

**SILVER BULLET OR NOT?: THE IMPACT OF AGRICULTURAL BIOTECHNOLOGY
ON THE RIGHT TO FOOD IN AFRICA**

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DECLARATION

I, Anganile Willie Amon Mwenifumbo, declare that the work presented in this dissertation is original. It has never been presented to any other University or institution. Where other people's works have been used, references have been provided, and in some cases, quotations made. It is in this regard that I declare this work as originally mine. It is hereby presented in partial fulfilment of the requirements for the award of the LL.M Degree in Human Rights and Democratisation in Africa.

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DEDICATION

To

REUBEN MWENIFUMBO

Visiting Karonga never feels the same without you.

R.I.P

ABBREVIATIONS

ACHPR	African Charter on Human and Peoples' Rights
CBD	Convention on Biological Diversity
CESCR	International Covenant on Economic, Social and Cultural Rights
Committee on ESCR	United Nations Committee on Economic, Social and Cultural Rights
FAO	Food Agriculture Organisation
GE	Genetically Engineered
GMOs	Genetically Modified Organisms
GURTs	Genetic Use Restriction Technologies
ITPGRFA	International Treaty on Plant Genetic Resources for Food and Agriculture
IPRs	Intellectual Property Rights
MDGs	Millennium Development Goals
NEPAD	New Partnership for Africa's Development
PBRs	Plant Breeding Rights
R&D	Research and Development
TRIPS	Trade Related Aspects of Intellectual Property
TUA	Technology Use Agreement
TNCs	Transnational Corporations
UDHR	Universal Declaration on Human Rights
UNDP	United Nations Development Programme
UPOV	International Convention on New Varieties for Plants
WHO	World Health Organisation

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CHAPTER ONE: INTRODUCTION

1.1 Background to the study

The right to food has been endorsed by most states with greater unanimity.¹ However, it remains one of the most violated right among human rights.² The universal recognition and commitment by states to end hunger is not surprising considering the pivotal significance of food security in the realisation of the right to food and other human rights.³ The severity of world hunger and malnutrition has been well chronicled. In the mid 1960s, the World Bank had calculated that 840 million people were malnourished.⁴ Its estimate increased to 932 million in 1975.⁵ Today, over 800 million people in the world suffer from hunger.⁶ This trend has been severe in developing countries where one-sixth of these 800 million people live.⁷ In Africa alone, half of its population was in 1984 threatened by severe hunger and malnutrition.⁸ By December 2005, a total of 27 African states were in need of 'urgent external food assistance'.⁹ It is patent from the foregoing that one of the momentous challenges that African states are facing is the ability to feed its people. There is no doubt that this failure greatly impinges on the right to adequate food which is one of the subsistence rights amongst the cluster of rights that

¹ See for instance the endorsement by the Special Assembly on Man's Right to Freedom from Hunger, 1963, Rome; the Universal Declaration on the Eradication of Hunger and Malnutrition endorsed by the United Nations General Assembly Resolution 3348 of 17 December 1974; the World Food Assembly, November 1984, Rome; The United Nations Food Agriculture Organisation (FAO) and World Health Organisation (WHO) International Conference on Nutrition of 1992, Rome; the Rome Declaration on World Food Security and World Food Summit Plan of Action of 1996; and Goal 1 of the Millennium Development Goals (MDGs) adopted at the Millennium Summit of the United Nations in 2000 supported by all 189 nations.

² P Alston 'International law and the human right to food' in P Alston & K Tomaševski (eds) *The right to food* (1984) 9.

³ See para. 1 of General Comment 12 (GC 12) of the United Nations Committee on Economic Social and Cultural Rights (Committee on ESCR). In this study the 'right to food' is used as a shorthand expression to include the right to adequate food and the right to be free from hunger provided under paragraphs 1 and 2 of article 11 of the CESCRC respectively. However, reference is made to a specific norm where it is necessary.

⁴ World Bank Staff Occasional Paper No. 23 of 1976 quoted in Alston (n 2 above) 10.

⁵ As above.

⁶ Practical Action, 'Food production'. http://www.itdg.org/?id=food_production (accessed 21 August 2006).

⁷ As above.

⁸ Alston (n 2 above) 10.

⁹ <http://www.fao.org/docrep/008/J6853e/j6853e02.htm#3> (accessed 25 August 2006).

the right to an adequate standard of living guaranteed under the International Covenant on Economic, Social and Cultural Rights (CESCR).¹⁰

The human right to food is realised when 'every individual, alone or in community with others, has physical and economic access at all times to adequate food or the means of its procurement'.¹¹ According to article 2(1) of CESCR, states only have an obligation to 'progressively' achieve the full realisation of the right to food. However, under article 11(2) of CESCR, state parties to the covenant have further undertaken to take measures to improve methods of food production by making full use of technical and scientific knowledge.

Modern biotechnology¹² is regarded as one of the technologies that has the potential to spur production and is increasingly receiving attention in the pharmaceutical industry.¹³ Agricultural biotechnology alone has been touted as the panacea and as constituting the only available avenue for raising yields fast to be able to feed an ever increasing and hungry world population.¹⁴ Notwithstanding the opportunities to bolster food security and hence reduce poverty that agricultural biotechnology presents, the health and safety of this technology have not been conclusively demonstrated. There is, therefore, a need to

¹⁰ The CESCR was adopted by the United Nations General Assembly in resolution 2200 A (XXI) of 16 December 1966. The CESCR, which contains one of the most comprehensive provisions on the right to food, has been ratified by almost all African states. By 19 September 2006, 49 out of the 53 African states had ratified the CESCR. See United Nations: <http://www.ohchr.org/english/countries/ratification/3.htm> (accessed 19 September 2006).

¹¹ GC 12, para. 6.

¹² Article 2 of the Convention on Biological Diversity of 1992 (CBD) defines biotechnology as 'any technology that uses biological systems, living organisms, or derivatives thereof, to make or modify products or processes for specific use'. The Convention on Biological Diversity (CBD) was adopted in Rio de Janeiro on 5 June 1992, 31 *International Legal Materials* 818.

¹³ F Musungu 'The right to health in the global economy: Reading human rights obligations into the patent regime of the WTO-TRIPS agreement' in C Heyns (ed) *International yearbook of human rights Master's programmes* (2001) 196.

¹⁴ The United Nations Department of Economic and Social Affairs has projected that the world population will reach 10.6 billion by 2050 from 6.5 billion in 2005. See United Nations *World population prospects: The 2004 revision* (2005) xviii. According to present estimates, food production in developing countries will have to increase more than 60% in the next 25 years in order to keep pace with population growth. See J Esquinas-Alcázar 'Genetic resources for food and agriculture: International Treaty on Plant and Genetic Resources for Food and Agriculture and other international agreements negotiated through FAO Commission on Genetic Resources for Food and Agriculture' in M Bergsmo (ed) *Human rights and criminal justice for the downtrodden: Essays in honour of Asbjørn Eide* (2003) 233.

allay fears about its potential adverse effects that might not only affect the enjoyment of the right to food but also other human rights such as the right to the best attainable standard of health, and the right to a clean and healthful environment.¹⁵

This study assesses the impact of agricultural biotechnology on the right to food in Africa and the multifarious implications of its introduction in Africa. It further explores how its negative effects can be mitigated whilst maximising its potential benefits to ensure food security which is the foundation for the realisation of the right to food. The study also examines the differing and sometimes conflicting obligations of state parties to the CESCRC to progressively achieve the full realisation of the right to food by making use of all available resources, the duty to make use of scientific knowledge in order to improve methods of food production and the duty to ensure that individuals enjoy the benefits of scientific progress and its applications.¹⁶ The study analyses these obligations to further explore the question whether African states have an obligation to immediately embrace agricultural biotechnology in order to ensure freedom from hunger which is the first step towards the realisation of the right to adequate food.

