speech can be connected to the political agenda of USA at the time. Together with the struggle to rebuild Europe after the war and 'Nationalist developmentalism', this agenda has been pointed out as being the origins of Growth Theory, the goal of which was to repeat the historical experiences of the First World in The Third World, and in which economic growth is central. Within this framework development became synonymous with economic growth, and increasing material wealth and incomes was considered much more important than making sure that there was a fair distribution of the wealth. It is also within this framework that the different UN agencies have been formed, and the agenda set by Truman in his speech can be seen as of neo-colonial, as the newly independent nations were urged to turn to the USA and other western countries for guidance to development (Potter et al. 2004).

Gross National Product (GDP) per capita was the first way of measuring development, and is still used in annual development reports from institutions like the UN and the World Bank. The GDP per capita measurement has often been used as an indication of the failure of Third World countries to reach development. However, the

measurement has been criticized for being solely focused on the economic growth, and in recent years, the Human Development Index, which also takes other parameters like life expectancy, school enrolment ratio and literacy into account, has been added. While economic growth has been, and still is considered the main definition of development, it has been widened to include certain social parameters and democracy.

This economic take on development reflects the “traditional” classical economic theories of Adam Smith and David Ricardo, which have been guiding development theory. In the classical and neo-classical economic theories, economic development was understood as growth of world trade and the law of comparative advantage advocating countries or areas to specialize in production that they are especially suitable for. The idea of the west being the model for development, and thus able to convey this development to the “underdeveloped” countries of the third world has been described in several works on the subject. The views of A.O. Hirschman include the idea of a ‘trickle-down effect’, where the development of the rich world will reach the poor world, as economic incentives spurs investment and moving of money to these areas (Potter et al. 2004).

When more of the old colonies gained their independence during the 1960’s, they did so with a sense of optimism and hope for the future, even though their economies were weak and relied heavily upon primary resources and external buyers (Hoogvelt, 2001/Potter et al. 2004). However the economies stagnated and declining growth demanded measures. Even though more and more of the developing countries started to make use of the term “development” during the 1970’s, many of them had started to recognize themselves as underdeveloped and used Western standards to measure themselves by (Potter et al. 2004).

In the 1970’s a series of events took place that came to shape the future of the developing countries. With an increasing demand for oil in the world, the oil-producing countries of OPEC made big profits. These were further increased by the oil crisis in 1973-74 when the Arab oil embargo, as a response to West’s support for Israel, spurred steep raises in oil price. The money made by the oil-producing countries was placed in western banks. Simultaneously, many of the developing countries were taking loans to fund their development programs. Approved by the international community, developmental models that included state-led national development that far overshot the financial capacity of the states were implemented in many developing countries. As the financial climate inspired the developing countries to take loans from the western banks, large amounts of the “petrodollars” spurred an ever-increasing inflow of capital to the developing countries. The nature of the loans went from public to commercial, as the banks were eager to strike interest from the influx of “petrodollars” (Hoogvelt, 2001). However, in the spinning money-carrousel, the loans increasingly ended up in the pockets of corrupt and/or undemocratic leaders in power of the developing countries. By overvaluing imports, under-reporting receipts from exports, smuggling of drugs, metals and a number of other illegal activities much of the loans meant for the development of the countries ended up in private overseas bank accounts of leaders, businessmen and others who chose to place their money abroad (Hermele, 2001). The money was then, without many questions about its intended use, further recycled by the banks in the form of new loans to questionable aims of questionable or illegitimate leaders (Hoogvelt, 2001).

By the beginning of the 1980’s US\$ 80-100 billion, or 25 % of the Third World debt had ended up in private hands and been banked in safe havens abroad (Hoogvelt, 2001). The active interest of the loans increased steeply from actually negative numbers to up to 16 % (Hermele, 2001). Together with the fact that the loans had been used to other ends than the development they were intended for, this left many developing countries in a debt crisis without the means to bring themselves out of it. In 1982 Mexico as the first country cancelled its debt repayments. Soon, most countries in Latin America and Africa countries followed suit and the Debt Crisis broke out. To come to order with the crisis, a new debt-strategy was launched in 1983 at a DAC- (Development Assistance Committee of OECD) meeting. In an initiative from USA it was decided that the uncontrolled loaning had to stop, and “aid coordination” was implemented to control the forms of loans and aid, private and public alike. The “Bretton Woods-twins” – The World Bank and the International Monetary Fund - IMF were put in charge of the coordination (Hermele, 2001).

The general solution provided by the IMF and the World Bank to the indebted countries was Structural Adjustment Programs (SAPs), which were a number of measures, and changes the countries had to accept in order to receive new loans. During the 1980’s neo-liberalism came strongly in the West, heavily advocated by US President Ronald Reagan and British Prime Minister Margaret Thatcher. With the IMF and the World Bank adhering to the same ideology, the SAP-measures issued to the third world countries as a way of coming to terms with their economic problems further promoted neo-liberal ideas. The main concepts of the SAP included:

- Devaluation of the currency to make domestic production competitive
- Deregulation of prices and wages
- Trade liberalization
- Privatization
- Reduction of public spending on social programmes
- Removal of subsidies for food
- Securing the right to private ownership
- Easier establishment of foreign companies

(Hermele, 2001/Hoogvelt, 2001).

Despite the claimed positive effects of the SAPs, the results did not support such claims. During the 1980's, 29 Sub-Saharan African countries accepted the structural adjustments pushed by the World Bank and IMF. Still, the per capita income in the region declined by 30 % from 1980-88. This should be considered in the context of the low GDP per capita rate of the countries (Ghai & Hewitt de Alcantara, 1991). Instead of the positive effects claimed to be the outcome of the SAPs, many countries experienced even more difficulties. The SAPs opened up the market of the developing countries for private investments, which mostly came from western companies or companies providing resources to the west. With the role and the influence of the state diminished and social securities and privileges such as health care and labour unions out of the way, there was not much to control or steer the exploitation of resources other than the supply and demands of the world market.

The structural adjustments rendered the states of the countries weak, and investments in public interests such as infrastructure and healthcare were not made in accordance to the public needs. Roads were built to serve the needs of mines and other industries, and thus not in other areas where there was a public need but no market incentive. The developing countries were told to focus on export, so African raw materials and physical resources were exported, flooding the market, forcing down the prices on the world market. Also, the focus on resources and commodities for export, meant a reduction in food production, leaving many countries vulnerable to famine and other consequences brought on by droughts or other crop failures (Hoogvelt, 2001). Devaluation entailed by the SAPs has increased foreign debt in terms of local currency, while liberalization of exchange rates has brought on higher interest rates on domestic debts. The rules of SAP also prohibits the governments to print money, they instead have to borrow more money from the World Bank, IMF and other international financial institutions (Hoogvelt, 2001)

While the structural adjustment programmes by the late 1980's started to include demands for free, democratic multiparty elections and an independent judicial system in the requirements for grants and loans, it has been pointed out that there are connections between the neo-liberalism of the SAPs and the instability and conflicts that have been plaguing many African countries. Chossudovsky (1995) describes how SAP-measures contributed in bringing about the conditions for the civil war and genocide in Rwanda in 1994. One explanation is that the states in many of the developing countries used to rely on rather corrupt means of maintaining stability, by buying the influence of locally and culturally accepted tribal leaders. When the state, as a result of the implementation of SAP-measures, lost much of their power and capabilities, the stability that had been maintained was lost. As the people that had been making a profit on the corrupt and inefficient, but peacekeeping ways, had to find other sources of power and income, countries could more easily descend into "warlordism" and inner turmoil (Reno, 1995 /Hoogvelt, 2001).

Another factor that can be attributed to the conflicts of developing countries, especially in many African countries is the market for different resources, often demanded by the population in the west, and extracted or produced in the developing world. In the many conflicts on the African continent, the selling of resources such as ivory, diamonds and oil has paid for the war. These resources, which often are sold on or via illegal markets, are often produced under hard conditions violating human rights. The incomes from these businesses are used to buy equally illegal weapons, armaments and to finance other needs of the warring parts. As this industry is also highly profitable, the leaders behind the war are encouraged to continue the war indefinitely (Hoogvelt, 2002).

The general understanding of development as described above has been widely criticized for being Eurocentric or "Westernized" with an origin, bias and discourse based on the values and understandings of western culture and history. The common factor for most of these ideas of development envisioned by the west is that they equate development with capitalism. This is at the root of much of the critique, as the western development theories fail to put the basic needs of humans at the centre. From the 1960's onwards, a number of alternative takes on development have been presented that put healthy lives, public participation and "bottom-up" approaches to

development at the centre. With the basic and local needs in focus, the development concepts of the Dag Hammarskjöld Foundation and Robert Chambers gave views of development in stark contradiction to the modernistic, classical and neo-liberal approaches (Potter et al. 2004 / Chambers, 1983).

Even though the westernized growth-focused concepts still dominate much of the work with development, other aspects have been given more attention in more recent years. Democracy, access to education and health are, as mentioned, now measured and presented in the UNDP's Human Development Reports. Being made visible beside the growth-focused measures of GDP, these more human variables provide an understanding of how well growth and human development correlate. These two general understandings of development are commonly put head-to-head as governments often focus on the economic aspects, while grassroots-movements and NGOs tend to give more attention to issues of democracy, human rights and local needs (Potter et al. 2004)

5. BACKGROUND

5.1. Tobacco

Tobacco is made from the leaves of tobacco plants of the *Nicotiana* genus, indigenous to the Americas. There are around 70 different species of tobacco, but *Nicotiana tabacum* (“Virginia tobacco”) and *Nicotiana rustica* (“Wild tobacco”) are the ones most commonly used for cigarettes. (“Tobaksfakta”, Internet, 2010-02-26 / Gilman & Zhou, 2004). Different varieties of flue-cured (explained below) Virginia tobacco make up almost 60 % of the global tobacco production. China alone produces half of the world’s flue-cured tobacco. Burley is a type of tobacco that is air-cured, and accounts for just under 15 % of the world’s tobacco. The United States and Malawi are the biggest producers of Burley. Oriental tobacco is a variety with strong aroma and makes up 10 % of the global production. Turkey is the leading producer of oriental tobacco, accounting for 40 % of total production (Jaffee, 2003).

Table 1. Structural patterns in major tobacco producing countries (Jaffee, 2003).

Major Tobacco Producing Countries : Comparative Structural Features

	China	Brazil	USA	Zimbabwe	India	Turkey	Malawi
Production (000 MT)	2600	590	480	210	660	260	125
Planted Area (000 Ha)	1600	330	195	80	435	280	140
# of Growers (000)	8000	135	90	18	850	576	375
Average Size of ‘Tobacco’ Farm (Ha)	0.4	16.8	66	300+	2.5	4.9	1.0
Average Tobacco Planting (Ha)	0.2	2.6	4.2	40	1.3	0.5	0.2
Tobacco Varieties*	90% FCV 9% Bur	75% FCV 16% Bur	2/3 FCV 1/3 Bur	95% FCV	75% Non-cigarette varieties FCV + Bur 5%	95% Ori	92% Bur
* Flue-Cured Virginia (FCV); Burley (BUR); Oriental (ORI) Sources: USDA Attache Reports; Kasnakoglu and Cakmak (2000)							

The cultivation of tobacco starts by planting the small tobacco seeds in hotbeds or cold frames where they grow until they are mature enough to be transplanted into the fields. This is done to protect the seedlings from insects (Tobacco Facts, Internet, 2010-03-04 & Stogie Fresh TV, Internet 2010-03-04). Like most other crops, tobacco requires pesticides, fertilizers and water to grow successfully. Depending on the type of tobacco and its intended use, the harvesting and subsequent curing differs. Burley tobacco is harvested by picking the entire stalk. Virginia tobacco, which is also known as “Bright”, is instead harvested in sets, starting with the bottom leaves first, since they are the first to mature. By picking, or “priming”, the leaves in sets this way, all the leaves are allowed to mature, as the plant can distribute more nutrients to the upper leaves when the lower sets have been harvested. In the USA, this is often done mechanically (Phillip Morris USA, Internet, 2010-03-04 & Stogie Fresh TV, Internet, 2010-03-04) but generally, tobacco harvesting is done by hand, since the crop requires tender care (Jaffee, 2003). For this reason, tobacco is mostly grown on small family-run farms. As seen in table 4 below, from Jaffee (2003) the average size of tobacco producing farms in Malawi is only one hectare. In China the number is only 0,4 hectares. The size of the actual tobacco plantings has an average of only 0,2 hectares in both of these countries. USA and most distinctly Zimbabwe have very big tobacco farms, and the average tobacco planting size in Zimbabwe is huge compared to the other countries described in the table. The next step in the process is the curing, or the drying of the tobacco leaves. There are different methods of curing the tobacco, which are used depending on the intended use of the tobacco.

- Air curing means that the tobacco leaves are hung in barns with good ventilation over a period of 6 to 8 weeks, giving the tobacco a light, sweet flavor and a high nicotine-level. Burley is cured this way, as is shown in Figure 3 (The Tobacco Seed Company, Internet, 2011-05-07).
- Fire curing means that the tobacco is hung in barns where wood-fueled fires are kept burning for a period of three to ten weeks, depending on the tobacco and the process. This method leaves the tobacco low in sugar and high in nicotine and is used for snuff, chewing tobacco and pipe tobacco (Ibid).
- Flue curing is similar to fire curing, since leaves hanging in a barn are dried from the heat of a fire. However, the tobacco does not come in contact with the smoke from the fire, as it is led out a flue. Cigarette tobacco high in sugar and with medium to high amounts of nicotine is cured in this fashion (Ibid.).
- Sun cured tobacco is dried outside in the sun. The method is used for oriental tobacco. Tobacco cured in the sun is low in both sugar and nicotine and is used for i.e. cigarettes (Ibid.).

After the curing, the tobacco is shipped to market and sold to companies processing the tobacco for their products (Phillip Morris USA, Internet, 2010-03-04).



Fig. 3. Burley tobacco being air-cured (Nyasa Times, Internet, 2011-05-08).

5.2. The Tobacco Industry

Tobacco is used world-wide, and is a multi-billion dollar business involving growing and curing of tobacco-leaves, importing and exporting of tobacco and of course selling, both nationally and internationally, of cigarettes and other tobacco products. The economic value of the tobacco industry is several hundred billions of USD every year, and between eleven and twelve million farmers are growing tobacco worldwide (Jaffee, 2003). Even though tobacco is such a big business, it is dominated by a few countries and companies. The world's two leading tobacco companies are Phillip Morris, which owns the world-leading cigarette brand Marlboro and British American Tobacco, which owns brands like Lucky Strike and Kent had in 1999 16,4 % and 15,4 % respectively, of the international market-share (Mackey & Eriksen, 2002/BAT, Internet, 2010-03-11). When it comes to the growing of tobacco, five countries – China, India, USA, Brazil and Turkey, produce 2/3 of the world's tobacco (Mackey & Eriksen, 2002). As seen in Table 1, China is by far the biggest producer. Most of this production goes to domestic production, but exports from China have steadily been increasing over the last decades, and in 2001 20 billion cigarettes to a value of US\$ 320 million were exported from the country (Mackey & Eriksen 2002). China is also the country that consumes the most tobacco, which is not strange, considering its population.

Table 2. Top 10 Tobacco Leaf producers (suite101, Internet, 2010-03-11).

Top Tobacco Leaf Producing Nations (2005)

1.	China	2.64 million tonnes (39.6 % of world total 6.7 million tonnes)
2.	India	0.64 million tonnes (9.6 %)
3.	Brazil	0.55 million tonnes (8.3 %)
4.	United States	0.47 million tonnes (7 %)
5.	EU	0.31 million tonnes (4.6 %)
6.	Turkey	0.23 million tonnes (3.5 %)
7.	Zimbabwe	0.22 million tonnes (3.3 %)
8.	Indonesia	0.14 million tonnes (2.2 %)
9.	Malawi	0.12 million tonnes (1.8 %)
10.	Russia	0.09 million tonnes (1.4 %)

Table 3: Top 10 tobacco consuming countries (suite101, Internet, 2010-03-11).