1.2 Statement of the research problem

Biotechnology has revolutionised the 'search for new product lines in different industries'.¹⁷ Agricultural biotechnology has been touted by its apologists as the silver bullet to end the food insecurity problem that has rocked developing countries especially African countries.¹⁸ There is now a strong push by various actors that African countries must embrace agricultural biotechnology/genetically engineered (GE) crop varieties in order to improve food production.¹⁹ This study, therefore, stands on the terrain of the

¹⁵ P Cullet 'Agro-Biotechnology: Can it deliver?' <http://www.ielrc.org> (accessed 4 May 2006).

¹⁶ See articles 2(1), 11(2)(a) and 15(1)(b)&(c) of the CESCRC.

¹⁷ GZ Banda, 'Modern biotechnology policy and legislation in Malawi' (2003) <http://www.cepamw.com> (accessed 10 August 2006); See generally R Evenson et al *Agricultural values of plant genetic resources* (1998).

¹⁸ P Kameri-Mbote 'Biotechnology and food security in Africa: Some policy and institutional considerations'. <http://www.ielrc.org/content/f0204.htm> (accessed 15 March 2006).

¹⁹ 'Africa must resist pressure on GMOs' *The Herald* 25 July 2006. See also D Kuyek, 'The GM crop push in Africa' Paper presented at the Civil Society Workshop on GMOs in African Agriculture, 27-29 September 2005, Nairobi, Kenya.

current polarised debate as to whether developing countries, particularly African countries, should embrace genetically engineered crops in order to spur food production and hence realise the right to food. The potency of agricultural biotechnology presents a risk that African states might embrace these technologies because of need arising out of desperation without appreciating its impact on the very right that they seek to realise.

The main thesis of this study is that although international human rights law sets a minimalist standard on states to ensure that every individual is free from hunger, 'need' or 'want' arising out of desperation do not justify the embracing of technologies that might with significant magnitude negatively impact on the very right they seek to realise. Thus it is contended in this study, firstly, that the duty to progressively realise the right to food entails that this right is not compromised because of 'need' at the expense of the multifarious problems that agricultural biotechnology presents. Secondly, it is contended that states' obligation to progressively realise the right to food demands that an assessment of the positive and negative impacts of scientific techniques that they have undertaken to use in order improve food production be had before embracing such technologies. This is because agricultural biotechnology, which holds great promise in the field of agriculture, might be marred with caveats that may cause irreparable damage and African states might not have the technological know-how and economic muscle to deal with any problems concomitant with it. The tail end would be that the very right which states set out to realise will be greatly compromised by the negative impacts of these technologies. Some of the questions that this study, therefore, seeks to answer are: Firstly, to what extent does agricultural biotechnology impact on the human right to food? Secondly, to what extent can states make use of scientific knowledge (agricultural biotechnology) in order to progressively achieve the full realisation of the right to be free from hunger, which is the only right that has been proclaimed as fundamental in the CESC, and the right to adequate food?

1.3 Focus and objective of the study

The study specifically centres on the current debate about the potency of agricultural biotechnology to ameliorate the food insecurity problems that have rocked Africa for

decades. It, therefore, focuses on the international legal obligations that African states have undertaken under the CESCRR to ensure the progressive realisation of the right to food amidst the euphoria for the introduction of agricultural biotechnology. Central to this obligation is the undertaking to make use of scientific knowledge in order to improve food production. This study examines the implications of these obligations in the light of agricultural biotechnology and how it impacts on the right to food.

The objective is to examine the ramifications of introducing agricultural biotechnology within the context of the international legal obligations of African states to progressively realise the right to food and make use of scientific techniques in order to improve food production. The specific objective of the study is to examine the impact of agricultural biotechnology on the right to food in order to establish whether it is a silver bullet for Africa or not.

1.4 Significance of the study

Freedom is the basis of human existence.²⁰ Freedom from hunger is a prerequisite for the exercise of almost all other human rights.²¹ This recognition possesses great antiquity. Karl Marx argued that '[M]an must eat before he can think'.²² Freiderich Engels in his speech at Karl Marx's funeral had this to say:²³

Just as Darwin discovered the law of development or organic nature, so Marx discovered the law of development of human history: the simple fact, hitherto concealed by an overgrowth of ideology, that mankind must first of all eat, drink, have shelter and clothing, before it can pursue politics, science, art, religion ...

The pivotal significance of food security which is the foundation for the realisation of the right to food and other human rights was well summarised by Gorovitz who argued that,

²⁰ President Thabo Mbeki 'I am an African' <http://www.anc.org> (accessed 1 August 2006).

²¹ W Eide and U Kracht 'The right to adequate food in human rights instruments: Legal norms and interpretations' in W Eide and U Kracht (eds) *Food and human rights in development* (2005) 106.

²² Quoted by President Thabo Mbeki in his Nelson Mandela Memorial Lecture delivered at the University of Witwatersrand on 29 July 2006. <http://www.anc.org> (accessed 1 August 2006).

²³ As above.

'No right has meaning or value once starvation strikes. It is an ultimate deprivation of rights, for without food life ends, and rights are of value only for the living'.²⁴ It therefore behoves states that have undertaken to ensure the full realisation of the right to food to progressively improve the means of food production amidst the current state of food insecurity in Africa. To this extent, agricultural biotechnology which, among other things, promises drought resistant varieties and offers a solution to the shortcomings of chemical agriculture, is an attractive technology that might be considered as a silver bullet to poor African countries which heavily rely on rain fed agriculture. Although the techniques that are being developed in the field of agricultural biotechnology hold great promise, there are potential risks which demand a thorough assessment of their impact on the right to food and other human rights that are pertinent to its enjoyment such as the right to the best attainable standard of health and a clean environment.²⁵ Thus, within the context of the debate on indivisibility and interdependence of human rights, there is need to analyse the overall ramifications of embracing agricultural biotechnology vis-à-vis the duty to progressively realise the right to food. For instance, the civil rights implications of embracing agricultural biotechnology have to be considered, among other things, in the light of intellectual property rights protection regimes which govern these highly patented modern technologies. It is, therefore, significant that while African countries might be contemplating to introduce these technologies in order to fulfill their international legal obligations as they relate to the right to food, a clear assessment of the impact of these technologies on this right must be had in order to appreciate its risks. This study will, therefore, highlight the negative and positive impact of agricultural biotechnology in the quest for food security which is the mainstay for the realisation of the right to food. The study, therefore, seeks to bring to the fore pertinent issues that impact on the right to food which would provide a fervent springboard towards the task to mitigate the risks that agricultural biotechnology presents whilst maximising its potential.

1.5 Hypotheses

The major hypothesis in this study is that modern agricultural biotechnology is crucial in the quest for improved food production in order to realise the right to food but that its

²⁴ Quoted in Alston (n 2 above) 19.

²⁵ Communication 155/96 *Social & Economic Rights Centre & the Centre for Economic and Social Rights v Nigeria* 15th Annual Activity Report. (SERAC case).

potential risks must be meticulously examined before it is embraced. The study further proceeds on the presumption that given the potency of agricultural biotechnology to spur food production, African states might seek to embrace these technologies because of need without fully appreciating the overall implications that might mar the very efforts that they initially set out to realise this right. To this extent, this study presumes that states have an obligation to examine and balance the risks and benefits of modern technologies before introducing them within their borders.

1.6 Literature review

Since the adoption of the Universal Declaration on Human Rights (UDHR) and the CESC, various studies have focused on the discussion about socio-economic rights and the various obligations that they entail.²⁶ Innumerable studies have sought to denounce the dichotomy between socio-economic rights and civil and political rights that are considered to be the 'daily staple of regional and domestic human rights mechanisms'.²⁷ The idea has been to regard socio-economic rights as self standing rights that must be enforced and implemented just like civil and political rights.²⁸ At the same time scholars like Oloka-Onyango have gone further to suggest how civil and political rights can be used as vehicles for the promotion and protection of socio-economic rights.²⁹ Now literature is replete with studies that focus specifically on defining the contents of various socio-economic rights guaranteed by the CESC. The United Nations Committee on Economic, Social and Cultural Rights (Committee on ESCR) has through its (General Comment No 12) GC 12 provided an authoritative definition of the content of the right to food.³⁰ Amartya Sen has sought to establish the philosophical foundations of the right not to be hungry.³¹ Sen investigates the

²⁶ D Brand & C Heyns *Socio-economic rights in South Africa* (2005).

²⁷ C Heyns 'Civil and political rights in the African Charter' in M Evans & R Murray *The African Charter on Human and Peoples' Rights: The System in practice, 1986-2000* (2002) 137.

²⁸ The Vienna World Conference was unequivocal in paragraph 5 of its Vienna Declaration and Programme of Action of 1993 that 'the international community must treat human rights in a fair and equal manner, on the same footing, and with the same emphasis'.

²⁹ J Oloka-Onyango 'Beyond the rhetoric: Reinvigorating the struggle for economic and social rights in Africa' (1995) 26 *California Western International Law Journal* 1.

³⁰ E/C.12/1999/5 Twentieth session, 26 April -14 May 1999, Geneva.

³¹ A Sen 'The right not to be hungry' in P Alston & K Tomaševski (eds) *The right to food* (1984) 69.

philosophical foundations of the right not to be hungry by questioning if people do have such a right.³² The author uses Ronald Dworkin's distinction between background rights and institutional rights to argue that rights that relate 'to not being hungry may take various forms in terms of concreteness and institutional reflection within states'.³³ However, Philip Alston argues that the fact that the right to adequate food is binding on at least half of the states in the world represents compelling reason to approach the matter primarily as a legal one rather than a philosophical reflection.³⁴ Philip Alston has co-edited a book with Katarina Tomaševski on the right to food in which Alston has a chapter that discusses, among other things, the relevance of law to world hunger and the relationship between the right to food and other human rights.³⁵ Alston further investigates the content of the right to food in existing international and regional human rights instruments and how the world seeks to implement this right under the existing regime.³⁶ Rolf Künemann has authored a book on food and freedom in which, among other things, the author argues that countries that evade agrarian reform measures when they are incapable to feed themselves violate the right to food.³⁷ Wenche Eide and Uwe Kracht have edited a book which has a chapter that examines the content of the right to food and the broad parameters for its implementation.³⁸ In the same book, Wenche Eide has a chapter that chronicles the events that led to the shift in focus from food security to the right to food.³⁹ The author observes that 'food security is not out, but that the right to food is fully in and has become the core of concern'.⁴⁰ It is patent from the foregoing that literature on socio-economic rights and particularly the right to food is abundant.

³² As above.

³³ As above.

³⁴ Alston (n 2 above) 13.

³⁵ As above, 19.

³⁶ As above, 32.

³⁷ R Künemann *Food and freedom: A textbook for human rights education* (1999).

³⁸ W Eide & U Kracht (eds) 'Food and human rights in development' (2005).

³⁹ W Eide 'From food security to the right to food' in W Eide & U Kracht (eds), as above, 67.

⁴⁰ As above, 91.

There is also no dearth of information on agricultural biotechnology.⁴¹ Timothy Swanson has edited a book that discusses the distributional implications of technological change in respect to biotechnology in agriculture especially in the developing world.⁴² Various scholars have contributed to this book. In one of the chapters, Nadia Cuffaro surveys the literature on the relationship between institutional status and technological change in agricultural development.⁴³ The chapter makes it clear that agriculture is an industry that responds to societal demands and therefore technological changes are induced by societal needs.⁴⁴ In another chapter Charles Spillane discusses the current state of play as regards public and private roles of different players in the field of agricultural biotechnology.⁴⁵ Furthermore, Robert Brac de la Perrière has authored a book that highlights the threats of genetically modified crops to farmers.⁴⁶ The author then suggests the means of action in order to safeguard the interests of farmers and local communities.⁴⁷ A number of these studies particularly focus on agricultural biotechnology as it relates to food insecurity. Although this study stands on the terrain of the debate on agricultural biotechnology and food security, it links and captures the debate within the discourse of human rights particularly the right to food.

There is also considerable literature in the form of journal articles on other aspects that this study deals with such as intellectual property rights and biosafety.⁴⁸ Literature on

⁴¹ K Lindsey & M Jones *Plant biotechnology in agriculture* (1999); Z Thomas 'Agricultural biotechnology and proprietary rights: Challenges and policy options' (2005) 8(6) *Journal of World Intellectual Property* 711; Kameri-Mbote (n 18 above).

⁴² T Swanson *Biotechnology, agriculture and the developing world: The distributional implications of technological change* (2002).

⁴³ N Cuffaro 'Population growth and agricultural intensification in developing countries' in T Swanson, as above, 25.

⁴⁴ As above.

⁴⁵ C Spillane 'Agricultural biotechnology and developing countries: proprietary knowledge and diffusion of benefits' in T Swanson (n 42 above) 67.

⁴⁶ R Brac de la Perrière & F Seuret 'Brave new seeds: The threat of GM crops to farmers' (2000).

⁴⁷ As above, 6.

⁴⁸ P Cullet 'Food security and intellectual property rights in developing countries' <http://www.ribios.ch> (accessed 9 August 2006); P Kameri-Mbote 'The development of biosafety regulation in Africa in the context of the Cartagena protocol: Legal and administrative issues' <http://www.ielrc.org> (accessed 1 August 2006).

this study is also rich with international and regional instruments on the human right to food and use of genetic resources for food and agriculture. Other documents that are of particular significance on the subject matter herein can be gleaned from publications of institutions such as the Consultative Group on International Agricultural Research (CGIAR) and the Food Agriculture Organisation (FAO).⁴⁹ Although there is a deficiency of case authorities at both international and domestic levels that specifically deal with the right to food, there is generally a litany of domestic case authorities on other socio-economic rights that illuminate the various international obligations that states have assumed under the CESC.R.⁵⁰ Case authorities from other domestic jurisdictions on the protection of intellectual property rights are also available.⁵¹ These cases are of utmost comparative significance when considering the impact of intellectual property protection of GE seeds for food in the African context.

1.7 Research methodology

This study will considerably rely on library and internet sources. The study involves the examination of international instruments and the writings of various commentators on the subject matter. The study will also make comparisons with a view to identify the differing consequences that agricultural biotechnology would have in the realisation of the right to food in Africa.⁵² The study will further analyse the nature of states' duty to progressively realise the right to food vis-à-vis the duty to make use of scientific knowledge. The idea is to locate the debate on the introduction of agricultural biotechnology in Africa in the context of states' international legal obligations.

1.8 Limitations of the study

⁴⁹ Available at <http://www.cgiar.org> & <http://www.fao.org>.

⁵⁰ See for instance, *Grootboom v Oostenberg Municipality* 2000 3 BCLR 277(CC); *Minister of Health v Treatment Action Campaign & Others* 2002 10 BCLR 1033 (CC) & *Soobramoney v Minister of Health, Kwazulu-Natal* 1997 BCLR 1696 (CC).