Top Tobacco Consuming Nations (2005)

1.	China	2.66 million tonnes (38 % of world total 7 million tonnes)
2.	European Union	0.71 million tonnes (10.2 %)
3.	India	0.52 million tonnes (7.4 %)
4.	Russia	0.44 million tonnes (6.4 %)
5.	United States	0.43 million tonnes (6.2 %)
6.	Brazil	0.23 million tonnes (3.3 %)
7.	Japan	0.18 million tonnes (2.6 %)
8.	Indonesia	0.17 million tonnes (2.4 %)
9.	Turkey	0.14 million tonnes (2 %)
10.	Pakistan	0.10 million tonnes (1.4 %)

An interesting feature of the tobacco industry is the importing and exporting of tobacco. As seen in Table 1, the EU only produces 4,6 % of the world's tobacco leaves. Still, Table 3 shows that the EU is the biggest exporter of tobacco leaves (Suite101, Internet, 2010-03-11). This indicates that there are imports to the EU that in turn are exported to other countries. Also trade within EU should explain this feature. Brazil is the biggest single exporter of tobacco and USA is another big exporter. Interestingly, the imports to USA are about as big as the exports (Mackey & Eriksen, 2002). American tobacco is popular globally and is therefore generally more expensive than tobacco from other countries – those exporting to USA. Table 1 shows that Malawi produces a mere 1,8 % of the tobacco in the world. However, Malawi stands for 5,3 % of the world's exported tobacco.

Table 4. Top 10 Tobacco leaf exporters (Suite11, Internet, 2010-03-11).

Top Tobacco Leaf Exporting Nations

1.	European Union	18.1 % of world total
2.	Brazil	16.6 %
3.	United States	9.9 %
4.	Zimbabwe	9.1 %
5.	Turkey	6.5 %
6.	China	5.6 %
7.	India	5.5 %
8.	Malawi	5.3 %
9.	Russia	3.9 %
10.	Other European countries	2.0 %

Today, tobacco is used all over the world, and even though there are some alternative uses for tobacco in, for example, medicine (“The National Centre for Tobacco-free Kids”, 2000) and biofuel research (The Register, Internet, 2010-02-26) the main area of use is personal consumption. Tobacco is available in different formats, with some being more common in certain parts of the world. The most common way to use tobacco is through smoking, and cigarettes account for 96 % of the total value sales of tobacco products. In the year 2000, 5 500

billion cigarettes were smoked. This number equals more than 15 billion cigarettes per day (Mackey & Eriksen, 2002).

Worldwide, approximately 1,3 billion people are smoking. While the rate of smoking has been going down, especially in developed countries and among well-educated people, the trend moves slowly, and smoking is increasingly becoming normal among poor and less educated. 84 % of the world's smokers live in developing countries or transitional economy countries (Global Issues, Internet, 2010-03-11). In China alone there are 300 million male smokers. Smoking is generally not as common among women, even though there are some countries such as Sweden and Norway where the percentage of male and female smokers are similar. In many countries, especially developing countries and in the Russian Federation, male smokers are ten or more times as common as female smokers. Still, there are around 250 million women of age 15 and older who smoke worldwide (Mackey & Eriksen, 2002).

While the cultivation of tobacco is the main focus of this report, health issues are probably the most commonly discussed problem concerning tobacco. The most well known effect of tobacco is maybe lung-cancer caused by smoking. According to the Tobacco Atlas published by WHO, tobacco is behind 90 % of all cases of lung cancer, but tobacco affects health in a number of ways, and no matter how tobacco is consumed, it has consequences for the health. Tobacco is in fact the second biggest cause of death in the world, exceeded only by poverty/malnutrition (Miller, 2007). In 2005 tobacco caused the death of 5,4 million people around the globe – approximately one every six seconds (Global Issues, Internet, 2010-03-12). Regular cigarette smoke contains over 4 000 chemicals of which around 60 are known or suspected carcinogens. Among the substances in tobacco smoke are Ammonium, DDT, Arsenic, Cadmium and Vinyl Chloride (Mackey & Eriksen, 2002). Beside the well-known link to lung-cancer, using tobacco is also known to cause cancer in other parts of the body, such as the mouth, stomach, liver and kidneys. Tobacco also harms the heart and can cause heart attacks. In addition to these health issues, other severe problems such as infertility for both men and women, leukemia, diabetes and weakened immune system, can be linked to the use of tobacco (Mackey & Eriksen, 2002). It is not only for the users that tobacco is a problem, as second hand or passive smoking also adds to the unhealthiness. The Centers for Disease Control and Prevention (CDC) in USA estimates that passive smoking is behind 3000 lung-cancer deaths and 46 000 deaths from heart diseases in USA every year (Miller, 2007).

5.3. Malawi

The Republic of Malawi is located in southeastern Africa, bordering to Tanzania in the north, Zambia in the west and Moçambique in the east and south (fig. 4). The most prominent geographic feature of the country is Lake Malawi, which makes up some 20 % of the nation's total area (Geographica, 2003). The landscape is made up of a long, narrow plateau with hills, billowing plains and mountains. These are all features of the Great Rift Valley that runs through the country from south to north (The Encyclopedia of Earth, Internet, 2010-03-04). The climate is sub-tropical with a rainy season (November to May) and a dry season (May to November) (CIA, Internet, 2010-03-08). At the end of the 15th century, Bantu-speaking peoples formed the first known settled kingdom, the Maravi confederacy, in the area around Lake Nyasa (Lake Malawi) (Historyworld, Internet, 2010-03-08). The Maravi kingdom crumbled as Arabian slave traders came to the area in the 18th century, extending their market from the coast. The period of slave trade also brought Islam to the region. (Ibid.) In the second half of the 19th century, the British brought an end to the Arabian domination, and in 1891, present-day Malawi was annexed by Great Britain and named British Central African Protectorate in 1893. In 1907 the colony was renamed Nyasaland. The first half of the 20th century brought little prosperity to Nyasaland and many of the African population moved to neighbouring countries in search of employment. In 1953, the British government declared that the three colonies of North Rhodesia, South Rhodesia and Nyasaland would form the Federation of Rhodesia and Nyasaland.



Fig. 4. Map of Malawi (Guide For Africa, Internet, 2011-06-16).

The influence of the African population was severely limited in this federation, and in the wake of the struggle for more independence and influence for the African population, Nyasaland was granted internal self-government within the federation in February of 1963. Dr. Hastings Banda, who became Prime minister when the self-government was granted, led the struggle for Nyasaland's independence. One month later, inspired by other African countries gaining independence from their former colonial rulers, all three of the colonies were demanding independence. The British government conceded, and the federation was officially dissolved on 31 December 1963 (Ibid.). As Nyasaland gained its independence, the name of the country was changed to Malawi, and Hastings Banda remained prime minister. The title was later changed to president, as Banda turned Malawi into a one-party state and ruled for 30 years, until finally, in 1994, multi-party elections were held, and Banda's rule ended (Encyclopedia of Earth, Internet, 2010-03-08).

Under the rule of the new president, Bakili Muluzi, Malawi's economy improved and foreign aid and investment came into the country (Historyworld, Internet, 2010-03-08). However, in later years, the progress has been hindered by political deadlock. There are a number of problematic issues in present-day Malawi such as corruption, increase of HIV/AIDS, deforestation, land degradation, increased pressure on agricultural land, poverty and a growing population (CIA, Internet, 2011-05-02). However, as will be described in this report, other problems such as questionable conduct from buyers on the agricultural market, decreasing tobacco prices and ill-designed aid measures are also adding to the situation.

Malawi had a population of 13 million in 2008 (The National Statistical Office of Malawi, 2008). Other sources estimate the number to be close to 15 900 000 (July 2011 est.) (CIA, Internet, 2011-05-02). The majority of the population belongs to some of the several Bantu-peoples, e.g. Yao, Chewa, Nsenga and Bguru, but there are also Asian and European minorities (Geographica, 2003). The official language is Chichewa, but other Bantu-languages such as Chinyanja, Chiyao and Chitumbuka are spoken throughout Malawi (CIA, Internet, 2010-03-08). Malawi has 28 provinces split up in three regions: Northern, Central and Southern. The majority of the population lives in the Central and Southern Regions, while the Northern Region is more sparsely populated. The name of the capital is Lilongwe, which is located in the Lilongwe province in Central Malawi. Other major cities are Blantyre, Zomba and Mzuzu (The National Statistical Office of Malawi, 2008). However, 85 % of the population lives in rural areas (CIA, Internet, 2010-03-09). Protestantism is the biggest religion with 55 % of the population as followers. Catholicism and Islam have 20 % of the believers each, and there is also a minority adhering to native religions (5 %) (Geographica, 2003).

Many of the conditions normally used as indices of poor development in the field of development studies are prevalent in Malawi. The death rate and infant mortality rate are among the highest in the world, with 14,23 deaths/1 000 population and 86.01 deaths/1,000 live births. With 50,03 years, Malawi ranks in 210th place in life expectancy at birth (CIA, Internet, 2010-03-08). A big contributor to the grim figures in these categories is HIV/AIDS. In 2007, 11,7 % of the Malawian population, or 930 000 people were living with HIV/AIDS, while 98 000 died from the disease. Nevertheless, the population of Malawi keeps growing at a fast rate. The total fertility rate is 5,59 children born /woman and the birth rate is 41,68 births/1 000 population (2009 est.). The population is growing by 2,75 %, which is the 21st highest growth rate in the world (CIA, Internet, 2010-03-08). The high fertility rate together with a high mortality rate results in a very young population. The median age in Malawi is 16,8 years, and 45 % of the population belongs in the 0-14 years age group (CIA, Internet, 2010-03-08). However, there are other categories in which Malawi fare much better. The literacy rate for ages 15 and older is 62,7 % for the population in total. However there is a big difference between the genders, as men have a literacy rate of 76,1 while the number for women is only 49,8 % (2003 est.). Despite these facts, Malawi ranks 44th in education expenditures, allotting 5,8 % of its GDP to education purposes (CIA, Internet, 2010-03-08).

Malawi is one of the poorest countries in the world and the Purchasing power parity (PPP) per capita is \$ 900 for 2009. At the same time Malawi showed up a GDP growth rate of 5,9 % for 2009, which was the 14th highest in the world (CIA, Internet, 2010-03-09). Malawi is very dependent on economic aid from IMF, the World Bank and individual donor countries. In the wake of the nation's economic improvement in recent years, Malawi was approved for debt relief under the Heavily Indebted Poor Countries (HIPC) Program in 2006 (CIA, Internet, 2010-03-09). Of the total GDP of \$ 12,81 billion in 2009 (2009 US\$), the agricultural sector stands for as much as 35,5 %. The service sector contributes 44,6 % and the industrial sector only 19,9 %. The importance of the agricultural sector is obvious as it employs 90 % of the labor force and stands for 90 % of Malawi's export income. The production of tobacco is a major part of the agricultural industry, making up 53 % of the total commodity export and standing for up to 70 % of export earnings. Other important industries include tea, sugar, cement and sawmill products (CIA, Internet, 2010-03-09 /Nsiku & Botha, 2007). There are also natural resources such as bauxite and uranium, but the amounts do not allow for large-scale commercial production (Geographica, 2003).

Hydropower provides almost all the electricity in Malawi (International Small-Hydro Atlas, Internet, 2010-03-09), but its contribution to the total energy need is only a few percent. Instead wood is used for fuel on a large scale (Geographica, 2003). Together with the increasing demand for land for the agricultural industries, this causes problems with deforestation and land degradation (Geographica, 2003/ The Encyclopedia of Earth, Internet, 2010-03-10).

5.4. The Tobacco Industry in Malawi

In Malawi, tobacco has been grown commercially since the 1890's when the British colonized the country. By the 1920's, it had become an important part of the economy of what was then referred to as Nyasaland Protectorate (Jaffee, 2003). Leading up to the country's independence in 1964, tobacco played a central role as a merchandise of the colonial economy of Nyasaland. However, it was not until the 1970's that a quick and stable expansion of the production started (FAO, 2003). After Malawi's independence, a large part of the country's political and economic elite invested in tobacco, and over the following two decades, the industry became the main source of employment, export earnings and also political influence (Jaffee, 2003).

The production levels have often fluctuated greatly from year to year, but the last four decades of the 20th century saw a steady overall increase. From an average of some 16 000 tonnes of tobacco per year in the 1960's, the production average was well over 130 000 tonnes per year during the last 10 years of the millennium (FAO, 2003). In 1974 tobacco stood for 39 % of the country's tradable exports. A figure that had increased to 69 % in 1993 (The Courier ACP-EU, 2003). Together with tea, sugar and coffee, tobacco makes up 90 % of the commodity exports of Malawi. Depending on annual production levels and prices, tobacco stands for 50-70 % of the export earnings (Nsiku & Botha, 2007).

In more recent years, the production of tobacco has leveled off somewhat, and the economic importance of the crop has fallen slightly. However, tobacco still remains an important factor in terms of the national economy, on household level as well as for the state. In 2003, tobacco made up 60 % of Malawi's total exports, 13 % of its GDP and 23 % of the total tax base in the country. Figure 5 shows the export share of tobacco and other crops

from 1977-2003. One in five households in Malawi relies heavily on tobacco production or employment within the sector for income (Jaffee, 2003). Kalimanjira (October 2010, pers. comm.) even claims that more or less all farmers grow tobacco and that almost 90 % of the Malawian population in some way is dependent upon tobacco. Tobacco is grown all across Malawi, but especially in the central and southern parts of the country. Mainly smallholder farmers grow tobacco, and the general concept is that if you have room for it in your land, you grow tobacco. This is in contrast to the other big agricultural products of Malawi such as cotton and tea, which are mainly grown on estates by large companies in the southern region of Malawi (Kalimanjira, October 2010, pers. comm.).

During the colonial period, the cultivation of tobacco in Malawi was a privilege restricted to estate owners. Through the National Tobacco Board (NTB), which was formed in 1926, the European estate owners imposed limits for smallholder production of tobacco. Demands for registration of tobacco farmers, reduced and controlled marketing sites and price limits for the smallholder tobacco made it hard for small-scale farming of tobacco to prosper (Tobin & Knausenberger, 1998). This monopoly continued after the independence, as the new political leadership used licenses for burley tobacco production and estate leases as means to ensure loyalty and support from the large-scale estate-farmers. Also, governmental policies subsidized the cost of growing burley on estates by reducing costs for agricultural inputs. Low prices on estate leases lowered the price of land, while the restrictions for smallholders to grow tobacco provided cheap labour for the estate owners (Ibid).

In this manner, the same system that was implemented during the colonial era was maintained. In this system tenants lived and worked at the estates, producing tobacco with the use of inputs that the estate owners provided on credit. The tenants then sold the tobacco to the estate owners at a price established by the government. These prices were significantly lower than the prices the estate owners received when they in turn sold the tobacco on auctions (Ibid). Smallholders could not legally grow the higher value burley tobacco until 1990, and were limited to other types tobacco. All of this tobacco had to be sold through the parastatal ADMARC (Agricultural Development and Marketing Corporation), which in turn sold the tobacco to buyers but only returned about 20 % of the earnings to the smallholders.

While the tobacco industry brought economic growth to Malawi, this growth was very unevenly distributed. Estate production value increased by an average of 9,5 % per year during the 1970's and by over 5 % annually in the 1980's. As comparison, the value of smallholder agricultural production increased by less than 0,5 % from 1978 to 1988 (Tobin & Knausenberger, 1998). As tobacco was such an important factor for the Malawian economy, donors started demanding implementation of certain sectoral/structural adjustments in exchange for new grants or loans to Malawi. From 1983 to 1990 the World Bank gave three tobacco-related loans to Malawi, and in 1991 USAID began its seven year long Agricultural Sector Assistance Programme (ASAP) worth US\$ 55 million. In exchange, The Malawian government agreed to reforms within the agricultural sector, intended to liberalize the production and marketing of food- and cash crops and to liberalize the production of burley tobacco. As the tobacco market became less restrictive during the following years, smallholders were allowed to grow and sell burley, and their allowed production quotas increased (Tobin & Knausenberger, 1998).