⁵¹ *Diamond v Chakrabarty* 16 June 1980, U.S Supreme Court, 447 U.S. 303; *Schmeiser v Monsanto* Supreme Court of Canada [2004] 1 S.C.R 902.

⁵² O Kahn-Freund 'On uses and misuses of comparative law' [1974] *Modern Law Review* 1.

It has been suggested that the advent of new technologies in the field of agriculture will have almost homogenous consequences in all developing countries.⁵³ However, this study specifically focuses on Africa mainly because of geographical, economic and cultural reasons. Geographically, the natural transboundary effects that GE crops might have will affect its biodiversity and genetic resources as a continent regardless of concerns in other developing countries. Secondly, any impact on the cultural richness of Africa that significantly informs crop husbandry is likely to affect its food security drive and economic growth as a continent that is essentially agro-based and home to some of the world's poorest people. The adoption of an African Model Law on Safety in Biotechnology (African Model Law) on how African countries are to implement the Trade Related Aspects on Intellectual Property Rights (TRIPS Agreement)⁵⁴, the Convention on Biological Diversity (CBD)⁵⁵ and the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGFRA)⁵⁶ under the African Union set up is indicative of an inspiration to deal with these issues from a common front. It is, therefore, proper and convenient to consider these issues with a common stand that the African Union is seeking to approach them.

1.9 Overview of chapters

This study has five chapters. Chapter one lays out the context in which this study is set, the focus and objectives of the study, its significance and other preliminary issues including the hypotheses, literature review and methodology. Chapter two is devoted to laying out the conceptual framework on which this study rests. Chapter three assesses the positive and negative impacts of agricultural biotechnology on the right to food. This chapter brings to the fore critical issues relating to agricultural biotechnology such as intellectual property rights (IPRs), gene use restriction technologies (GURTs), erosion of biodiversity,⁵⁷ environmental and health concerns that would impact on the realisation of

⁵³ P Pinstруп-Andersen & M Cohen 'Agricultural biotechnology: Risks and opportunities for developing country food security' (2000) 2(1/2/3) *International Journal of Biotechnology* 145.

⁵⁴ Trade Related Aspects on Intellectual Property (TRIPS Agreement), Marrakech, 15 April 1994, 33 *International Legal Materials* 1197.

⁵⁵ The CBD (n 12 above).

⁵⁶ Adopted in Rome on 3 November 2001.

⁵⁷ The CBD defines biological diversity (biodiversity) as 'the variability among living organisms from all sources including, inter alia, terrestrial marine and other aquatic ecosystems and the ecological

the right to food. Chapter four analyses the differing international legal obligations of states relating to the right to food within the context of the debate on the introduction of GE seeds and crops in Africa. Chapter five presents the conclusions and recommendations of this study.

complexes of which they are part; this includes diversity within species, between species and of ecosystems' (n 12 above).

CHAPTER TWO: CONCEPTUAL FRAMEWORK: THE RIGHT TO FOOD IN PERSPECTIVE

2.1 Introduction

The implementation of the right to food has been a subject of commentary on a grand scale. In order to eschew the risk of just repeating what others have had to say on this subject, this chapter lays out the conceptual framework on which this study is built. The conceptual underpinnings that inform this study will determine the conclusions that this study will eventually draw. In this regard, this chapter begins by linking agricultural biotechnology to the right to food. It then discusses the manifold interrelationships of human rights. This part underscores the need to adopt a holistic approach in a study of this nature in order to be able to identify the varying human rights that impinge on the realisation of the right to food vis-à-vis agricultural biotechnology. The chapter concludes with a discussion on inter and intra-generational equity. This part highlights the need to contextualise this study within the debate on sustainable development. Hand in glove with the precautionary principle, this part lays out the conceptual foundation that significantly informs the discussion in chapters three and four of this study.

2.2 The link between agricultural biotechnology and the right to food

The pivotal significance of the right to food to human existence and the need to improve methods of food production has served as an impetus for research and development (R&D) in the field of agriculture. Lately, this research has focused on agricultural biotechnology or genetic engineering that threatens to almost obliterate millennia of traditional plant breeding history.⁵⁸ However, agricultural biotechnology presents opportunities that have the potential to overcome the shortcomings of traditional plant breeding in terms of improving food production.⁵⁹ The need to bolster food production is in line with one of the principal objectives specified under article 11(2)(a) of the CESCVR viz. to improve methods of food production with a view to realise the right to food. One of the means of achieving this objective is by 'making full use of technical and scientific

⁵⁸ Brac de la Perrière & Seuret (n 46 above) 1.

⁵⁹ Pinstrup-Andersen & Cohen (n 53 above) 155.

knowledge'.⁶⁰ Agricultural biotechnology not only presents an opportunity to achieve the productivity gains needed to raise crop yields fast in order to ensure food security. It further promises, among other things, the introduction of pest resistant crops with heightened tolerance to adverse weather and soil conditions.⁶¹

The right to food is a shorthand expression that encompasses two separate legal norms that are guaranteed by article 11 of the CDESCR, viz. the right to adequate food and the right to be free from hunger. It has been argued that the right to adequate food is the appropriate overall norm and that freedom from hunger is the minimum prescription below which states cannot afford to fall in their duty to realise the right to food.⁶² This contention augurs well with the interpretation afforded to article 11 by the Committee on ESCR. In GC 12 the notion of adequacy implies quantity and quality which goes beyond the standard expected of the freedom from hunger sub-norm.⁶³ To this extent, the right to adequate food as the main norm lays down a maximalist standard which current food production trends cannot meet without the help of modern agricultural biotechnologies.⁶⁴ Put succinctly, the potency of agricultural biotechnology presents potential productivity gains of boosting food security which is the mainstay for the realisation of the right to adequate food as interpreted by the Committee on ESCR in GC 12.

2.3 Indivisibility and interdependence of human rights

The UDHR laid out a platform that embraced all human rights and all aspects of human life as interrelated and mutually reinforcing. However, the embodiment of civil and political rights in a different covenant from social, economic and cultural rights served as a springboard to reinforce the fallacious belief that socio-economic rights possess

⁶⁰ Art. 11(2)(a) of the CDESCR.

⁶¹ Pinstrup-Andersen & Cohen (n 53 above) 157.

⁶² Alston (n 2 above) 33.

⁶³ In fact, in GC 12 of the Committee on ESCR does not set out to give content to the right to be free from hunger but the right to adequate food which dispels doubt that the latter is the grand norm. See also P Alston, n 2 above.

⁶⁴ Esquinas-Alcázar (n 14 above) 235.

relative values.⁶⁵ This belief has seen the marginalisation of socio-economic rights to the extent that debates still top human rights fora and preoccupy the academia about their justiciability and enforceability. However, lately there has been a shift in the conceptualisation of socio-economic rights especially with the adoption of the Vienna Declaration and Programme of Action (Vienna Declaration) that unequivocally proclaimed all human rights as universal, indivisible, interdependent and interrelated.⁶⁶ The Vienna Declaration further prescribes that the 'international community must treat human rights globally in a fair and equal manner, on the same footing, and with same emphasis'.⁶⁷ On paper, the Vienna Declaration obliterates the misconceptions that led to the dichotomisation of the two clusters of rights by emphasising that none of these clusters is normatively superior to the other.⁶⁸

Perhaps the manifold interrelationships of human rights cannot better be demonstrated than when one considers the significance of food to human life. The famous slogan 'freedom or bread' seamlessly illustrates the indivisibility of the two clusters of rights. Both clusters of rights are essential to the enjoyment of life in that the exercise of certain freedoms such as the right to vote can be vitiated because of an empty belly and an attendant disease such as malnutrition. It is clear therefore that socio-economic rights are not only central to human welfare but further that the exercise of certain civil and political rights is significantly dependent on some socio-economic rights and the vice versa. This indivisibility and interdependence of human rights finds its basis in the fact that all human rights derive from the unifying concept of human dignity.⁶⁹

It is trite that the right to food is closely related to such other aspects as health, care, social security and environment. Perhaps a classic illustration of this interrelatedness and interdependence of human rights is the one that was afforded by the African

⁶⁵ C Puta-Chekwe & N Flood 'From division to integration: Economic, social and cultural rights as basic human rights in I Merali & V Oosterveld (2001) *Giving meaning to economic, social and cultural rights* (2001) 39.

⁶⁶ M Nowak *Introduction to the international human rights regime* (2003) 27.

⁶⁷ Vienna Declaration and Programme of Action (n 28 above).

⁶⁸ M Nowak (n 66 above) 27.

⁶⁹ R Gavison 'On the relationships between civil and political rights, and social and economic rights' in JM Coicaud et al (eds) *The globalization of human rights* (2003) 24.

Commission on Human and Peoples' Rights (African Commission) in the *SERAC* case.⁷⁰ The African Commission took a bold step to find a violation of the right to food albeit that the African Charter on Human and Peoples' Rights' (ACHPR) does not contain an express provision that guarantees this right. In this decision the African Commission held that:⁷¹

The right to food is inseparably linked to the dignity of all human beings and is therefore essential for the enjoyment and fulfillment of such other rights as health, education, work and political participation.

The African Commission recognised that albeit that the ACHPR does not expressly provide for the right to food, the destruction of food sources by the Nigerian government greatly impinged on the dignity of the Ogoni people which is the basis for the protection of all human rights.⁷² In fact, the African Commission's emphasis that the right to food is linked to such other rights as health, education, work and political participation not only underscores the indivisibility argument about human rights. It further underscores the argument that the two clusters of rights are mutually reinforcing. In this regard, the diverse environmental, health and socio-economic risks that agricultural biotechnology presents should not only be understood in the light of their potential impact on these ancillary aspects of health and environment. But also on how the impact on these aspects affects the realisation of the right to food. In other words, the assessment of the impact of agricultural biotechnology must not be oblivious of the fact that certain health and environmental aspects interlace with the realisation of the right to food.

2.4 Inter and intra-generational equity

The international community has through various international instruments made references in recognition of a pressing social need to sustainably utilise resources in order to safeguard the interests of both present and future generations. For instance, the Rio Declaration on Environment and Development prescribes that states must reduce

⁷⁰ *SERAC* case (n 25 above).

⁷¹ As above, para. 65.

⁷² As above.

and eliminate unsustainable patterns of consumption in order to achieve sustainable development.⁷³ Jurisprudence is slowly developing and is also pointing to the need for 'wise stewardship [of natural resources] and their conservation for the benefit of future generations'.⁷⁴ The concept of sustainable utilisation of resources is germane in the face of evidence of a soaring erosion of biodiversity (genetic resources) which is the storehouse that provides humanity with food and medicine.⁷⁵ Agricultural biotechnology which largely uses genetic resources for its processes and products therefore poses a grave risk of accelerating this erosion.⁷⁶ This pressure on genetic resources in turn increases the risk that gene banks may fail to provide for the needs of both present and future generations. It is for this reason that the principle of intergenerational equity as employed in various international instruments calls for a fair and sustainable utilisation of resources in order to balance the consumptive needs of both present and future generations.⁷⁷ The principle recognises the interdependence between past, present and future generations.⁷⁸ In the context of this study, it recognises that agricultural biodiversity today is a result of many years of development passed from past to present generations which the latter has an obligation to pass on intact to future generations. In this regard, intergenerational equity prescribes that fairness should dictate the consumptive demands of present generations by ensuring that a proper balance be struck between the optimal use of resources to meet present needs and ensuring that

⁷³ See principle 8 of the Rio Declaration on Environment and Development, 1992. See also principle 21 of the Stockholm Declaration of 1972. Available at <http://www.unep.org> (accessed 11 September 2006).

⁷⁴ See the separate opinion of Judge Weeramantry in *Maritime Delimitation in the Area between Greenland and Jan Mayen (Denmark v Norway)* International Court of Justice (ICJ) Judgment of 14 June 1993; *Nuclear Tests cases (New Zealand v France)* 1995. Available at <http://www.icj-cij.org> (accessed 6 August 2006). On the domestic level, see the Philippines case of *Minors Oposa v Secretary of Department of Environment and Natural Resources* reprinted in (1994) 83 *International Legal Materials* 173.

⁷⁵ Esquinas-Alcázar (n 14 above) 233.

⁷⁶ As above, 235.

⁷⁷ O Lynch & G Maggio 'Human rights, environment and economic development: Existing and emerging standards in international law and global society'. http://www.omced.org/wri/wri_legal.htm (accessed 10 August 2006).

⁷⁸ EB Weiss 'In fairness to future generations: International law, common patrimony and intergenerational equity' in P Hayden (ed) *The philosophy of human rights* (2001) 618.

resource availability for future generations is not vitiated.⁷⁹ Put succinctly, states must strive to address current needs without prejudicing future needs.

The second concept of intra-generational equity demands fairness in the utilisation of resources among human members of the present generation at both domestic and global spheres of operation.⁸⁰ It is clear that developing countries have the richest biodiversity as compared to developed industrialised countries but it is the latter that are spearheading the research on modern agricultural biotechnologies.⁸¹ This concept helps this study to bridge the intra-generational concerns that straddle trade in agriculture, genetic resources use and transboundary effects of biotechnology, environmental protection and human rights particularly the right to food. It further helps this study to raise issue about the significance of the precautionary principle in helping to regulate areas of new discovery such as agricultural biotechnology that present potential risks to the environment and health but which risks have not been conclusively proven.

2.5 Conclusion

Modern agricultural biotechnology is one of the technologies that states can utilise in order to meet the objective of improving food production specified under article 11(2) of the CESC. However, the debate on the introduction of these technologies in Africa must be considered in the light of established principles of international law. This is because modern agricultural biotechnology albeit its potency to spur food production has potential risks that affect the environment and other spheres of human life. These risks might not only have far reaching consequences on these spheres of life but also on the very task of ensuring food security which is the foundation for the realisation of the right to food. In this regard, a study of this nature must be contextualised within the varying legal arenas and utilise the established principles that inform them. Here the precautionary, inter and intra-generational equity principles become handy in considering the interlacing areas of modern agricultural biotechnology, environmental conservation and the sustainable utilisation of genetic resources for food and agriculture.

⁷⁹ Lynch & Maggio (n 77 above).

⁸⁰ As above.

⁸¹ Esquinas-Alcázar (n 14 above) 234.

CHAPTER THREE: ASSESSING THE IMPACT OF AGRICULTURAL BIOTECHNOLOGY ON THE RIGHT TO FOOD

3.1 Introduction

The application of agricultural biotechnology is still largely confined to industrial country agriculture with Africa still largely engaged in R&D.⁸² It is, therefore, virtually impossible to provide an *ex post* assessment of the impact of agricultural biotechnology on the right to food in Africa. This chapter, therefore, proffers an *ex ante* assessment of the potential benefits and risks of agricultural biotechnology and how these affect the right to food. The chapter investigates the potential benefits of agricultural biotechnology in improving food production and hence ensuring food security in Africa. This discussion proffers an analysis on how these benefits aid the objective of the CDESCR to improve food production and hence realise the right to food. This chapter further affords a discussion on the potential risks of biotechnology. Here environmental, health and other socio-economic risks which directly affect the right to food are highlighted and analysed.