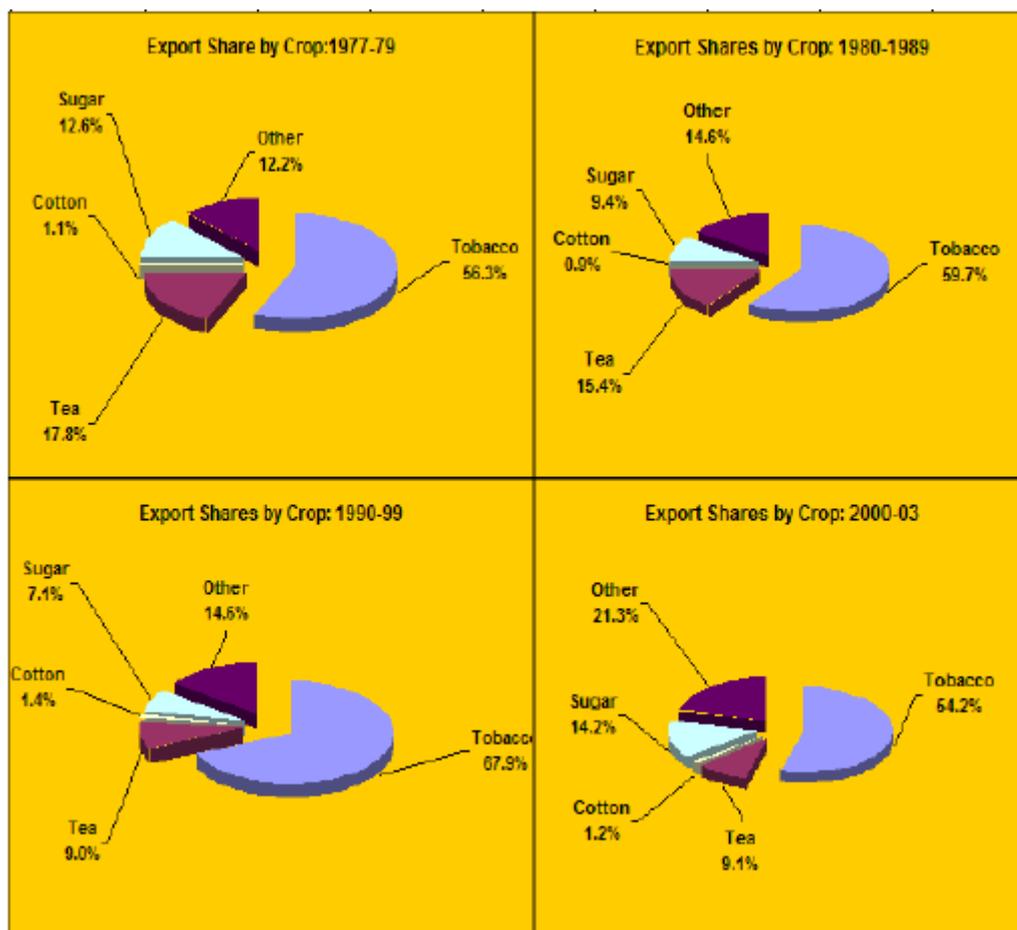


Fig. 5. Malawi export share by crop from 1977-2003. The four diagrams clearly shows the spike in tobacco production and adhering export share during the 1990's. The new millennium has seen a steep decline in the export share for tobacco in favour of sugar and other crops (Gwaza, 2005).

During the 1990-1991 season 7 500 smallholders were legally producing 2,26 million kg of burley. By the 1995-1996 season the number had grown to almost 110 000 smallholders, and the demand for quota allocations was so big that the government increased the smallholder quota from 10,7 million kg to 30 million kg. In the 1992-1993 season smallholders accounted for 3 percent of Malawi's burley production. Three years later they produced 40 % of the country's burley. The share of burley in Malawi's tobacco production increased significantly as the number of smallholders increased (Fig.6). As a result, the Malawian ministry of agriculture estimated that the per capita income for smallholder burley producers more than doubled between 1991 (US\$ 153) and 1996 (US\$ 315) (Tobin & Knausenberg, 1998). However, as Tobin & Knausenberg (1998) explains, the smallholders seeing this increase in income represented less than 5 % of the smallholders in Malawi. They were also thought to be the smallholders that were wealthier even before the liberalization of the burley industry. The poorer smallholders were reluctant to start burley production, plausibly because they could not afford the investment costs.

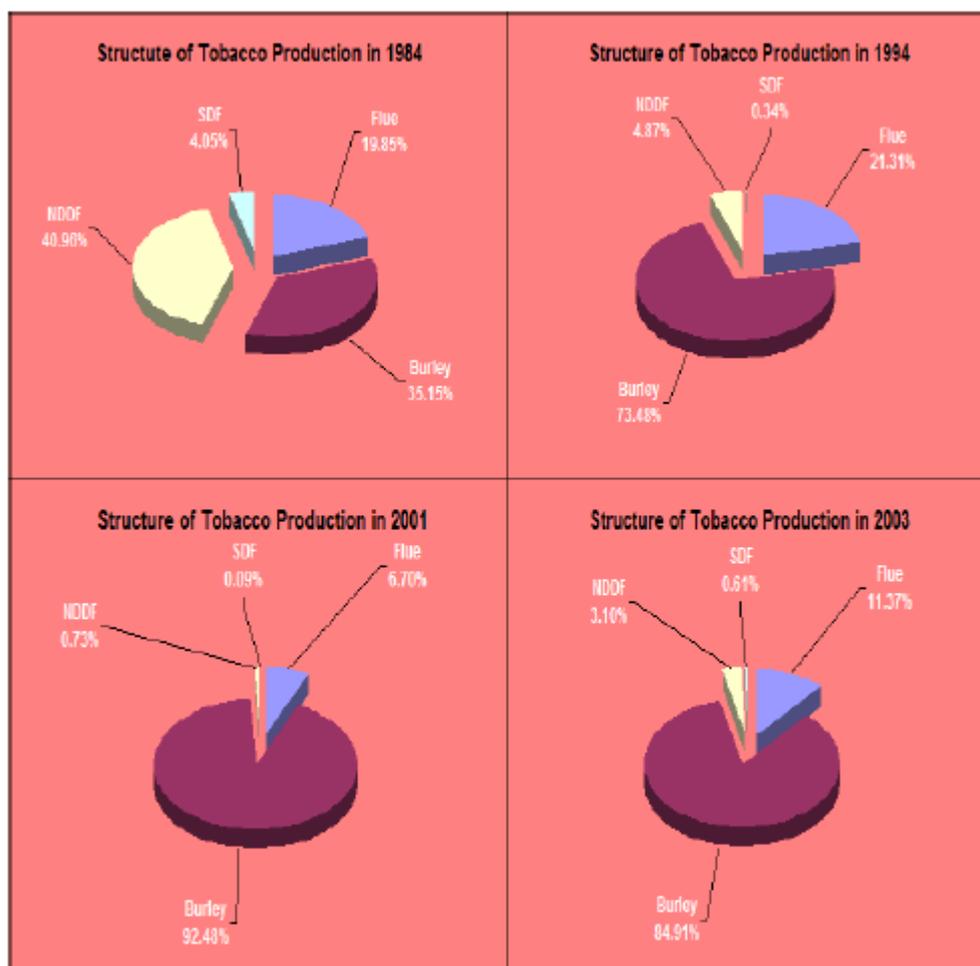


Fig. 6. Structure of Tobacco Production (1984-2003). As a result of the repeal of the Special Crops Act in 1994 the amount of smallholder farmers growing tobacco increased greatly. The smallholders mainly grow burley tobacco, and have thus changed the structure of Malawi's tobacco production (Gwaza, 2005).

A smallholder farmer is defined as owning less than two hectares of land (The Courier ACP-EU no 201 November-December 2003). Smallholders growing tobacco generally only use 0,1-0,3 hectares for tobacco cultivation. Many of the smallholders who started growing burley during the 1990's had experience from working in the larger estates, which they could use in their own tobacco-farming. Also, "burley clubs" were formed with the purpose of facilitate the smallholders' tobacco-business by e.g. obtaining necessary inputs, providing technical assistance and organizing transports to the auction floors. Together, these conditions made possible the redistribution of the Malawi tobacco industry into a smallholder-dominated one. Overcoming a severe drought in 1994, the tobacco industry rebounded in the following years with a peak in 1997. In 1998, 400 000 small holders, equalling 17 % of the total number of households in Malawi – including 183 000 poor households and 73 000 ultra-poor households were growing tobacco (Gwaza, 2005). A World Bank report from 2003 puts the number of smallholder tobacco farmers to around 300 000 (The Courier ACP-EU no 201 November-December 2003). However, both the productivity and profitability started to decline in the late 1990's and early 2000's.

Hazarika & Alwang (2003) examines the drop in efficiency that followed the rapid increase in the number of smallholders. They indicate that the policy reforms which made it possible for smallholders to get into the tobacco-market also resulted in a drop in production efficiency. The paper refers to this as an efficiency-equity trade-off. It is revealed that "...inefficiency is negatively and significantly correlated with tobacco acreage" (Hazarika & Alwang, 2003, p 4). An explanation given for this correlation is the fact that most smallholder farmers allocate most of their land for the staple crop maize, and only a small part for tobacco. It is argued that many farmers over-use inputs – mainly fertilizers in an attempt to compensate for the small hectareage available for tobacco (around 2 % of the total area). With access to larger plots of agricultural land, such an over-use of inputs would not be necessary as more land would be available for both tobacco and food-crops. Also, raising the mean share of land allotted for tobacco from 2 % would mean more cost-efficient tobacco production for the

smallholders. Badly working rural maize markets are pointed out as part of the problem, as many farmers thus have to rely on self-sufficiency in maize with small areas allotted for tobacco as a consequence. Hazarika & Alwang (2003) suggests improvement of the rural transportation infrastructure to alleviate this problem. For the smallholder tobacco farmers the preparations for the tobacco season starts in October and cultivation begins in November, at the start of the rain-season. The tobacco is harvested in February-March and then dried before it is sold in May (Kalimanjira, 2010, pers. comm.).

As Burley has become the major tobacco type in Malawi, air curing is the most used method for drying the harvested tobacco. After the tobacco leaves have been cured, they are packed in bales and transported to the auctioning floors. The transportation of the tobacco to the auction floors has been problematic and widely criticized. Because of congestion at the auction floors, the trucks have to wait in queue to offload the tobacco. The cost for transportation cuts deeply into the revenue of the sold tobacco, as prices at the very least hold a level between US\$0,03 and US\$0,12 per kg (Gwaza, 2005). Because the transportation companies have to pay their drivers even as they stand still outside the auction floors for several weeks waiting to offload the tobacco, they often err on the side of caution and take out higher transportation fees to cover these expenses.

There are also problems concerning bribes and corruption as the transport companies have organized themselves in transport associations, which negotiate the rates with tobacco farmer associations such as TAMA (Tobacco Association of Malawi) and NASFAM (National Smallholder Farmers' association of Malawi). TAMA and NASFAM have different methods of organizing the transportation. TAMA makes use of a national network of around 80 satellite depots to which the farmers have to bring their tobacco bales, and from which they are then transported to the auction floors. Farmers have criticized this system as they in addition to paying TAMA for transporting the bales from the satellite depots to the auction floors, also have to fund the transportation to the depots. Also there are cases of TAMA representatives taking advantage of the situation by using their own vehicles to make transportation deals (Gwaza, 2005). NASFAM instead make use of a system where local burley clubs and transportation companies are involved. With road-side collection points that have been agreed upon as reasonably close for a number of farmer clubs and which are easily accessed by the trucks, NASFAM has been able to cut the transportation costs by half and reducing the transportation time by up to 60 %. However, since TAMA is the biggest farmer association, and with the big problems with congestion at the auction floors, the situation is problematic (Gwaza, 2005).

Another issue that affects the farmers are the hessians in which the tobacco is packed during transport and auction (fig. 7). TAMA is responsible for providing hessians, and is supposed to buy them from importing companies and provide them at the satellite depots. Each farmer gets hessians according to their production. However, the system works poorly, and farmers are often forced to buy their own hessians, making them pay twice as they also have to pay a fee to TAMA of (US\$ 0.063 per kg or MK 500 per bale (of approximately 80 kg) (Gwaza, 2005).



Fig. 7. Bales, or "hessians", of tobacco packed at the auction floor in Lilongwe (Malawi Voice, Internet, 2011-05-08).

The selling of tobacco and all other crops is done through the governmental institution ADMARC (Agricultural Development and Marketing Corporation), which buys the tobacco from the farmers, and later sells it on the three auction floors of Limbe, Mzuzu and Lilongwe. The private company Auction Holdings Limited (AHL) controls all these auction floors. AHL is the only licensed auction floor operator, and thus holds monopoly on this market, since it is required by law that tobacco be sold at auction floors (Gwaza, 2005/Nsiku & Botha, 2007). The auctioning of tobacco is controlled and regulated by the Tobacco Control Commission (TCC) which licenses auction floors, advises the government on sale and export of tobacco, promotes and expands the sale of tobacco, and fixes charges and tariffs after consulting the operators of the auction floors. The TCC also classes and grades tobacco and licenses, registers and regulates tobacco sellers (Gwaza, 2005). In the 2005/2006 growing season the Agricultural Input Subsidy Programme (ASIP) was implemented in Malawi. The programme subsidises fertilizers for maize and tobacco, which are big costs for the farmers (Dorward et al. 2008).

The tobacco market of Malawi is dominated by three big buyers – Limbe Leaf, Dimon and Standard Commercial/Alliance-One, which combine for almost 95 % of the buyer market and have been accused of collusion to gain low prices on the auctions (Nsiku & Botha, 2007/ Gwaza, 2005). The selling of tobacco is not done over night, as recent years have seen frequent buyer-seller stand-offs when the farmers have been unwilling to accept the low prices offered by the buyers. As the tobacco is not sold directly by the farmers, the negotiation is done via ADMARC. This process can be problematic for the farmers, as they do not receive payment for their submitted tobacco, until ADMARC has sold it on the auction floors and then deposited the money in banks for collection by the farmers (Nsiku & Botha, 2007/ The Courier ACP-EU no 201 November-December 2003). The long waiting process has often forced farmers to accept lower prices, as they need money for investment in in-puts for the following season, such as gasoline and fertilizers. A tobacco farmer explains more about the problems that can arise:

“It is hard for the farmer to receive his money because you don’t know when and how much you receive because there are different types of taxes that are taken by tobacco handling companies. So many problems in getting a fair price because sometimes tobacco can stay one month before it is bought... ..delays in receiving your money as sometimes your money is posted to another account which is not yours. They delay us in planning the next growing season, buying farm inputs and other social economic engagements.” (Interview with tobacco farmer, September 2010).

In March 2006, Malawi’s president, Dr. Bingu Wa Mutharika threatened to revoke the license of the largest tobacco buyers if they continued to offer prices lower than the minimum price set by the government. One result of the low prices and long negotiation periods at the domestic auction floors is smuggling. In order to get better payment, or at least getting the money directly in hand, some farmers sell their crops illegally across the borders to Zambia and Mocambique (The Courier ACP-EU no 201 November-December 2003). Some reports indicate Malawian tobacco constitutes as much as 15 % of the tobacco on the Zambian market (Nsiku & Botha, 2007).

6. EFFECTS OF THE TOBACCO INDUSTRY

With one single crop dominating the economy of a country as burley tobacco does in Malawi, it is relatively easy to discern many of the economic, ecological and social effects of it. In this report the issues related to the Malawian tobacco industry have been divided into two categories – environmental effects and socio-economic effects. Even though one could argue for three categories of social, economic and ecologic, following the theories of sustainable development, which forms the background for this report, a decision was made to keep the effects in only two categories. The reasons for clustering the economic and social issues together and leaving the environmental issues with their own categories are several. First of all, this categorization differentiates the more “anthropological” effects from the “biological” ones. Also, in the human society of today the social and economic factors are often closely interlinked. As the society is parallel to the economy, so is of course also the environment. This will also be clear as the connections between environmental effects and the economy and/or social phenomena will be covered. Since many papers, such as Hazarika & Alwang (2003), Nsiku & Botha (2007) and The Courier ACP-EU (2003) already have looked into the economy of the Malawian tobacco industry, it was also deemed more relevant to give the environmental effects a closer look in this paper.