3.2 Potential benefits of agricultural biotechnology

The New Partnership for Africa's Development (NEPAD) recognises the urgent need to achieve food security in Africa by improving food production.⁸³ It identifies climatic uncertainty, weak and unproductive agrarian systems as the major setbacks that have held back sufficient food production.⁸⁴ The significance of agriculture in Africa does not only relate to the need to feed Africans but also to the need to improve the economies of African countries which are largely agro-based.⁸⁵ Currently, Africa's food production growth has been slumping. The annual agricultural growth rate, for instance, fell from 2.3

⁸² Apart from South Africa which has gone full throttle into the application of agricultural biotechnology to the extent of commercialising GE crops, the following are some of the African countries that are involved in agricultural biotechnology R&D: Egypt, Zimbabwe, Tanzania, Uganda, Kenya and Ghana. See Kameri-Mbote (n 18 above).

⁸³ See para. 133 of The New Partnership for Africa's Development Declaration (NEPAD Declaration) adopted in Abuja, Nigeria, October 2001.

⁸⁴ As above, paras. 132 & 135.

⁸⁵ As above para. 134. Most Africans earn their living by producing food. In fact, employment and other income earning opportunities are closely linked to agriculture. C Ndiritu 'Kenya: Biotechnology in Africa: Why the controversy?' Available at <http://www.cgiar.org/biotech/rep0100/Ndiritu.pdf> (accessed 18 September 2006).

percent in the 1970s to 2.0 percent in 1980-1992.⁸⁶ According to FAO, the number of countries in sub-Saharan Africa that are facing 'exceptional food emergencies' has increased from 12 to 20 since the beginning of 1997.⁸⁷ According to FAO, the reasons for poor food production in Africa are diverse. They range from poor rainfall, adverse climatic conditions, shortage of arable land and soil infertility to conflicts and wars.⁸⁸ However, the major set back as identified by NEPAD is climatic uncertainty.⁸⁹ In this regard, agricultural biotechnology which, among other things, promises adverse weather tolerant transgenic crops becomes relevant for Africa's food production needs. It is for this reason that NEPAD has a commitment to work with organisations such as FAO to 'harness biotechnology in order to develop Africa's rich biodiversity and indigenous knowledge base by improving agricultural productivity'.⁹⁰

3.2.1 Increased yield potential: Food security and nutrition

Food security is the foundation for the enjoyment of the right to food. The World Food Summit Plan of Action defines food security as 'physical and economic access to sufficient, safe and nutritious food by all people to meet their dietary needs and food preferences for an active and health life'.⁹¹ Although food security does not only depend on availability of foodstuffs but also on access and distribution, its defining hallmark is that of availability.⁹² It is this feature that justifies the assertion that food security is the foundation for the enjoyment of the right to food because GC 12 isolates food availability as one of the definitive elements of the core content of the right to adequate food.⁹³ GC 12 provides that the core content of the right to adequate food implies 'availability of food

⁸⁶ Ndiritu, as above.

⁸⁷ FAO, 'Africa food supply outlook' <http://www.fao.org/NEWS/GLOBAL/GW9723-e.htm> (accessed 28 September 2006).

⁸⁸ As above.

⁸⁹ NEPAD Declaration (n 83 above) paras. 132 & 135.

⁹⁰ As above, para. 146.

⁹¹ World Food Summit, Plan of Action, Rome, 17 November 1996.

⁹² It has been argued that the assertion that the problem is not one of inadequate food production but redistribution is trivial and highly misleading because it suggests that redistribution of static food supplies is the solution to food deficiency. Ndiritu (n 85 above).

⁹³ GC 12, para. 8.

in quantity and quality sufficient to satisfy the dietary needs of individuals, free from adverse substances, and acceptable within a given culture'.⁹⁴ Erratic climatic conditions in Africa hamper food production and hence the availability of food in sufficient quantities in order to satisfy the dietary needs of most Africans.⁹⁵ In this regard, the potency of agricultural biotechnology to provide answers to some of these problems must be considered if African states are determined to end hunger and make strides in ensuring the 'full realisation' of the right to adequate food for all Africans.

In the past, agrarian reforms have been undertaken with the view to improve food production. Traditional plant breeding has been the conventional way of developing crop varieties that brought considerable productivity gains in agriculture by increasing the speed within which new varieties are produced.⁹⁶ However, modern agricultural biotechnology represents a great leap in that the time required for plant breeding processes to develop new varieties can actually be halved.⁹⁷ It is generally asserted that GE seeds are expected to increase crop yields because agricultural biotechnology promises crop varieties that are pest and disease resistant, and tolerant to adverse weather and soil conditions which are some of the major food production constraints for Africa's food security drive. In Kenya for instance, the application of tissue culture in the production of bananas has witnessed an increase in yields for small-scale farmers.⁹⁸

In terms of nutrition, which is the ultimate goal for the right to adequate food, agricultural biotechnology offers solutions to Africa's major maladies of malnutrition and undernourishment as crops are engineered to contain rich micronutrients such as vitamin A and iron.⁹⁹ As a matter of fact, the development of a rice strain that is rich in vitamin A and iron content has the potential to prevent blindness and low hemoglobin

⁹⁴ As above.

⁹⁵ NEPAD Declaration (n 83 above) paras. 132 & 135.

⁹⁶ Brac de la Perrière et al (n 46 above) 1.

⁹⁷ Cuffaro (n 43 above) 37.

⁹⁸ Kameri-Mbote (n 18 above).

⁹⁹ C Prakash 'Feeding a world of six billion' (1999) <http://www.agbioforum.org> (accessed 10 September 2006).

levels that lead to anemia.¹⁰⁰ Further, the introduction of edible vaccines that are delivered in locally grown crops would help to eliminate the various ailments and maladies that the Red Cross, African Union and United Nations missions are fighting in Africa.¹⁰¹

3.2.2 Tolerance of crop varieties to abiotic stresses

Genetic enhancement tools in the field of agricultural biotechnology have not only helped scientists to redesign crops to be more productive but also to be drought tolerant, sturdy and withstand adverse weather conditions.¹⁰² Africa has been hit by droughts partly because of its expansive reliance on rain fed agriculture.¹⁰³ Studies indicate a progressive drying trend which is severely constraining agricultural growth.¹⁰⁴ This problem is compounded by soil infertility that has led to the intensive application of chemicals and fertilizers.¹⁰⁵ In this regard, technologies that promise varieties that demand less fertilizer input and are tolerant to adverse weather conditions would certainly boost food production in Africa. Thus the availability of food in order to ensure the enjoyment of the right to food is partly dependent on embracing such technologies that counter some of these ills that constrain agricultural productivity in Africa. Agricultural biotechnology and agrarian reforms noted in the NEPAD Declaration are some of the ways envisaged by article 11 of the CESCRC as the means of improving food production. It follows, therefore, that the various technologies being developed in the field of agricultural biotechnology can significantly improve food availability. This would in turn assist African states to meet their obligations set under the CESCRC as expounded by GC 12.

¹⁰⁰ M McGloughlin 'Ten reasons why biotechnology will be important to the developing world' (1999) <http://www.agbioforum.org> (accessed 18 September 2006).

¹⁰¹ As above.

¹⁰² P Pinstrup-Andersen & M Cohen 'Modern biotechnology for food and agriculture: Risks and opportunities for the poor' <http://www.cgiar.org/biotech/rep0100/Ppanders.pdf> (accessed 11 September 2006).

¹⁰³ Ndiritu (n 85 above).

¹⁰⁴ As above.

¹⁰⁵ As above.