6.1. Environmental effects

6.1.1. Deforestation and its consequences

An issue that has been given concern in several papers on the Malawian tobacco industry is deforestation. Malawi is a poor country where most people, lacking other options, turn to wood as fuel for cooking food. As a result, the country's forests are being cut down, and lacking or poorly implemented rules and regulations regarding forest management make for unsustainable forest use. With a growing population consisting mostly of poor farmers, the need for more agricultural land results in forest areas being cut down to make room for more farms (Mkanda, 2000). The tobacco industry also adds to this problem by demanding wood to some extent for fuel when fire or flue curing tobacco, but mainly as building material for curing huts- used in fire and flue curing as well as in air curing. The huts are generally constructed as thatched grass roofs upon forked poles about two meters apart on which the tobacco is hung to dry after the harvest. Because of damage from weathering and termites, these constructions are used for only two years before being dismantled and turned into fuel wood (Tobin & Knausenberger, 1998).

Since the tobacco industry of Malawi has turned from a more diversified tobacco production to one dominated by burley, the need for wood has declined. Before the repeal of the Special Crops Act and the subsequent change toward more burley, strains such as southern district fire-cured tobacco was more common and the rate of deforestation was much higher. Between 1972 and 1990 the forest cover of Malawi declined by 41 % according to Bunderson & Hayes (1997). In 1993 the government of Malawi admitted that Malawi had one of the highest rates of deforestation in the world (Tobin & Knausenberger, 1997/Government of Malawi, 1993) and in the middle of the 1990's reports stated that as much as 90 % of the annual energy-demand in Malawi was covered by fuel from the indigenous forests. Kalimanjira (October 2010, pers. comm.) describes how in 1984 – the year he left Malawi, you did not need to go far to reach the forest, and some wild animals such as lions would sometimes come into the village and kill goats and other domestic animals. Today such attacks do not occur anymore, since the wild animals are gone - driven off as the forested areas have disappeared, extending the distance between wilderness and human settlements.

“I used to get the wood nearby bushes and selected remaining woodlots. This is done in the night because it is prohibited by law to cut trees unnecessary.” (Interviewed tobacco farmer, September 2010, pers. comm.).

While deforestation is severe, there are some areas that are being protected and patrolled by rangers. In these preserves it is illegal to collect wood, and cars leaving the areas are controlled for wood. However, since law enforcers are susceptible to bribes, illegal cutting of protected forests can continue, but today you need money to buy wood (Kalimanjira & Anna, September 2010, pers. comm.). Anna recognizes that during the colonial days coffee, tea and tobacco were all big industries, and there was need for fuel wood and wood material, but the country was still “green”. After the independence however, deforestation escalated because rules that controlled cutting and replanting of trees during the colonial rule were not maintained or implemented.

There are attempts to protect forests and to encourage replanting. The aforementioned forest reserves are one method, but already in 1973, the Special Crops Act required tobacco estates to plant trees on at least 10 % of their land, intended for their own use. Compliance has been low among estates, and by 1998 only 20 % of the estates were self-reliant in woods (Tobin & Knausenberger, 1998). The law does not apply to smallholders, and most smallholders would have a hard time affording 10 % of their land even if it did. According to Kalimanjira & Anna (October 2010, pers. comm.), forests in Malawi are public land owned by the state and local chieftains, and there are no rules regulating who is allowed to cut trees. However, a recent law demands that one should plant new trees after logging. Though the law is in effect, new trees do not grow fast enough to cover the need for more wood, and with no one looking after the young saplings, they easily fall victim to weather conditions such as drought (Kalimanjira & Anna, October 2010, pers. comm.).

The deforestation results in loss of biotopes and reduction of suitable natural areas for many wild animals, as exemplified by the increased distance between human settlements and wilderness, described by Kalimanjira (October 2010, pers. comm.). Deforestation also affects the hydrologic cycle. Globally, as much as 62 % of the precipitation is a result of evapotranspiration from lakes, wetlands and vegetation (Environment NEWS Service, internet, 2011-03-14). Less trees thus means less rainfall, less rainfall means drier conditions, which in turn affects trees and other plants. Drier weather conditions and less forest cover could also result in an increased risk of fires. Fires could cause even more deforestation as well as many other problems. Figure 7 shows how this system of positive feedback aggravates deforestation and drought.

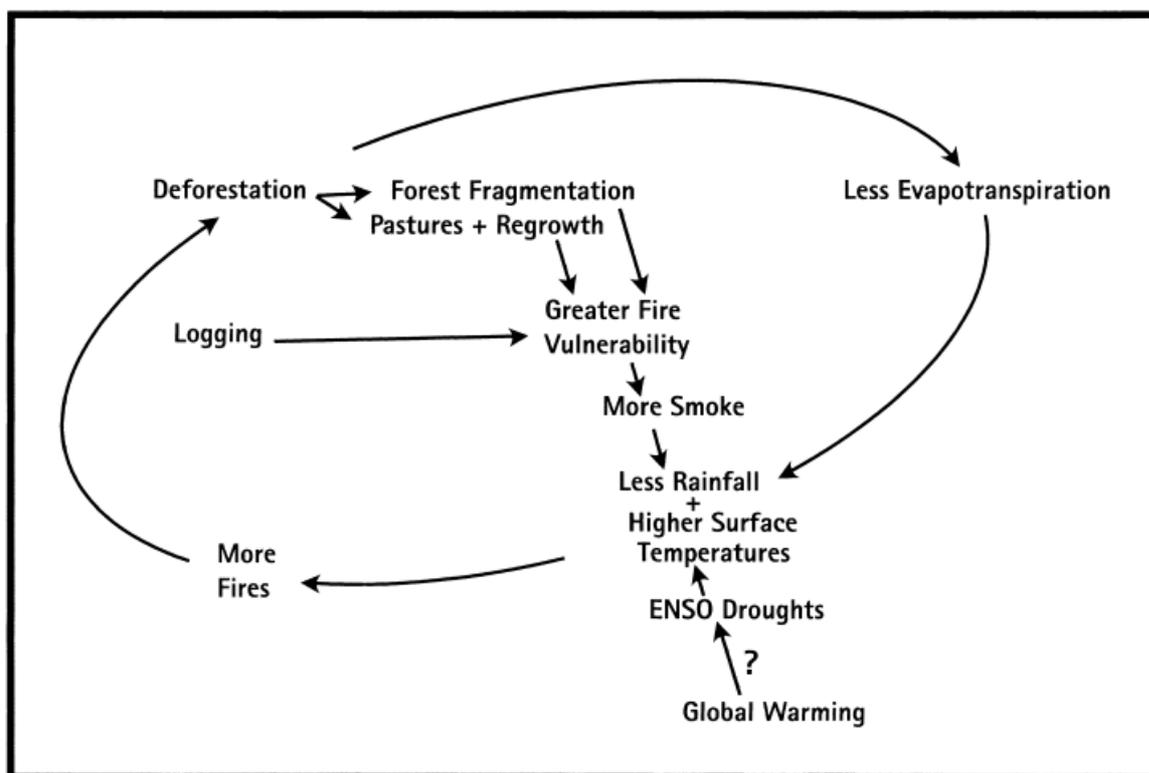


Fig. 8. Positive feedbacks among forest fragmentation, logging, fires, and climate change (ENSO, El Niño–Southern Oscillation). The figure exemplifies the situation in the Amazon, but the general concept could be applied to other forest areas such as in Malawi. Source: Laurance & Williamson, 2001).

Plants bind carbon dioxide from the air via the process of photosynthesis. Thus, all forests on the planet are essentially carbon sinks – holding carbon that would otherwise be in the atmosphere as CO₂, adding to the green house effect. Deforestation means less trees binding CO₂, and when the wood is burned, the carbon stored inside is again released into the atmosphere. As such, deforestation as the in Malawi, where the wood is often used and burned at a fast rate (even wood for material use in tobacco drying, is burned when no longer usable), adds to the green house effect while at the same time reducing the capacity of nature to bind carbon dioxide. Altering of the composition of greenhouse gases (GHG) in the atmosphere is one of the big environmental issues in the world today. An increased level of GHGs in the atmosphere results in global warming and global climate change. On a local/regional level, changes in climate can have a big impact on the environment in Malawi. Shifts in the onset,

duration and intensity of rain and dry season could mean difficulties for certain species to adapt and survive in the long run. Key species or entire biotopes could face extinction, while others might benefit from the climatic changes. As seen in figure 7, climate change could also boost the effects of other environmental issues such as deforestation or soil erosion.

Also adding to the tobacco industry’s effect on climate change are of course GHGs released from transport and processing of the tobacco. Transport to auction floors and subsequent export of the tobacco obviously results in combustion of fossil fuels and release of GHGs such as CO₂. The same goes for farming inputs such as pesticides, fertilizers, which also add to the climate-changing potential of the tobacco industry. While this is not an issue specific to the tobacco industry, as it applies also to other goods being produced and exported in similar fashion, the issue still remains and should be taken into account when examining the environmental effects of the Malawian tobacco industry.

6.1.2. Soil erosion and eutrophication

Another effect of the deforestation is soil erosion. The trees bind the soil and absorb water with their roots. Trees also have a protecting effect as they halt the speed of falling raindrops. When allowed to hit the ground unstopped at velocities of up to 9 m/s, the individual raindrops break loose soil particles up to 2 mm in diameter. With fewer trees to cover and bind the soil, it is more easily eroded and washed away by rain. While agriculture of course implies some kind of vegetation cover in the area being farmed, these crops seldom give much shelter to the ground. Especially since the two important crops maize and tobacco are seasonal crops, they provide no shelter during the onset of the rainy season. Some perennial crops such as tea prove to protect against rain splash erosion but not to the degree that natural forest cover would. The steep topography of Malawi makes the erosion of the frail soil occur even faster (Mkanda, 2000).

Beside destabilizing the ground and thus causing potential damage and destruction on infrastructure and human settlements, the erosion also means that nutritious soil is washed away. Much of the agriculture in Malawi is conducted on hill slopes and other unsuitable areas. The soil in such farmlands, having been worked and thus being looser is more prone to both sheet erosion caused by surface runoff and so-called channel erosion such as rill and gully erosion.

Table 5. Depletion of soil nutrients by tobacco and other crops (loss in kg/ ha). Source: CorpWatch, Internet, 2011-03-07 quoting Van Wambeke through Goodland, Watson & Ledec (1984).

	Nitrogen	Phosphorus	Potassium
Tobacco	24,4	14,4	46,4
Coffee	15,0	2,5	19,5
Maize	9,8	1,9	6,7
Cassava	2,2	0,4	1,9

Not only does this reduce the fertility of the agricultural lands, but also the nutrients end up in the rivers and further downstream – in Lake Malawi where they cause eutrophication. Tobacco depletes soil nutrients at a very high rate, as described in Table 5 where the rate of nutrient depletion of tobacco is compared to coffee, maize and cassava. Since tobacco quickly exhausts nutrients, continuous input of chemical fertilizers is needed, further aggravating the amount of nutrient leaking into lakes and waterways (CorpWatch, Internet, 2011-03-07). The interviewed tobacco farmer (September 2010, pers. comm.) describes using the fertilizers CAN (Calcium Ammonium Nitrate) and 23:22 (Nitroammophosphate) on his tobacco fields. He also points out that fertilizers are required for the tobacco growing: *“It’s not possible to grow without fertilizers because soils are now used to these chemicals as a result you could not harvest good quality.”*

Increased levels of nutrients like Phosphorus (P) and Nitrogen (N) in Lake Malawi seem to result in increased occurrence of toxic blue-green algae. Increased sedimentation in the lake may raise the boundary of the anoxic (oxygen-deprived) water level. The blue-green algae together with the sediment from the eroded soil muddy the water, blocking sunlight, which affects the maritime ecosystem. When the algae die they sink to the bottom where they are consumed by microorganisms. This process demands oxygen, and with a greater amount of algae, more oxygen is consumed, resulting in low levels of oxygen at the bottom. This in turn reduces the depth of the euphotic zone – the zone in which photosynthesis can occur, reducing the fish habitat (Msomphora, 2005). Eutrophic lakes often see an increase in the amount of cyanobacteria, which could affect the ecosystem. Since cyanobacteria are considered a relatively poor food source, they make for an unstable base for a food pyramid,

making the transfer of energy to higher trophic levels. This would obviously be a disadvantage for fish feeding mainly off zooplankton. However, it could instead benefit certain species of tilapiines fish that eat phytoplankton such as the cyanobacteria (Msomphora, 2005).

According to Mkanda (2000) the calculated accumulation of sediment in Lake Malawi is 1 mm per year. Since the fish habitats are often found along the shoreline of Lake Malawi and especially close to the river mouths, they are easily affected by the discharge of sediments from the rivers. The consequences of the sediment discharge are several, as the sediments can seal the caverns in which rock-dwelling cichlids like the Mbuna breed, and destroying the locale for gravel spawning fish. Also in the rivers and streams of the Lake Malawi catchment area, many species of fish are in decline (Mkanda, 2000). Kalimanjira & Anna (October 2010, pers. comm.) describe the problem with sediment and fertilizers ending up in Lake Malawi and how fishing – a once big industry, today is doing very poorly. However, they do recognize that overfishing is another important reason for the decline in fish. From a biological point of view, Lake Malawi is unique as it is home to 800 endemic species of fish. 90 % of the fish in Lake Malawi belong to the Cichlid family, and Lake Malawi has become renowned for being the source for many of the popular aquarium-fishes purchased around the world (Commonwealth Secretariat, 2007 / Mizoiri, 2001). Socio-economic consequences of the disturbed marine ecosystem are more extensively explained in section 6.2.5.

Much of the farming in Malawi is done on marginal lands of poor suitability, both from an agricultural and a soil protection point of view. With a growing population of mainly rural inhabitants, the pressure on the land is constantly increasing. For smallholders with a farm size of only 1 hectare or less, the possibilities for soil preserving measures such as crop rotation are limited. With a low income and the already high amount of labour needed to manage the farm, little resources are left to spend on intercropping or prevention of gully formation (Mkanda, 2000). Estate farmers generally have better conditions to prevent soil erosion, but Mkanda (2000) describes how many of the small estate owners that emerged in the 1970's and 80's, after a large portion of customary land was converted to burley estates, had inadequate knowledge of soil preservation.

Farming methods that reduce soil erosion include selecting proper land for the cultivation on flat land and away from watercourses, mechanic measures such as ridging, terracing and building storm drains and appropriate agronomic measures like planning and timely planting, suitable intercropping, spacing, and proper tilling. As the rain on the unprotected land with following eroding effects are relentless forces of nature, the more “mechanic” methods often prove less effective than better planning and agronomic measures when it comes to preventing soil erosion. However, the focus has still remained mostly on the mechanic processes. While there obviously is a strong connection between farming in Malawi and the sedimentation and eutrophication of Lake Malawi, the nature of the farming methods has varied. Before the British colonization, the indigenous people of Malawi made a living off pastoralism and shifting cultivation in which finger millet and maize were intercropped with beans and methods of fallow lands and crop rotation were used (Mkanda, 2000). Also, farming was mainly done on the flat land. Different farming methods were used depending on the climatic and geologic conditions.

During the colonial period, the farming methods changed, as the European settlers brought changes to the agriculture. By dividing up the land and setting up specific reserves for the natives to work and bringing in European farming methods such as monocultures, bush fires and allowing overgrazing, the colonists caused large-scale soil erosion. Attempting to solve these problems, soil-preserving strategies were implemented, which meant replacing the traditional farming methods with contour ridging and later on to construct dams and to terrace farming areas. However, these methods were mainly suitable for the European run estate farms, and did not attract the natives, as the methods were unfamiliar and did not take the local conditions into account (Mkanda, 2000). However, the colonial methods became standard and continued to be used even after Malawi's independence. A large-scale project involving hundreds of kilometers of artificial waterways in the 1970's became an expensive failed attempt to reduce soil erosion. The scale and methods were not in phase with the smallholder farmers' budget or working conditions, and thus the farmers were not inclined to offset labour and resources for such a scheme. Generally, the focus for most smallholders is to provide for the economic and nutrient needs of the family. Investments in things like soil protection are not prioritized under such conditions (Mkanda, 2000).

6.1.3. Pesticides

Lake Malawi has a long flushing time of 750 years, which means that sediments and pollutants coming into the lake will remain there for a very long time before being flushed out. This is important to take into account in terms of soil sediments and fertilizers from farming such as tobacco reaching the lake. Of course, this also applies to any

types of pesticides brought to the lake with runoff and sediments. Burley farmers in Malawi apply around one tonne of pesticides per hectare of tobacco, and practices recommended by BAT that are used in many tobacco producing countries around the world suggests 16 separate applications of pesticides during the three month period from planting of the tobacco seeds in the seedbed until they are transplanted into the fields. The chemicals used include Aldicarb, 1,3-Dichloropropane, Chlorpyrifos and Acephate. These are all substances of varying toxicity, which are used to kill off pests such as insects, nematodes, and fungus that may harm the tobacco plants (Tobacco's Children, Internet, 2011-03-08/ Corpwatch, Internet, 2011-03-08/ Otañez, 2008). The effects of the chemicals are not limited to insects or fungi, and can cause a number of problems in other animals and humans exposed to the substances. Paralysis of the respiratory system, neurologic effects, developmental disorders and carcinogenic effects are examples of the impacts that these chemicals can have on other organisms than the intended pests. For example, Aldicarb is toxic to many types of fish, mollusks, zooplankton and insects, and 1,3-Dichloropropane affects fish, plankton and amphibians (Pesticideinfo, Internet, 2011-03-08).

Methyl Bromide is a relatively inexpensive pesticide, utilized both against insects and certain kinds of weed, which previously was used extensively by estate tobacco farmers in Malawi. As a toxin Methyl Bromide has severe effects on the heart, brain, neurological system as well as effects on the reproductive system on animals exposed to it (OEHHA, Internet, 2011-03-06). In addition to this, the substance has an ozone depleting effect. Having been heavily used in the Malawian tobacco industry, Methyl Bromide was banned from imports in 2004 and phased out over the following year. While alternatives to the use of Methyl Bromide, such as the introduction of floating seed trays for the planting of tobacco, were introduced during the phase-out period, illegal imports from neighbouring countries mean that the substance continues to be used in Malawi (UNDP in Malawi, Internet, 2011-03-06). Also, other types of pesticides are still used, as the interviewed tobacco farmer (September 2010, pers. comm.) explains: *“The seedlings could be eaten while in the nursery and the same pests eat the leaf as it is growing. So it is always important to use pesticides.”*

The continuous application and subsequent leakage of toxic chemicals in the farming of tobacco together with the large number of tobacco farms, leaves little room for dilution or slowing of the accumulation of the chemicals in higher trophic levels of the eco system. The different features of the used substances result in widespread effects in parts of the ecosystem. Adding chemicals like this to nature might influence natural selection and have consequences on the ecosystem. For instance, it could favour pesticide-resistant strains of mosquitoes or flies when their genetic competition is knocked out. These “immune” strains of insects could then cause many problems as carriers of diseases or as uncontrollable pests in farmlands (Barry, 1991 – as described by Smoke-free East Sussex Tobacco Control Alliance, Internet, 2011-03-09). While the farming of tobacco requires heavy use of pesticides, it is rather ironic that tobacco itself has proved to be a potent pesticide, and has been used as such for hundreds of years. More recent research indicates that tobacco-oil, derived by heating tobacco leaves to 482,2 degrees Celsius in vacuum, can be used with success against a number of insects, fungi and bacteria (Science Daily, Internet, 2011-03-08). Contrary to the information described previously, Kalimanjira (October 2010, pers. comm.) notes that tobacco does not need that much pesticide if managed properly.

6.1.4. Miscellaneous environmental effects

An important part of the discussions regarding climate change and the general sustainability of the human society is the concept of peak oil. For all finite resources a threshold is reached when 50 % of the available supply has been consumed. From that point on the production of the resource will decline, and the price of the resource will increase as it becomes scarcer. Relevant for the tobacco production of Malawi is the concept of Peak Phosphorus, as this is one of the most important nutrients (together with nitrogen), absorbed from the soil by plants. In all agricultural systems of today, a continuous input of industrial fertilizers is required, since the production drains the soil of naturally occurring nutrients. These industrial fertilizers are made from phosphate rock, which, just like oil, diminishes at the rate it is being mined. Decreasing phosphate supplies and increasing fertilizer prices will result in increasing food prices, and possible starvation and turmoil as a consequence. Peak phosphorus is estimated to occur within the next 30 years (White & Cordell, 2008). A similar problem with peak nitrogen is also a threat, but the main issue is not the nitrogen in itself, which is abundant in the air, but rather methane that is an important part of the process to derive ammonia. Methane, like oil and phosphate rock is a finite resource (The Wildfuels Alternative, Internet, 2011-04-23). Socio-economic consequences of the environmental degradation connected to the tobacco production will be described in section 6.2.5.

6.2. Socio-economic effects

Many of the environmental issues connected to the Malawian tobacco industry described above have socioeconomic counterparts and/or effects that can be seen as economically or socially problematic. Even though not all of the socio-economic effects are directly connected to the environmental effects of the tobacco farming, many are and thus show the importance of considering the environmental dependency of the human society.

6.2.1. General economy

First of all, tobacco is an extremely important cash crop in Malawi. With so many people making an income from growing and selling tobacco, and many more from businesses connected to the tobacco industry, such as transport, packing and retail of farming inputs, it is obvious that the situation for the Malawian tobacco industry affects a lot of people economically. Kalimanjira (October 2010, pers. comm.) even claims that around 90 % of the population of Malawi depend on tobacco in one way or another.

A problem with heavy dependence on one single crop is that situations can arise, both in a short and a long-term perspective that affect the market value of tobacco. This can be both profitable and costly both for individual tobacco farmers and the entire country. Short-term effects that can affect the market value are for example weather conditions that affect tobacco production in other countries. If less tobacco can be produced, and supply cannot meet demand, it means a higher price in a simplified economic model. Crops going bad in other parts of the world should mean that Malawian tobacco would catch a higher price when sold. Of course, the opposite is also possible; an unexpected good year for tobacco producers around the world gives more tobacco to the market, which will lower the general price of tobacco. The competition on the global tobacco market is hard, as developing countries like Brazil and China are taking bigger shares of the market. Also, farmers in the EU are subsidized at the level of US\$ 1,60 per kg of tobacco. This can be compared to the average auction price for all types of tobacco in Malawi in 2006: US\$ 1,11 per kg. For burley, the average price was less than US\$ 1 per kg (Nsiku & Botha, 2007). This kind of subsidized tobacco farming of course means that prices are pressed down globally, hitting the tobacco farmers of Malawi hard.

A bad growing season in Malawi could also mean that farmers are unable to produce the amount of tobacco they need to make a decent income. If combined with a low price on the auction floors, it can be devastating for poor families who lose out on their main source of income. While extreme weather and unstable political situations can have sudden and unexpected effects on the production of tobacco, trends within the market can have long-term effects for a heavily tobacco-dependent country such as Malawi. One such trend that is visible within many western countries is the anti-smoking campaign that has been quite successful of late (Makoka et al. 2010). With more and more strict rules and regulations for selling tobacco, and restrictions of smoking areas, it is clear that tobacco consumption is declining in this part of the world. The decreasing global demand subsequently lowers the global price of tobacco, which affects the producers.

However, the tobacco consumption trend is the opposite in many developing countries, including China, which in large can compensate for the declining trend in the west. While the growing markets of the developing world can prove very profitable for tobacco producing countries such as Malawi, the real price of tobacco will likely decline as the market shifts from the wealthier western countries to the poorer, developing countries (Tobin & Knausenberger, 1998). As tobacco consumption generally correlates with lower income and lower levels of education, it could be assumed that consumption will eventually decrease also in developing countries, as standards of living improve and access to better education makes people aware of the health risks involved with smoking. The tobacco dependency could also place Malawi at a disadvantage if other countries with more favourable farm lands and/or infrastructure would expand their share of the global tobacco market, steadily decreasing the profitability for Malawi, if the country can not keep up (Tobin & Knausenberger, 1998).

Being dependent on one single crop to such a degree as Malawi is on tobacco, leaves the country extremely sensitive to scenarios like the ones mentioned above. A bad tobacco-year will mean less tax income for the state. Less tax income will mean less money to spend on things like infrastructure or schools for example – both important factors for social and economic development. For the farmers, who are mostly already very poor, a bad harvest or low selling prices on the auction floors could prove very burdening to the family economy.

6.2.2. Situation for the farmers

The Malawian tobacco farmer interviewed for this report describes allocating 9 hours/day, seven days a week during high season for his tobacco production. Having 10 hectares of farmland, of which four hectares are allocated for tobacco, he has two tenants working on his farm. Still, his wife and four children have to help out in the farming chores. *“Every member of the family work with me in the farming of the tobacco. It is on daily basis, because some times of the season, especially when harvesting, the demand is high and we also hire labour”* (Tobacco farmer, September 2010, pers. comm.). His farm produces around 150 bales of tobacco, each bale weighing 50 kg. From this harvest, he made 4000 USD in the 2009-2010 season, giving a price of US\$ 0,53 per kg.

Receiving a decent payment for the tobacco brought to the auction floors has long proved to be difficult for the farmers. Since the farmers are not paid directly for their tobacco, but have to wait until ADMARC has finished negotiating with the buyers, sold the tobacco and then transferred the money to bank accounts before they can receive payment, they are placed in a situation where they cannot invest in new farm inputs for the next growing season. With the price negotiations often resulting in standstills at the auction floors, the waiting period for the farmers to receive their money can be prolonged further. With the need for investments for the upcoming season, payment of school fees and down payment on loans looming over them, farmers often have to settle for prices lower than expected in order to come up with any money at all to pay off the different costs (The Courier ACP-EU no 201 November December 2003).

“I do not consider the amount of money received is fair since the price is determined by the buyer, and farmers have no bargaining power” (Interviewed tobacco farmer, September 2010, pers. comm.). The problematic structure and corruption within adhering businesses like transportation, the Burley clubs and the distribution of hessians, also adds costs to the individual farmers as well as the tobacco industry as a whole.

In addition to the economic hardship these conditions put many smallholder farmers in, they also feed an economically unsustainable trend for the Malawian tobacco industry. When farmers, year after year are forced to settle for lower-than expected profits or no profit at all, the interest for growing tobacco decreases. The slope in tobacco's dominant role in Malawi's economy and the fact that more alternatives, such as chilli, paprika and other spices are coming into the agricultural market bear witness to this trend (Kalimanjira & Anna, October 2010, pers. comm./Makoka et al. 2010)). Malawi also loses tax income due to the payment issues, as farmers chose to sell their tobacco illegally in neighbouring countries in order to avoid the problems of the domestic auction system and make better profit (The Courier ACP-EU, 2003). By subsidizing tobacco production that is smuggled out of the country, Malawi loses out on even more of its economic potential. With all the uncertainties connected to its tobacco-production, it is interesting that Malawi in large avoids one problem that is common in many tobacco producing countries. Malawi, in contrast with many other tobacco producing countries of the south, does not have a lot of domestic smokers. Therefore, the costs connected with tobacco consumption do not cut into the profits made from selling the tobacco as they do in countries with higher prevalence of smoking (Corpwatch, Internet, 2011-03-28).

6.2.3. Child labour

One big issue within the Malawian tobacco industry is child labour (Fig. 9). According to Clacherty (2009) Malawi has the highest rate of child labour in southern Africa; with 88,9 % of children aged 5-14 engaged in work in the agricultural sector. It is customary to have the entire family helping in farm work, and it is often required for the farming business to work out for a smallholder farmer. While the occurrence of child labour is very high, it is not labelled as something negative among many farmer families. It is viewed as necessary, as the children have to learn to manage farming, so they can provide for themselves when they grow up (Kalimanjira, October 2010, pers. comm.). Not only children in families of smallholder farmers work in the tobacco fields. In the larger estate farms, there can be entire families working as tenants in the tobacco fields. Often the children have to work as hard as everyone else for the family to make ends meet economically. Estate owners are supposed to provide food and shelter for their tenants. However, when the monthly labour is distributed among the tenants, some families have to go without both income and food rations (Corpwatch, Internet, 2011-03-28).



Fig. 9. Child working in tobacco field in Malawi (The Namibian, Internet, 2011-05-08).

In many cases poverty is the reason why children take employment on tobacco plantations. Some do it to help get money and food for their family. Sometimes the children work to get money so that the family can afford the inputs required for their own agricultural business. However, this stops them from helping at the family farm, which results in a bad harvest for the family. Thus, the children have to go work at a plantation the following season as well, resulting in a catch 22. Food and clothes were two important reasons given when children were asked why they work at a tobacco plantation. While situations at home have forced some children to seek employment to help provide for themselves and their family, other children work just for the meals that the employers provide. For many of the children interviewed in Clacherty (2009), school was important, but many of them described the problems with secondary school not being free. Working part-time in order to pay for school fees is another reason why some children take employment in tobacco estates (Clacherty, 2009).

Laws have been implemented in Malawi, including the signing of the UN Convention on the Rights of the Child, which prohibits child labour and states that children have to go to school. Still it remains common with children working part or even full time in the fields, as many families try to combine education for the children with them helping out in the farm work during high season (Kalimanjira/ Anna, October 2010, pers. comm.) However, 4,7 % of the children working within the agricultural sector do not attend school at all (Clacherty, 2009). Education is an important part of development, but as a consequence of the high rate of child labour, many Malawian children miss out on their right to go to school. Not only does this limit the children as individuals, as they lack education and knowledge that enables them to choose their own path in life, but it also continues the situation of farmers resorting to tobacco as their only “secure” means of income. When the children of tobacco farmers are kept out of school to learn the ways of tobacco farming, their future holds little chance of other means of self-sustainment. In addition to the described problems concerning child labour, there are also health effects to consider, as will be described in the next section.

6.2.4. Health effects

The work in the tobacco fields also involves a number of health risks to which workers, both adults and children, are subjected. First of all, tobacco is toxic, and workers who pick, sort or bundle the tobacco leaves by hand are exposed to nicotine poisoning, sometimes equivalent to smoking 50 cigarettes per day. Contracting nicotine through the skin in this manner is referred to as Green Tobacco Sickness (GTS). Children are extra vulnerable to GTS, due to their smaller body mass in relation to the amount of nicotine. The symptoms of GTS are several and include fluctuations in heart rate and blood pressure, respiratory difficulties, nausea, vomiting, diarrhoea, and general weakness (Clacherty, 2009). During harvest, children are often set to pick the tobacco leaves, as their

smaller hands make them more suitable for the picking. Kalimanjira & Anna (October 2010, pers. comm.) describe their own experiences of picking tobacco leaves resulting in itching in the fingers and working in the curing barns, being exposed to the smoke from the curing process. Pesticides are another health problem that workers in the Malawian tobacco fields are exposed to. The application of pesticides is done with spray cans or even as simple as a jerry can with a cup to sprinkle the chemicals (Clacherty, 2009) This work is often done with poor or no protection, leaving the workers vulnerable to the effects of both acute and long-time exposure to the chemicals (Otañez, 2008).

Aside from the exposure to harmful substances, the work in the tobacco fields is heavy, abusive and low-paid. Aching shoulders, back and knees are common problems, especially for child labourers. The workday can last up to 12 hours, with little or no possibilities for breaks. In the interviews presented in Clacherty (2009), many of the children describe verbal, physical and sexual abuse from their supervisors. Being hit in the face, kicked or beaten with sticks are common punishments if the children are late, “lazy” or wanting to rest and have a drink of water. The children also described lasting wounds, like sores and blisters. Girls working at tobacco farms are commonly subjected to sexual harassment. Supervisors take advantage of the girls’ dependence on them by asking to have sex with them. Knowing that they risk their income if they decline, and might receive favourable treatment while working if they accept, the girls often agree. The girls carry the fear of pregnancy and/or venereal diseases silently, as these issues seldom are discussed (Clacherty, 2009).

The hard work and long hours are often combined with poor nutrition, as workers sometimes will have to work several days between decent meals. As a result, many children working in the tobacco sector are malnourished and thus more susceptible to infections. The workdays can start as early as 04.00 or 05.00 am. The demanding work and long workdays leave little time for other activities, and because of the working conditions many children have problems sleeping. Dreams and worries about providing for their family or the abuse they are subjected to affect the child labourers even when they are not working (Clacherty, 2009). The conditions are also detrimental to the general physical, mental and psychological development of the children (Clacherty, 2009 / CorpWatch, Internet, 2011-03-28).