3.2.3 Disease and insect resistant crop varieties

Pests and diseases account for about 30% of pre- and post harvest crop losses in Africa.¹⁰⁶ This problem partly accounts for the low and fluctuating yields which in turn affects food availability. Farmers, therefore, tend to spend huge sums of money in order to counter the problems that pest and diseases present. For instance, in 1995 farmers in Kenya purchased the following agrochemicals: 1.36 million kilograms of insecticides. 3.4 million kilograms of fungicides, 113, 000 kilograms of plant hormones and 1.7 million kilograms of herbicides.¹⁰⁷ However, agricultural biotechnology promises pest and disease resistant crop varieties. It offers the hope of reducing agrochemical use by developing varieties that produce their own insecticides. For instance, some crops that have been genetically modified for purposes of insect resistance contain a gene from a bacterium called *Bacillus thuringiensis (Bt)* that enables the transgenic crop to release toxins that protect it from particular insects.¹⁰⁸ This will certainly not only boost yields as some of the major set backs on food production will have been overcome but further avert the hazardous exposure of farmers to some toxic herbicides and insecticides. It is commonplace that the health of farmers in Africa is crucial to food production because human beings are a major source of manpower when it comes to food production. Further, the reduction in agrochemical use that has hazardous effects on the health of small-scale farmers does address the concerns of GC 12 that states should address health issues with regard to all aspects of the food system including food production.¹⁰⁹ It is, therefore, undisputable that the issue of pest and disease resistant transgenic crop varieties is crucial to increased food production and the health of small-scale farmers who are Africa's major arsenal in the fight against food insecurity and its attendant maladies that continue to take a devastating toll on Africa. Increased food production will not only enhance the availability of food but also boost the economies of African countries that are failing to protect and fulfill various socio-economic rights due to poverty.

¹⁰⁶ B Woodward et al 'Can agricultural biotechnology make a difference in Africa?' (1999) <http://www.abioforum.org> (accessed 2 September 2006).

¹⁰⁷ Ndiritu (n 85 above).

¹⁰⁸ A Ely 'Evaluating environmental risks of Bt Maize in the US and EU: Lesson for Kenya' <http://www.gapresearch.org/governance/AEMaizefinal.pdf> (accessed 10 August 2006).

¹⁰⁹ GC 12, para. 23.

3.3 Potential risks of agricultural biotechnology

Just like any other modern technology, agricultural biotechnology poses a number of risks. Agricultural biotechnology raises potential liabilities on various aspects of life that are a major cause of concern to various interest groups. However, this discussion only identifies those risks and liabilities that this study considers to be very crucial to the right to food in Africa.

3.3.1 Environmental risks

In line with the objectives of the CBD¹¹⁰ which, among other things, seeks to conserve biodiversity, opponents of agricultural biotechnology advance various environmental concerns to counter the euphoria that transgenic crops will address some of the shortfalls of conventional plant breeding. Some of the ecological risks that are of great concern include the danger that agricultural biotechnology will lead to the creation of super weeds and pests, the natural migration of gene traits from one organism to another and genetic erosion. All these concerns might hold true in so far as the right to food is concerned because environmental protection interlaces with food production. In fact, one of the objectives of the ITPGFRA is to ensure the sustainable use of genetic resources because it recognises the critical significance of genetic resources in the food production chain.¹¹¹ Although the environmental liabilities that agricultural biotechnology presents are diverse, this study only isolates two concerns viz. cross pollination (gene migration) leading to loss of biodiversity and the creation of invasive weeds.

Cross pollination (gene flow) between crops and closely related species entails the migration of genes from one population into another.¹¹² Gene flow has a homogenising effect on crops in that plants pass on their traits to a group of surrounding species thereby making such species genetically similar.¹¹³ Another concern on loss of

¹¹⁰ CBD (n 12 above).

¹¹¹ See para. 4 of the preamble to the ITPGFRA (n 56 above).

¹¹² B Schaal 'Biodiversity, Biotechnology and the environment' <http://www.schaal@biology2.wust.edu> (accessed 6 July 2006).

¹¹³ As above.

biodiversity relates to the fact that agriculture biotechnology promotes varieties that promise greater productivity gains at the expense of traditional varieties that cannot match the potency of these transgenic varieties. It is feared that this trend will lead to monocultures as it undermines crop diversification because farmers will eventually discard the less yielding traditional varieties that they have grown over time in favour of the high yielding varieties GE varieties.¹¹⁴ It is clear from the foregoing that the homogenising effect of gene flow on non-target organisms and the eventual neglect of indigenous varieties by farmers because of high yielding transgenic varieties can lead to loss of genetic biodiversity which is the storehouse that provides Africans with various food groups in order to satisfy their various dietary needs in line with GC 12. There is, therefore, a need to balance the between the needs of present and future generations on use of genetic resources for food. This is because the loss of biodiversity would eventually bankrupt gene banks that are rich in genetic resources for food and hence compound food security problems for both present and future generations.

Critics of agricultural biotechnology further raise the danger that herbicides tolerant varieties might pass on genes to neighbouring weeds and crop varieties thereby creating super and invasive weeds.¹¹⁵ It is also feared that weeds may eventually develop resistance thereby compounding the weed management problem to poor farmers.¹¹⁶ These ecological concerns do not only hold true with regard to environmental damage but also with regard to food production as super weeds would greatly undermine food production and hence the availability of food for Africans.

3.3.2 Health risks

The right to food is also inseparably linked to the right to health. This is especially relevant to African where food production is a manual enterprise such that ill health can

¹¹⁴ M Altieri & P Rosset 'Ten reasons why biotechnology will not ensure food security, protect the environment and reduce poverty in the developing world' (1999) <http://www.agbioforum.org> (accessed 18 September 2006).

¹¹⁵ M Altieri & P Rosset 'Strengthening the case for why biotechnology will not help the developing world: A response to McGloughlin' <http://www.agbioforum.org> (accessed 18 September 2006).

¹¹⁶ A Kamperewera 'Environmental impacts of biotechnology: An issues paper for development of biotechnology policy in Malawi' (2005) Environmental Affairs Department, Malawi (Unpublished).

significantly affect agricultural productivity. In this regard, concern has also been raised about the danger of agricultural biotechnology products to human health. Some of the risks that have been identified include allergenicity and toxicity of foodstuffs derived from GE crops.¹¹⁷ Allergens and toxins in foodstuffs remain a significant public concern throughout the world such that GC 12 prescribes that food that contains adverse substances to human health undermines the core value of the right to adequate food.¹¹⁸ It is this prescription that demands states to identify and destroy toxins and ensure that the right to adequate food is protected.¹¹⁹ In this regard, within the interdependence of human rights discourse, concerns about the health risks that products of agricultural biotechnology pose are germane to the right to food debate as they affect its enjoyment and realisation.

3.3.2.1 Allergenicity and toxicity

The development of allergies could be as a result of inheritance or exposure to allergens which are essentially proteins available in foods.¹²⁰ These allergens stimulate a class of antibody molecules that eventually cause allergic reaction in individuals.¹²¹ Modern agricultural biotechnology provides methods where genes could be encoded for specific proteins. For instance, a gene from a particular plant or animal source that confers a specific trait can be isolated and transferred to another organism thereby transferring the genetic expression of the host organism into the recipient.¹²² This method has been used to improve the nutritional content of various foodstuffs.¹²³ However, according to Samuel Lehrer, the major health concern is that a protein encoded by an introduced gene may

¹¹⁷ FAO, 'FAO statement on biotechnology' <http://www.fao.org/Biotech/stat.asp> (accessed 10 August 2006).

¹¹⁸ GC 12, para. 8.

¹¹⁹ As above, para. 10.

¹²⁰ S Lehrer 'Potential health risks of genetically modified organisms: How can allergens be assessed and minimised?' <http://www.cgiar.org/biotech/rep0100/Lehrer.pdf> (accessed 15 August 2006).