The fact that child labour is so widespread within the Malawian tobacco industry puts the country at risk to suffer further economic hardships from boycotts aimed at stopping child-labour. The long term economic issues with tens of thousands of children being subjected to health-volatile farm work and missing out on education are difficult to measure, but will undoubtedly affect both the social and the economic situation in Malawi in coming years. Fewer educated people will slow development and pave the way for undemocratic leaders, as uneducated people are more easily convinced and exploited (Kalimanjira & Anna, October 2010, pers. comm.). Since it is customary for children to help provide for the family, it is difficult to go in and change such ways. *“If you come from the city in a Jeep and nice clothes and ask people to change their ways of living (having children work), they will say: ‘Easy for you to say, who have money’. It is better to go through the village chieftain, who has influence”* (Kalimanjira, October 2010, pers. comm.). It is important to differentiate between the more common cases of children helping out on the family farm, and children working as tenants in larger estates. It is mainly the latter that are subjected to what is commonly known as child labour, while helping out on the farm is often a necessary part of life for farmer’s children.

6.2.5. Effects of environmental degradation

Aside from the immediate social problems and economic consequences of the tobacco farming in Malawi, the environmental effects attributed to the industry also have an impact on the lives of Malawians. Soil erosion following deforestation and ill planned farming on hillsides, result in large-scale loss of fertile soils. Not only can the erosion result in landslides that can destroy human settlements and claim lives, but the loss of fertile soil means that farming will be less successful. To compensate for the declining soil fertility, farmers will have to use more industrial fertilizers. An extra cost for the, often already poor, farmers.

Since fishing is an important source of food and income for many Malawians, problems like sedimentation, eutrophication and accumulation of harmful chemicals in higher trophic levels - disturbing the ecosystem of Lake Malawi, could mean economic losses for fishermen and the state, as well as social problems. Fish from Lake Malawi is an important source of nutrition, making up 40 % of the total protein supply for Malawians. The fishing industry is also an important part of the Malawian economy, as around 50 000 people are directly employed with fishing, and a further 350 000 indirectly, involved in processing and marketing of the fish, building, making and repairing boats, parts and fishing tools. Fishing make up 4 % of the Malawian GDP, but the unique fish life of

Lake Malawi also brings income in the form of ecotourism. These economic values, together with the nutritional value of the fish are threatened if the fish fauna is affected negatively. (Commonwealth Secretariat, 2007).

Widespread application of insecticides could benefit strains of insect species that are resistant to pesticides, resulting in more problems with crop-eating bugs not only within the tobacco industry, but also with other crops – affecting both food production and economy. Another risk concerning insects and pesticides is that resistant strains of mosquitoes, flies and other disease-carrying insects could increase, as pesticides knock out their competitors. This could result in diseases spreading faster across larger areas, affecting more people. Pesticides might also affect other insects than the ones intended, such as bees, which function as an important pollinator of flowers and other vegetables. If bees and other pollinators disappeared, the consequences could be catastrophic not only at an ecological level, but also for human life, as we would face a collapsing ecosystem where many plants would be unable to reproduce.

Pesticides used in the tobacco fields not only threaten the fish industry, insects and other wildlife, they also contaminate water used by humans. Even though Methyl Bromide has been banned in Malawi, illegal use of the chemical poses a health risk as it is highly toxic - causing ataxia, muscle weakness and behavioural disorders. Other pesticides are deemed carcinogenic, while some cause asthma or depressions (Pesticideinfo, Internet, 2011-04-04 / Thankyouforsmoking, Internet, 2011-04-04). Constant exposure to chemicals of this kind, whether by working in the fields, or ingesting polluted food and/or water, could be fatal. In a poor country such as Malawi, the resources and knowledge to prevent and manage pollution are difficult to come by, adding more health problems that further aggravate poverty.

7. OUTLOOK FOR THE FUTURE

Given the consequences described above, it would be detrimental both to the environment and to the Malawian society, if the tobacco business of Malawi remained unaltered. Continuous and increasing levels of environmental degradation in the form of deforestation, soil erosion and release of toxic chemicals into the soil, air and water, would keep straining the ecosystem to the point where the long term effects are very difficult to assess, and costly, if even possible to alleviate. In terms of effects on the society, the nature of the tobacco industry requires a lot of labour, and the numbers of health issues involved with the production have effects on the overall development of Malawi, because it involves, and thus affects, such a large portion of the population. If the tobacco business would remain at its current level, long term effects on the health of workers from the hard work, and the subjection to harmful chemicals, together with child labour and the work load for smallholder families keeping part of younger generations entirely or partially out of school and the fact that tobacco does not alleviate food production issues, combine to make the future of Malawi quite dire. When asked about the negative effects of the tobacco industry, Kalimanjira & Anna (October 2010, pers. comm.) point out the workload for the tobacco farmers and hired tenants, health issues, and shorter life span as the main negative effects of the Malawian tobacco industry.

While the Malawian tobacco industry evidently has many issues in a wide spectrum of fields, it is nonetheless an important part of Malawi's economy and the everyday life of many Malawians. Many of the children that miss out on school because of work in the tobacco fields, would most likely be unable to attend school at all without the income from tobacco to pay for school fees. Likewise income is needed for other everyday expenditures such as food, tools and clothes. However, the income that tobacco generates to the farmers and to the state via taxes is not measured against the social, environmental and also economic costs induced by the tobacco industry, as in this paper. *"They don't think like that. The government does not take the costs into account if they are not afflicted directly."* (Anna, October 2010). From this description, it is understood that the Malawian government does not take, for example health issues involved with tobacco farming into account when calculating the profitability of the tobacco production. The mentality of not looking at the long term effects of the tobacco business, is something that, according to Anna, seems to be widespread not only among the governing strata of society, but with the Malawian society as a whole. Anna herself recounts that she would not have understood the question about indirect social or environmental costs had she not been living in Sweden. The two facts that work in the tobacco fields is connected with many forms of unhealthiness, and that the income that the tobacco brings to smallholder farmers and tenants is scarcely enough to cover health care expenses makes the trade-off negative and thus unsustainable in terms of economy and social welfare.

The possible future outcomes of continuing tobacco production as it is done today can be discussed and theorized endlessly, with mostly grim outlooks as result. However, such discussions and theorizations are not relevant if the tobacco production of today cannot be maintained. Anti-smoking campaigns are reaping success in many western countries with stricter and stricter regulations and bans on tobacco consumption being legislated from year to year. With wealthy westerners abandoning tobacco, the global demand as well as the willingness to pay will decrease. In 1998, the Western European region was importing over 64 000 tonnes of Malawian tobacco, and North America 22 000 tonnes (FAO, 2003). Under such circumstances, it is evident that the Malawian tobacco industry will have to find alternative export destinations, to make up for the declining western market. While China is the largest tobacco consuming country in the world, it is also self sufficient in regard to tobacco, and will not be an alternative under the current state monopoly on tobacco. Other emerging economies in Southeast Asia could prove to be possible importers of Malawian tobacco. However, it is the buyers on the Malawian auction floors and their ability to work the market that will decide where and to what amounts Malawian tobacco will be exported. Limbe Leaf, Dimon and Standard Commercial/Alliance-One are the dominant buyers on the Malawian auction floors today, but if the demand and geography of the global tobacco market change, other companies could have a bigger impact on the outcome. Also, the reaction of the big cigarette producing companies to the changes in the market could have a very large impact on how the trends of tobacco develop.

Looking at the development of the Malawian tobacco industry over the last decade, its importance in Malawi's economy has been somewhat declining, even though tobacco remains very important. Although marginal, concern for environmental issues and the working conditions of the tobacco industry has been raised, and this adds to the economic problems of the farmers. Anna (October 2010, pers. comm.) contends that the profitability of tobacco has decreased, with the introduction of these concerns, and says that many farmers have switched from tobacco to chilli. Chilli, being easy to grow, more resistant to drought, providing better harvests and having a more stable market, is a new trend in Malawi. As with tobacco, chilli is sold on auction via ADMARC, but catches a higher

price than tobacco. Cotton has also taken some of the tobacco's market shares in Malawi, and the future for tobacco farming is not considered to be sustainable in the long run.

"It's difficult to consider tobacco to be a long time business for me and for Malawians in general...there is very little market outside Malawi for tobacco since the world has embarked on non-smoking campaign. Farm inputs are becoming very expensive for most farmers to afford...There is not much needed competition amongst buyers, therefore the system favours only the buyers who can make large profit over the farmers." (Tobacco farmer, September 2010, pers. comm.)

Since tobacco still remains the big source of tax income for the state, the government subsidises tobacco production, while other crops are not given the same economic support. When asked if he ever considered switching from tobacco to an alternative crop, the interviewed farmer replies that he has thought about it in the past, but can not think of a crop that could provide the same economic income as tobacco.

"...almost all other possible crops fetch little money compared to tobacco! There is no subsidising of farm inputs on the other crops for most farmers." (Tobacco farmer, September 2010, pers. comm.)

While tobacco is more expensive to grow and more labour-intensive than other crops, it is still more profitable in monetary terms, and a large-scale switch to alternative crops is thus not likely, as the possible income from an alternative crop is not enough for smallholder farmers to cover yearly household expenses. The interviewed tobacco farmer suggests that allowing farmers to export their harvests outside Malawi could make other crops more profitable. He also argues that the government would have to subsidize farming inputs required for other crops as well, and suggests that the introduction of irrigation systems could make it possible for farmers to harvest twice a year instead of just once. Generally improving the system for transportation, selling and receiving money for sold goods, could also prove to be positive for the economy as many farmers currently experience problems with these parts of their tobacco farming.

As mentioned above, the general poverty has been feeding a mentality of seeing to the current issues rather than future problems, making attempts to bring up concern for environmental effects and the long term development of Malawi difficult. However, in recent years a positive trend has been seen, as young people are trying to change and develop their homeland. Anthropocentric concerns such as democracy, suffrage and women's rights have seen increased attention, but also environmental concerns and ideas of a more eco-friendly society. This is further encouraged by aid organizations with green profiles, giving money to projects like forest replanting. Also, compost material has recently seen an upswing in Malawi, as an alternative to the industrial fertilizers generally used (Anna, October 2010, pers. comm.). All these facts suggest a trend towards a more democratic society where concerns for human rights and the environment are becoming more important.

While this trend is progressing in Malawi, it has not had as big direct impact on the tobacco industry. With so many people depending on the crop, it is difficult to encourage alternatives to the current ways. A big part of Malawi's income consists of foreign aid, and when loans from the World Bank are made, they require an investment plan aimed at improving the economy and bringing about development. Tobacco is described as a means of reaching such goals, in order to secure loans. Kalimanjira (October 2010, pers. comm.) compares the situation in Malawi with the cocaine industry of Colombia. It is a harmful industry, but what are the alternatives? It brings money into a society that desperately needs it, and without reasonable options, the industry continues. Because of corruption, much of the money that tobacco brings to Malawi never comes to such use that would benefit the country the most. For example, lack of basic working material and so called brain drain, when highly educated people take their knowledge and skills abroad, to work for better salaries and working conditions are results of the corruption, and has left the Malawian healthcare in need of plastic gloves as well as trained doctors (Anna, October 2010, pers. comm.). The corruption has also turned Malawi into a "transit country" for smuggling of arms, minerals and so-called blood diamonds to and from countries plagued by war and dictatorship such as Congo and Zimbabwe.

Despite all the importance of tobacco and the difficulties to find viable alternatives, Kalimanjira & Anna (October 2010, pers. comm.) contend that the small steps being taken and the dubious economic future of tobacco will result in a heavy decrease in the Malawian tobacco industry. *"Tobacco is a dying industry. Without a doubt."* (Anna, October 2010, pers. comm.) As Malawi remains an agricultural country, other crops such as aforementioned chilli and cotton are likely options for many of the Malawian farmers. There are also surveys being made to find suitable crops to replace tobacco, but no major conclusions have been made as of yet. Kalimanjira (October 2010, pers. comm.) recalls from before he left Malawi, how an attempt to start sugar-based

ethanol production in Malawi was stopped as the company in question was bought up by an oil company. In more recent years, sugar producers along Lake Malawi has begun selling their sugar to ethanol-producing companies, but as Kalimanjira describes it, this production requires rather big land areas in order to be viable economically. In order to improve the situation in Malawi, it is required that companies make investments in the country (Kalimanjira & Anna, October 2010, pers. comm.).

In spite of environmental deterioration from deforestation and loss of natural habitats, Malawi has many beautiful and serene areas, with a warm climate, making it suitable for tourism as an alternative or complementary source of income for the country. There are some investments, mainly in the form of beach resorts by Lake Malawi, but there is potential for a larger tourist industry (Anna, October 2010, pers. comm.) There is some promise within aluminium and coal mining, but it will require investments to improve the infrastructure. The railways of Malawi are neglected, but there are improvements being made by Chinese investors (Kalimanjira, October 2010, pers. comm.)

As in several other African countries, Malawi has seen a lot of Chinese entrepreneurs coming in during recent years. Their willingness to bring investments, improve infrastructure and construct new buildings in return for access to natural resources, and agricultural lands has been popular among leaders. The Chinese investments do not make demands on how the money they bring to the country is being used, as most western aid require. However, the Chinese have been criticized for not bringing jobs to Malawi, as they bring in Chinese labour, sometimes in the form of prisoners, instead of hiring from the local populace (Kalimanjira & Anna, October 2010, pers. comm.)

8. DISCUSSION

The situation of the Malawian tobacco industry, as described above, is obviously a complex one. Tobacco is on the one hand a major source of income for the state and for a very large portion of the population. On the other hand, the nature of the Malawian tobacco production is causing a number of problems both environmentally and socially. In order to determine whether or not it is a sustainable business, all these aspects have to be weighed against each other. This is very difficult, since the effects differ so much in form and the way in which they are conceived and measured. The social and ecological impacts are often difficult to measure or to even connect to the tobacco production, since they are indirect or synergetic. Because of this, obvious thought-provoking effects are not as visible when it comes to the Malawian tobacco industry, as the effects of for example oil spills or armed conflicts. Still, in light of the facts presented in this paper, it is clear that the tobacco industry of Malawi in its current form is not functioning within the realms of sustainable development. Causing and adding to a number of environmental problems, connected to several forms of illegal and health damaging working conditions, and counting the direct and indirect costs it invokes on the Malawian society, the tobacco business is not economically sound either. Thus it fails to meet the requirements for all three of the main pillars of sustainable development. What can be discussed is why the situation is as it is, and what options are available to alleviate the problems. Even if the situation was better in terms of social and environmental effects, the fact that tobacco is a product that has no real functional value in human society, and causes death and unhealthiness all around the world, is quite enough to label the production as unsustainable.

Even though tobacco in itself is a harmful product, and the suitability of it being grown at all could be questioned, it is nevertheless being grown in a number of countries all over the world. The situation for workers and the environmental effects of the tobacco production in countries like Malawi, Brazil and Zambia likely hold material for several research papers. However, tobacco is being produced under much better conditions in the USA and European countries, which proves that the situation could be greatly improved in Malawi. The fact that tobacco is being grown to such a large extent in developing countries follows the trend of many other lines of production. The extraction of natural resources, and the production of many products have moved to developing countries, where salary costs are low and the laws concerning corporate social and environmental responsibility are few, loose and/or easily circumnavigated via bribes and lobbying. This occurs while the consumption of these goods mainly takes place in developed countries, where rules regarding working conditions and environmental regulations are more difficult and expensive to adhere to.

This is a form of post-colonialism that has been widely criticized for its immoral ways of making business. As has been explained in this report, the consumption of tobacco in western countries is declining. However, the tobacco consumption is increasing in many rapidly advancing countries such as China and Indonesia. With these countries becoming richer and possibly taking over the smoking habits of the western world, the situation for tobacco-producing countries like Malawi will likely not change much in terms of market conditions. They keep their spot at as the low wage producer having to deal with any negative effects of the production, regardless of export destination. Though, there is room for speculation as to whether the Chinese expansion in the country could express itself in Chinese companies buying farmlands to provide production of tobacco (or other crops) aimed for the Chinese market.

With these examples, it is easy to link the tobacco industry to the development theories of socio-economic geography. Malawi suffers from many of the problems that have been prevalent in former colonies. Under British rule, the economic focus of Malawi was agriculture, and diversification was limited. As such, Malawi had a selected path that was easy to follow after its independence. When the new leading strata of society made investments in a large-scale tobacco production, it turned Malawi into the monoculture it is today. This was further aggravated when the liberalization of the market in the 90's allowed smallholder farmers to enter the business at a larger scale. Being dependent on one single product has been a common problem for many former colonies. Corruption is another issue that is inhibiting the development of Malawi, and part of the answer as to why the situation is as it is with the tobacco industry. Presenting tobacco as an economic catalyst for Malawi, the government can legitimate investment loans from the World Bank and aid organizations. When these loans are not used as intended, and the benefits that they were supposed to bring to the farmers are not provided, the situation for the farmers obviously does not stand to gain. The socio-economic progress that the loans were meant to bring, are instead being used for bribes and personal interests of the ones controlling the money. This is not the whole truth, as the system provides the possibility for farmers to buy subsidized inputs on credit, making the farming endeavours possible even for small holders. But it is self-evident that corruption eats into the prosperity of the

country, making living conditions harder for many people. This in turn provides one of the many incentives for people to view tobacco farming as a viable source of income.

The situation also tells something about the nature of aid and the attempts to come to terms with the debt that many third world countries are struggling with. In short, the work of IMF, the World Bank and many other providers of foreign aid, is based on the assumption that money and development go hand in hand. This may be true to an extent, but considering only the monetary value of an investment neglects a big part of the situation in Malawi and many other indebted third world countries. While Malawi clearly needs investments, aiming these investments mainly on aiding the tobacco industry will not bring about the development it is supposed to provide. Subsidizing farming in a country that is suffering hard from poverty and malnutrition would seem like a good idea. The problem is of course that people cannot eat the tobacco, and the income that it is supposed to provide, is very unstable. As tobacco is very labour intensive compared to other crops, it can be assumed that directing the subsidies towards other crops, would increase the production of those crops, and at the same time lower the relative amount of labour needed from the farmers. Thus they would have more time and energy to focus on other ways of making an income.

The environmental effects of the Malawian tobacco production are rather general, and could be attributed to most agriculture. Deforestation caused by the demand for new agricultural land is not unique to tobacco production, and can be seen all around the globe. The deforestation directly connected to tobacco, is the one that provides fuel wood and building material for curing huts. This is not as big an issue nowadays, as the production has switched to focus on burley, which is not fire- or smoke cured. However, the curing still requires wood for construction of curing barns. As soil erosion is largely connected to deforestation and the bare grounds of agriculture, this aspect is not unique either. However, the amounts of pesticides and fertilizers used in tobacco farming, that together with the eroding soil end up in downstream river systems and Lake Malawi, could be reduced with alternative crops. Even though crop circulation is standard conduct, a more diversified agriculture would provide more room for crops with nutritious needs that complement each other. One way to measure the deforestation in relation to the tobacco industry would be to calculate an economic value for the forest, by taking into account all the different eco-services that it provides. Comparing it to the value of fuel wood etc. could give an idea of how much it is worth, and an incitement for the society to set up a plan on how to manage the forests better.

When it comes to the effects on rivers and lakes, eutrophication and toxic chemicals can be very harmful to the long-term stability of the ecosystem. Chemicals accumulating in the fish of the unique Lake Malawi biotope and the risks that this poses for both the ecosystem, people and the economy is a problematic developmental issue no matter how one decides to define development. Once again, poverty is an important cause underlying the entire situation. Since people often lack the education and knowledge to question the use of, and more importantly, the economic means to abstain from using pesticides and industrial fertilizers, it is not hard to understand that these chemicals and nutrients are continuously allowed to leak into the lake. This puts the different aspects of sustainable development against each other, as there is an economic reason for the use of the pesticides and fertilizers that degrade the environment. In light of the ambiguous answers concerning the need for pesticides given in this study and the fact that tobacco itself is used in pest repellants, there could be reason for further investigation and research on the actual need for pesticides in tobacco farming. Less or more appropriate use of pesticides could prove to decrease both economic and environmental strains on Malawi.

When large amounts of soil are being eroded into the rivers and lakes, current and potential farmlands are left deprived of fertility. With the country's most important natural resource being literally flushed down the river, the agriculture will suffer as the fertility of the farmlands decrease, and the demand for industrial fertilizers will cut into the profit of the farmers and demand more labour. At the same time as the lack of nutrients decreases the profitability and productivity of the agricultural sector, the same nutrients are causing problems both for the environment and other businesses downstream, such as fishing and tourism. As such, more efficient management of Malawi's soils would benefit the country ecologically as well as socio-economically. This is an example of how both the social and the economic aspects of sustainability are depend on the sustainability of the environment, as is exemplified in the "nested sustainability" model. The aspect of peak phosphorus adds another grave long-term effect to the considerations. Using finite nutrients to grow a harmful crop and to cause eutrophication in a unique environment is certainly not sustainable.

As with many of the other aspects of the tobacco industry of Malawi, it is the level of poverty with adhering levels of education, public health and lack of viable options for individuals is at the core of this problem. When people have a hard time providing for themselves and their families, and payment of school fees are difficult to come up with, the general level of education for the country is hampered, and thus the outlooks for future in terms of

finding alternative and solutions to the problems of today. With lower rates of education, it is not hard to understand that complex aspects of everyday life such as soil erosion are not dealt with accordingly. Together with the fact that poor farmers cannot afford to make changes that cut into their profit, the educational issue results in a setting where environmental concern and responsibility are not favoured. The mentality of not worrying about the future that is described in the report is connected to these issues. On the other hand, the current situation in Malawi is maintained in large due to a combination of low prices paid by tobacco buyers, lobbying from the bigger actors in the tobacco sector towards the Malawian government and the willingness of the government to uphold the tobacco farming with aid money from IMF, the World Bank and other actors. Better social and environmental responsibility in this end of the economy, would likely affect the conditions for, and the effects of, the farming.

The fact that people coming from outside the local area, such as NGOs have a hard time gaining the trust of the local population, is another way in which the hardships of Malawian farm life is manifested. It also makes solutions to problems like deforestation, soil erosion and child labour difficult to address. However, the positive trends of more concern for the environment and demands for more democracy and equality, that Anna (September 2010, pers. comm.) described hold some promise for the future. However, they have had a hard time affecting the tobacco industry directly; a trend where these concerns are manifesting themselves within the Malawian society would be an important factor in fostering the changes that are needed for a more sustainable society. This trend is very important as it involves Malawians who understand the culture and the society of their homeland – not outsiders who try to bring about changes that are not based in the intrinsic knowledge of the local people. As is indicated by the findings in this report, the Malawian tobacco production will likely decrease in amount, value and thus in importance for Malawi's economy. This is a combined effect of changes in the global tobacco market, the extremely heavy dependence of Malawi on this single crop and the many diffuse circumstances concerning the selling of the tobacco and receiving payment. A more diversified economy will likely render Malawi better prospects for the future. Even though agriculture will most likely remain the main source of income for Malawi, more diversity in the type of crops being produced will provide better economic insurance as the crops can complement each other and make up for possible bad harvests for one of them.

The fact that tobacco has held, and still holds a relatively stable demand on the global market has worked to make it the central industrial crop of Malawi that it is today. However, with the increased concern for the health effects of consuming tobacco, and a rising global awareness of environmental degradation and the part that land-use plays in this issue, tobacco could be facing a drop in demand and stronger competition from ecologically and economically rational choices of crops. Increasing global meat consumption has been criticized for resulting in inefficient land use as well as adding to the food crisis and global warming. Attempts to turn from the reliance on fossil fuels to renewable alternatives such as biodiesel and ethanol have also been criticized along the same lines. One strong argument has been the fact that the farmland used to grow crops for ethanol, could instead be used to feed starving people. With this argument in mind it is interesting to analyze the tobacco industry. Compared to ethanol, tobacco is a much more useless alternative, since it does not provide any real function in the human society, other than satisfying the demands of nicotine addicts. Ethanol, on the other hand, can actually be used as fuel to keep cars and other machines running.

Looking at the situation in Malawi, tobacco is being grown to some extent by almost every farmer, in order to provide an income. Besides tobacco and other cash crops such as groundnuts, farmers also grow food crops to provide nutrition for themselves and their families. The most common food crop grown is maize, which in other settings, such as in the USA, in addition to being an important food crop, is also used for ethanol production. As it turns out, Malawi's most common food source could also hold part of the solution to overcome the dependence on tobacco, and consequently reach a more stable economic situation more within the boundaries of sustainable development. That is, of course, if ethanol derived from maize is considered to be a sustainable option. Looking at the current levels of fossil fuel consumption compared to the rate at which other alternatives such as electric engines are being developed, there should be a demand for biofuels such as ethanol during the coming decades to cover the transmission between fossil fuel and more sustainable alternatives.

If Malawi were to leave tobacco production in favour of ethanol or other biofuels, this could prove to bring better economy to the country, while also alleviating the population from the heavy labour burdens and health impacts of tobacco farming. The use of pesticides and fertilizers would probably continue, even though the levels of use could vary, and increased demand for farmland would still threaten the forests, whether for tobacco growing or maize production. Also, the use of industrial fertilizers that would be required for this ethanol production would diminish the reserves of phosphate rock and compete with food production for this limited resource. The assumption in itself also points out the big problem: ethanol most likely will not prove to be a reliable source of

income for an extended period of time, as other alternatives most likely will decrease the market share of combustible engines. And even if the cash crop grown in Malawi was maize, it would still compete with food production in one of the poorest countries in the world. A complete reliance on maize for income could of course also prove to be as fatal to the economy as complete reliance on tobacco or any other source of income.

It is somewhat intriguing that a population suffering hard from poverty and malnutrition is allotting such a large portion of the available farmland (on average 1/5 of the farmland for individual farmers) to grow an inedible crop, just to sell it to receive money that partly is used to pay for food to the family. This could be argued to show a failure either in the economic system or in the mindsets of human beings – or both. However, a scenario in which all farmers used their land only to grow food crops to provide food for their families would soon see the farmers needing some form of input from outside their farms, while non farmers would be willing to trade these inputs if they had them in return for some of the food that the farmers had produced. This is economic theory at its simplest form: supply and demand. The problem that can be seen for many tobacco farmers in Malawi is that they are not selling some of their excess harvest to be able to buy farm inputs and other necessities. They are instead cutting down on their food production to grow a labour-intensive and time-consuming crop that they receive poor payment for. A payment that for many smallholders hardly covers the needs of the family, including everyday nutrition. For farmers with more land and resources to manage the farming with, the income from tobacco can be a more stable economic foundation, even if the tobacco price is low.

If this is the best economic option for these farmers, the system is at fault somewhere. Evidently the tobacco industry is being artificially maintained through subsidies from the Malawian state. If it had been an industry that could be assumed to in time maintain itself economically, these subsidies could be seen as a justified cost. However, in its current form, the tobacco industry of Malawi has so many problems, many of which are not properly attended to, that the subsidies are only paying to have the environment destroyed, and the prospects of development for Malawi hampered by unhealthiness and children kept out of school. The classical and neo-classical economic theories that have governed investments and attempts to drive “development” are to a large extent being proven wrong by the Malawian tobacco industry. Development cannot be equated with money, for the raw material of one of the most profitable industries of the world is not bringing the changes that the producers require to lead a better life. The “trickle-down” effect is obviously not living up to its alleged effect, as the tobacco companies keep making big money, while the tobacco farmers remain in the same situation despite the amounts of tobacco leaves that they provide to the market. All in all, the tools for development that have been brought to Malawi have not worked - another example of how the mainstream conception of development is at fault. The comparative advantage in this case could be discussed. Malawi is obviously an agriculturally based economy, and tobacco can be cultivated across the entire country. Still the economic effects are less than convincing. It could be argued that maybe Malawi is not as well suited for tobacco production as it seems. Or maybe it is the economic system, the thoughts of development and the history of the country that has provided the preconditions that are to blame.

It is difficult to come up with a simple solution when trying to amend the situation of the Malawian tobacco production. It is quite clear that tobacco production in general, and the way in which it is conducted in Malawi particularly, is far from sustainable, and should not be considered as a long-term option for development in any form. Even though tobacco is economically important to Malawi and its people, it is not doing much more than barely providing for the farmers in short terms, and causing problems and adding extra costs to the farmers and society as a whole in the long-term perspective. While there are several options that could prove to be much more profitable in the long run, the short-term costs and uncertainty that a shift would mean could make it hard to convince the population of the benefits. However a shift has already begun as more and more farmers have turned to alternative crops for their income. The growing of sugar and cotton that has been increasing in Malawi is mainly conducted on larger estates. It could become important in a new diversified Malawian agriculture, but should not be seen as a solution for all the small holder farmers. It is also important that environmental effects of the alternatives are considered, be they the same or other. Proper knowledge and understanding of how such effects could develop is important to take into account. Finally, it is very important that the social structures that impose negative effects on how the tobacco production is conducted, is not allowed to remain after a shift to an otherwise better alternative.

The suggestion of this report is that the agricultural production of Malawi should shift towards production of food crops. This is likely to be a more sustainable and long-term alternative, as it is a more efficient use of farmland and the demand for food will last much longer than the demand for tobacco, and the decline in tobacco production in favour of food crops seen in recent years indicates that this is a process already under way. An important aspect to consider is that the transition is not rushed, and that the alternatives are economically viable options. It is also

essential that several crops are allowed to take over the market share of tobacco, so as to avoid heavy dependence on one single crop. There are already several food crops being grown in Malawi, and some of them are grown as cash crops. A more diversified agriculture focused on food production, can help spur domestic trade, while at the same time providing more food in a country where poverty and malnutrition are part of everyday life for many people. Expanding production of more specialized crops such as chilli or groundnuts could be a way of reaching the international market. The trend of increasing global food prices is something that could prove both beneficial and detrimental to Malawian food exports. Higher price generates higher income, but also spurs self-provision. It could also mean that food becomes a new cash crop for Malawi, as farmers export the lion part of their produce to get money, while the local population goes hungry, unable to compete with the prices paid by foreign buyers. Therefore starting out carefully with crops that are not basic food stock could be wise. The transition towards a food-based economy could be assisted by loans or aid from institutions such as the World Bank, NGOs or other actors on the global arena. The subsidies for farm inputs that tobacco farmers receive would then instead be given to the farming of food crops.

An important obstacle to overcome will be corruption and lobbying from the tobacco industry towards the Malawian government. Reaching out to the government and the society as a whole to convince them to phase out tobacco is important to get the mandate for a transition. Local NGOs or interest groups play an important part in facilitating required changes in society. Changes in the system of transporting, selling and receiving payments for the produce compared to the situation of the tobacco, which make this part of tobacco farming easier, should also be implemented so as to make it easier for the individual farmers to sell and receive proper payment for their production. This factor in itself could probably be a strong incentive for shifting from tobacco. Since tobacco already seems to be losing some of its importance in the Malawian economy, and many farmers are discontent with how the business is working out for them, a shift of this type, eased by loans or aid money that makes the practical changes more manageable for the farmers, could be a quite efficient way of bringing actual development to Malawi. As described in the Nested Sustainability model, the environment should be seen as the base for human society and economy, thus it is important to make sure that the environment is not degraded. By promoting the appropriate types of crops, strong benefits to the environment could also be made. It must be understood, though, that a shift towards food production will not automatically put a stop to all the current environmental issues, or problems with unhealthiness and difficult working conditions. These will still require attendance.

While this option does not solve all the problems connected with the tobacco situation, it seemingly forms a better alternative, which can improve many of the problematic situations that are prevalent in Malawi. A more stable economy will allow people to better provide for their everyday needs. School enrollment will likely increase if small holders can make a living without requiring as much assistance from their family. This will in turn provide better prospects for the future of Malawi as a country, even if children most likely will be required to assist in family farm work, and agriculture probably will remain the main source of provision for Malawians even in the foreseeable future. Food, stability and a basis for the future are really important aspects of development. Money should be seen as a tool or catalyst to reach these goals, not as the goal itself. Given how news and money flows are working, the biggest difficulty might be to bring awareness to the situation and find financing for the required changes and improvements. As improvements are made in some areas, opportunities to address other issues are opened up. Alleviating the immediate threats of poverty and starvation makes people more prone to consider and give attention to other problems such as environmental degradation or human rights. Of course this suggestion is based on the information provided in this report, additional, more in-depth and possibly contradictory information from other sources could of course make other solutions seem more favourable. More qualitative studies focusing on the different issues mentioned in this report are essential for more exact or detailed suggestions.

9. SUMMARY

The aim of this study is to describe the situation of the Malawian tobacco industry, how it affects sustainable development in Malawi, and what the prospects are for the future. Further, the report intends to provide suggestions on how to make the situation more sustainable. The study is based on theories on sustainable development and the general concept of development. A literature study complemented with interviews with a Malawian tobacco farmer, a representative of an NGO working with Malawian issues and an emigrated Malawian, forms the information basis for the report.

Tobacco is a commodity used all over the world. As such it holds a great market value, and while it is generally connected to health issues among its users, it is also an important source of income for the producers. Malawi has a unique relationship to tobacco, as it is the most important source of income for Malawi, making up 13 % of the country's GDP, 23 % of the total tax base and up to 70 % of total export incomes (Jaffee, 2003). Tobacco is grown more or less all over Malawi. It dominates the agricultural sector, and as much as 90 % of the Malawian population is in some way dependent on tobacco for income.

While tobacco is a very important cash crop, there are a number of environmental and socio-economic issues that eat into the profitability of the crop. The heavy dependence on one single crop, and a market where the buyers set the standards for prices leaves the tobacco farmers and Malawi's economy vulnerable to bad harvests and fluctuations on the global tobacco market. The low prices paid at the auction floors often results in standstills, and long waiting periods for the farmers. For smallholder farmers, the income made from the tobacco is often very little compared to the costs of farming inputs, food, shelter and loans. Poor working conditions for tenants working at tobacco estates and cases of child labour are other problems that are associated with the tobacco production of Malawi. Even for smallholder farmers, the work often requires the entire family to help out on the farm, which can result in children staying home from school.

Among the environmental problems, deforestation and adhering soil erosion are important issues connected to the tobacco production. The curing of the tobacco requires wood material for the curing huts, and in some cases for fuel when the tobacco is fire- or smoke-cured. The rate of deforestation is very high, and destroys natural habitats for wildlife, while also leaving the soil bare, and thus more susceptible to erosion. The eroding soil poses a physical threat to homes and infrastructure in the form of landslides. Soil erosion also washes away fertile soil, increasing the demand for industrial fertilizers. The nutrients end up in rivers and subsequently in Lake Malawi where they cause eutrophication, potentially upsetting the unique biotope of the lake. Pesticides used in tobacco farming are another source of concern as they also end up in the lake where they can affect fish and other marine life. Disruptions in the ecosystem of Lake Malawi may also have socio-economic consequences, as fish from the lake is an important source of protein for the population around the lake. Also, the fishing industry and the potential for tourism are affected negatively by toxic substances entering the lake.

Considering all aspects, it is clear that the situation regarding the Malawian tobacco industry is very complex. Considering all the impacts and consequences, the industry is definitely not functioning within the realms of sustainable development. However, it still holds high economic importance for individual farmers and the country as a whole. However, the many problems associated with tobacco farming, mainly in the form of unsatisfying conditions for smallholder farmers, have made the future of Malawian tobacco production unstable. Many farmers are switching to alternative crops, and concern for environmental issues and human rights at grass-root level holds some promise of change.

As a means of improving sustainability, the study suggests that the trend of farmers switching from tobacco to food crops should be encouraged, and a transition towards a more diversified stock of crops, where specialization on crops such as chilli or groundnuts could open up the gates to the international market. It is important that the transition is not rushed, and that economically viable alternatives are allowed to replace the tobacco share of the market at a proper rate, so as to avoid increasing poverty.

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11. REFERENCES

The names of some of the references in this report are written as acronyms in the text, while they for easier understanding and explicitness are written in full in the reference list. See the list on p 1 for explanation of acronyms.

11.1. Academic reports and articles

Baker, S. (2006): "Sustainable Development". Routledge, UK

Bunderson, W.T. & Hayes, I.M. (1997): "Sustainable Tobacco Production in Malawi: The Role of Wood Demand and Supply". Malawi Agroforestry Extension Project, Lilongwe.

Castro, C.J. (2004): "Sustainable Development: Mainstream and Critical Perspectives". Organization & Environment, Volume 17, No. 2 195-225 (2004).

Chambers, R. (1983): "Rural development: Putting the last first". Longman, London.

Clacherty, G. (2009): "Hard work, long hours and little pay – Research with children working on tobacco farms in Malawi". Plan Malawi, Lilongwe.

Commonwealth Secretariat (2007): "Provisional Agenda Item 1: Overview of Fish and Fish Trade in the ESA Region – The Fish sector and Its Importance in Malawi". Internet link:
http://www.thecommonwealth.org/shared_asp_files/GFSR.asp?NodeID=162743

De Vylder, S. (2007): "The Least Developed Countries and World Trade – Second Edition". SIDA, Stockholm.

Dorward A. et al. (2008): "Towards 'smart' subsidies in agriculture? Lessons from recent experience in Malawi". Overseas Development Institute: Natural Resources Perspectives September 2008.

FAO (2003): "Issues in the global tobacco economy: Selected case studies" –Ch 5: "Tobacco in Malawi". Food and Agriculture Organization of the United Nations, Rome.

Ghai, D. & Hewitt de Alcantara, C. (1991): "The Crisis of the 1980s in Africa, Latin America and the Caribbean: An Overview" in Ghai, D. (ed.) (1991): "The IMF and the South". Zed Books, London on behalf of United Nations Research Institute for Social Development. (p. 13)

Giddings, B. et al. (2002): "Environment, Economy and Society: Fitting Them Together Into Sustainable Development". Sustainable Cities Research Institute/John Wiley & Sons Ltd. And ERP Environment, Newcastle upon Tyne.

Gilman, S.L. & Zhou, X. (2004): "Smoke: A Global History of Smoking". Reaktion Books Ltd, London.

Gwaza, J.B. (2005): "Draft Report on Stakeholder's Workshop On Tobacco Reforms Held on 15th April 2005 at Chitedze Research Station." The Government of the Republic of Malawi Ministry of Agriculture, Irrigation and Food Security. New Horizon Consultants, Blantyre.

Hazarika, G. & Alwang, J. (2003): "Access to credit, plot size and cost inefficiency among smallholder tobacco cultivators in Malawi". Agricultural Economics Volume 29, Issue 1, July 2003, pages 99-109.

Hermele, K. (2001): "Skuldkrisen – En liten bok om syds stora lån". Agora, Stockholm.

Hoogvelt, A. (2001): "Globalization and the Postcolonial World – The New Political Economy of Development, Second Edition". Palgrave Macmillan, Hampshire.

- Jaffee, S. (2003): “Malawi’s Tobacco Sector – Standing on One Strong Leg is Better Than on None”. In Africa Region Working Paper Series No. 55 June 2003. Internet link: <http://www.worldbank.org/afr/wps/wp55.pdf>
- Johansson, M. (2008): “Sustainable Palm-oil? – How does the Indonesian palm-oil industry affect Indonesia ecologically, socially and economically?”. Umeå Universitet.
- Laurance, W. F. and Williamson, G. B. (2001): “Positive Feedbacks among Forest Fragmentation, Drought, and Climate Change in the Amazon”. *Conservation Biology*, 15: 1529–1535. doi: 10.1046/j.1523-1739.2001.01093.x
- Lear, L. (2002): Introduction to “Silent Spring – 40th Year Anniversary Edition” by Carson R. (1962). Fort Mariner Books, New York.
- Makoka D. et al. (2010): “Value chain analysis of Paprika and Bird’s Eye Chillies in Malawi”. MPRA Paper No. 27785. Munich Personal RePEc Archive
- McNeill, D. (2007): “The Ethics of Sustainable Development” in Grenholm, C-H. & Kamergrauzis, N. (editors), (2007): “Sustainable development and global ethics. Uppsala University Library, Uppsala.
- Miller, G. T. Jr. (2007): “Living in the Environment 15th Edition”. Thomson, Brooks/Cole, Belmont, CA.
- Mizoiri, S. (2001): “Fishes in Lake Malawi”. Chapter 1 in “Fish in Lake Malawi and other lakes in Malawi”. Molecular Biology and Ecology research Unit/Lake Malawi Ecology Project, Zomba. <http://www.est.ryukoku.ac.jp/est/yuhma/FLM-pamph/index.html>
- Mkanda, F.X. (2000): “Soil Erosion, Anthropogenic Effects, and Interrelationships Between Soil Conservation, Climate Change and the Biodiversity of Lake Malawi/Niassa /Nyasa”. Centre for Earth Observations Sciences, Geography Department, University of Manitoba, Winnipeg, Manitoba, Canada R3T 2N2
- Msomphora, M.R. (2005): “Eutrophication, of the East African Great Lakes” Ch 21 in "Drainage basin nutrient inputs and eutrophication: an integrated approach." University of Tromsø.
- Nsiku, N. & Botha, W. (2007): “Tobacco Revenue Management: Malawi case study”. International Institute for Sustainable Development, Winnipeg, Canada.
- Otañez, M. (2008): “Social disruption caused by tobacco growing”. WHO Framework Convention on Tobacco Control, Geneva, Switzerland.
- Porter, D.J. (1995): “Scenes from childhood” in Crush, J. (ed.) “Power of Development”. Routledge, London (63-86).
- Potter, R.B. et al (2004): “Geographies of Development Second Edition”. Pearson Education Limited, Essex.
- Reno, W. (1995): “Corruption and State Politics in Sierra Leone”. Cambridge University Press.
- Reno, W. (1995): “Markets, War and the Reconfiguration of Political Authority in Sierra Leone”. *Canadian Journal of African Studies*, 29(2), 1995.
- Stenmark, M. (2007): “Sustainable Development and the Millenium Declaration” in Grenholm, C-H. & Kamergrauzis, N. (editors), (2007): “Sustainable development and global ethics”. Uppsala Universitet Library, Uppsala.
- Tobin, R.J. & Knausenberger, W.I. (1998): “Dilemmas of Development: Burley Tobacco, the Environment and Economic Growth in Malawi.” Center for International Research, Arlington and US Agency for International Development in *Journal of Southern African Studies*, Volume 24, Number 2, June 1998. Routledge, London.
- World Commission on Environment and Development (1987:43) “Report of the World Commission on Environment and Development: Our Common Future”. Online version: <http://www.un-documents.net/wced-ocf.htm>

11.2. Various Reports, articles, information papers and Internet sources

British American Tobacco (2010-03-11): “British American Tobacco Product Information” <http://www.bat-ingredients.com/>

CIA (2010-03-08): “The World Factbook – Malawi” <https://www.cia.gov/library/publications/the-world-factbook/geos/mi.html>

Chossudovsky M. Third World Network Features (1995): “IMF-World Bank policies and the Rwandan holocaust”. Third World Network, Penang, Malaysia. Internet link: <http://www.hartford-hwp.com/archives/35/033.html>

CorpWatch - Playing with Children’s Lives: Big Tobacco in Malawi: (2011-03-28): <http://www.corpwatch.org/article.php?id=14947>

CorpWatch – Tobacco: The Smoke Blows South (2011-03-08): <http://www.corpwatch.org/article.php?id=4030#Environment>

Dearing, S. (2009): “Malawi tobacco child labourers being poisoned by their work”. Digital Journal: <http://www.digitaljournal.com/article/278158>

Environment News Service, Internet (2011-03-14): <http://www.ens-newswire.com/ens/jan2006/2006-01-16-02.asp>

Guide For Africa, Internet (2011-06-16): “Map of Malawi”: <http://www.guideforafrica.com/malawi/malawi-map.html>

Historyworld (2010-03-08): “History of Malawi”: <http://www.historyworld.net/wrldhis/PlainTextHistories.asp?historyid=ad48>

Mackey, J. & Eriksen, M. (2002): “The Tobacco Atlas”. WHO, Geneva.

Malawi Voice, Internet (2011-05-08): “Malawi Tobacco Earnings Fall 5.5% in 2010 Season-Reserve Bank of Malawi”: <http://www.malawivoice.com/latest-news/malawi-tobacco-earnings-fall-5-in-2010-season/>

New World Encyclopedia (2011-05-02): “Sustainable development”: http://www.newworldencyclopedia.org/entry/Sustainable_development

Nyasa Times, Internet (2011-05-08): “Woman works on her barley tobacco in Chalenga village”: <http://www.nyasatimes.com/national/female-tobacco-tenants-raped-for-food.html/attachment/woman-works-on-her-barley-tobacco-in-chalenga-village>

Office of Environmental Health Hazard Assessment in California (2011-03-06): http://oehha.ca.gov/air/chronic_rels/pdf/74839.pdf

Page, L. (2009): “Tobacco biofuel to solve energy/ environment crisis?” The Register, 31st December 2009: http://www.theregister.co.uk/2009/12/31/tobacco_biofuel

Pesticide Info – Pesticide Database (Used to search info for pesticide chemicals Aldicarb, 1,3-Dichloropropane, Chlorpyrifos and Acephate). (2011-03-08): http://www.pesticideinfo.org/Search_Chemicals.jsp

Philip Morris USA, Internet (2010-03-04): “Making Our Cigarettes”: http://www.philipmorrisusa.com/en/cms/Products/Cigarettes/Manufacturing/default.aspx?src=top_nav

Smoke-free East Sussex Tobacco Control Alliance, Internet, (2011-03-09): <http://www.smokefreeeastsussex.org.uk/facts/environment/>

Stogie Fresh TV, Youtube channel, Internet (2010-03-04):

<http://www.youtube.com/watch?v=yGN63RJCYHE&feature=related>,

Suite101 (2010-03-11): “Top Ten Tobacco Countries- China, India and Brazil Among Top Tobacco Nations”
http://internationaltrade.suite101.com/article.cfm/top_ten_tobacco_countries

Sustainability-Ed, Internet (2010-03-25): “Principles of sustainability: People, planet and profits”.
<http://www.sustainability-ed.org/pages/what3-1.htm>

Thank You for Smoking, Internet (2011-04-04): <http://thankyouforsmoking.blogg.se/index.html>

The Courier ACP-EU no 201 November-December (2003): “Green gold: tobacco as Malawi’s lifeline”.

“The Encyclopedia of Earth” (2010-03-04): “Malawi”: <http://www.eoearth.org/article/Malawi>

The Namibian, Internet (2011-05-08): “Malawi child tobacco workers exposed to nicotine”:
[http://www.namibian.com.na/index.php?id=28&tx_ttnews\[tt_news\]=58807&no_cache=1](http://www.namibian.com.na/index.php?id=28&tx_ttnews[tt_news]=58807&no_cache=1)

The National Statistical Office of Malawi (2008): “2008 Population and Housing Census Preliminary Report”.
National Statistical Office, Zomba.

The Tobacco Seed Company (2011-05-07): “Curing Tobacco”:
http://www.tobaccoseed.co.uk/How_to_Cure_Tobacco.html

The Wildfuels Alternative – A discussion of the ecological alternatives of biofuels – Peak Nitrogen 11/12/07,
Internet (2011-04-23):
http://cas.okstate.edu/debo/blogs/index.php?blog=5&title=peak_nitrogen&more=1&c=1&tb=1&pb=1

Tobacco’s Children (2011-03-08): http://www.tobaccoschildren.org/pdf/Forgiftad_pa_tobaksfalten.pdf

”Tobaksfakta”. (2010-02-26): <http://www.tobaksfakta.org/Default.aspx?id=8666>

United Nations, Internet (2010-03-24): “UN Conference on Environment and Development (1992).
<http://www.un.org/geninfo/bp/enviro.html>

White, S. & Cordell, D. (2008): “Peak Phosphorus: The Sequel to Peak Oil”. Sustainable Phosphorus Futures,
Internet (2011-04-23): <http://phosphorusfutures.net/peak-phosphorus>

11.3. Interviews

“Anna”, woman emigrated from Malawi to Sweden (2010-10-30)

Malawian tobacco farmer (September 2010)

Sydney Kalimanjira, chairman, MaSwe (2010-10-30)