¹²¹ As above.

¹²² J Carpenter 'Cases studies in benefits and risks of agricultural biotechnology: Roundup ready soybeans and Bt field corn' <http://www.ncfap.org/reports/biotech/benefitsandrisks.pdf> (accessed 19 August 2006).

¹²³ Pinstrup-Andersen & Cohen (n 102 above).

be allergenic and cause allergic reactions to people.¹²⁴ According to Lehrer, there are two major ways in which genetic engineering (agricultural biotechnology) can alter the allergenicity of a food.¹²⁵ Firstly, this might occur where the levels of proteins are genetically altered through manipulation thereby raising the levels of allergens in a food.¹²⁶ Secondly, in such a case where the expression of a new gene in a receiving crop could introduce allergens that are normally not present in a donor crop.¹²⁷ Similarly, toxins can also be passed from one crop to another through genetic engineering.¹²⁸

It is clear from the foregoing that despite the potential of agricultural biotechnology to bolster food production and improve the nutritional content of foodstuffs, it poses potential liabilities on the health of consumers of its products. This negatively impacts on the right to food as envisaged by paragraph 10 of GC 12 which prescribes that foodstuffs must be free from adverse substances. It further raises the ethical question that is obliquely addressed by GC 12 that food must not only be free from adverse substances but also acceptable within a given culture.¹²⁹ It is clear that culture and religion intertwine such that it would be unethical to transfer a protein from a particular food that is proscribed by a cultural or religious group into a permitted one without labeling the product so that consumers know the processes that the product underwent. It follows from the foregoing that the integration of agricultural biotechnology in the drive to improve food production presents a grave challenge of minimising its potential health risks that in turn undermine the very right to food that it seeks to realise.

3.3.3 Socio-economic costs

There are certainly a number of socio-economic costs that agricultural biotechnology poses on the right to food. However, intellectual property rights that are concomitant with modern technologies present a weighty cost on the right to food in Africa especially

¹²⁴ Lehrer (n 120 above).

¹²⁵ As above.

¹²⁶ As above.

¹²⁷ As above.

¹²⁸ Carpenter (n 122 above).

¹²⁹ GC 12, paras. 8 and 10.

when one considers the appalling state of the economies of her countries. Economically, concern has been raised about their potential to drain the already meager financial resources of developing countries.¹³⁰

3.3.3.1 Intellectual property rights (IPRs)

Intellectual property rights (IPRs) is a generic term that refers to the protection of creative and inventive works which cover patents, designs, trademarks, plant breeders' rights, copyright and trade secrets.¹³¹ However, it is patents and plant breeders' rights that have taken centre stage in the field of agricultural biotechnology. It is these tools of intellectual property protection that are of particular concern to this study.

3.3.3.1.1 Patents and plant breeders' rights (PBRs)

Patents and PBRs give the patent holder the exclusive right to the commercial exploitation of the invention.¹³² In other words, the protection confers upon the holder an exclusive right to exclude others from manufacturing, using, offering for sale, selling and importing the invention without the consent and license of the inventor.¹³³ Currently, it is the TRIPS Agreement that sets out the general international legal framework for the protection of intellectual property rights which all members of the World Trade Organisation must respect.¹³⁴ However, it is the International Convention for the Protection of New Varieties of Plants (UPOV Convention) that lays out an international legal framework that focuses on agriculture and the protection of plant varieties through

¹³⁰ D Richer 'Intellectual property protection: Who needs it?' <http://www.cgiar.org/biotech/rep0100/Richer.pdf> (accessed 18 September 2006).

¹³¹ See part 2 of the TRIPS Agreement (n 54 above).

¹³² Patents are given to an inventor if the invention meets the criteria of novelty, inventive step and industrial applicability, whereas PBRs are granted to a breeder who has made any plant variety improvement that fulfils certain criteria, viz. novelty, distinctiveness (clearly distinguishable in one or more important characteristics), uniformity (sufficiently uniform in its relevant characteristics) and stability (the relevant characteristics remain unchanged). See articles 27(1) & 5 of the TRIPS Agreement and the International Convention for the Protection of New Varieties of Plants (UPOV Convention-1991) respectively.

¹³³ Patents for research outputs may be sought for novel processes and products whereas plant variety protection extends to new crop varieties only. J Cohen 'Managing intellectual property-challenges and responses for agricultural research institutes' <http://www.cgiar.org/biotech/rep0100/jcohen.pdf> (accessed 18 September 2006).

¹³⁴ As above.

PBRs.¹³⁵ Article 27 of the TRIPS Agreement imposes an obligation on all state parties to 'provide for the protection of plant varieties either by patents or by an effective *sui generis* system or by any combination thereof'.

The protection of plant varieties through patents and/or PBRs reflects a significant shift from the early periods of plant breeding and the Green Revolution where products and processes of agricultural research resided in the public domain.¹³⁶ According to article 7 of the TRIPS Agreement, the objective of IPRs is 'to promote technological innovation and the transfer and dissemination of technology to the mutual benefit of innovators and consumers'. The rationale is that IPRs foster innovation in the sense that they provide incentives for R&D as innovators are able to recoup the profits of their research investments. It is argued that without '[Intellectual property] protection, research based companies would be unable to bear the risk of the major investments in [R&D] required to bring those technologies to the market'.¹³⁷

R&D in the field of agriculture is currently pioneered by big private research firms.¹³⁸ It is feared that the potency of agricultural biotechnologies might create dependence by farmers on the products of these profit driven firms which will make them vulnerable in case of price increases.¹³⁹ Further, the exclusive monopoly on the use of the products by the patent holder means that African farmers will not be able to save seeds and reuse them as that will be an infringement of the patent protection.¹⁴⁰ In so far as the right to

¹³⁵ UPOV, Paris, 1961 which was revised in Geneva on 19 March 1991 (UPOV Doc. 221(E), 1996).

¹³⁶ P Cullet 'Food security and intellectual property rights in developing countries' <http://www.ribios.ch> (accessed 22 August 2006).

¹³⁷ It is argued that at the moment the cost of developing a new plant protection chemical is over US\$ 150 million. See Richer (n 130 above).

¹³⁸ The top nine private firms engaged in agricultural biotechnology are Asgrow, Calgene, Dekalb, DuPont, Merck, Monsanto, Mycogen, Novartis, and Pioneer HiBred. See H Chan 'International patent behavior of nine major agricultural biotechnology firms'. <http://www.agribioforum.org> (accessed 18 September 2006).

¹³⁹ Today only six top private company giants control almost 100% of the transgenic seed market. These are Monsanto, AstraZeneca, Novartis, Du Pont/Pioneer, Aventis and DowElanco. See Brac de la Perrière & Seuret (n 46 above) 11.

¹⁴⁰ This is because patent law only absolves such cases where 'it can positively be proved that possession was innocent of any actual use or intention' failing which infringement will be presumed. See Lord Wilberforce in *Pfizer Corporation v Ministry of Health* [1965] A.C 512 (HL) at p.572.

food is concerned, the danger is that any increases in prices of the products of agricultural biotechnology in the form of farm inputs coupled with the restriction to self supply seeds will curtail the economic accessibility of most African farmers to the means of food production. According to paragraph 13 of GC 12, 'economic accessibility applies to any acquisition pattern or entitlement through which people procure their food'. It is clear that most Africans acquire their food through subsistence farming and any economic barrier in accessing the means of food production would significantly impact on their right to food as envisaged by GC 12.

In order to protect their inventions and recoup profits of their investment, patent holders usually enter into licensing agreements with farmers to whom they have sold their products. In the case of Monsanto Canada, farmers that buy its patented canola seeds usually sign a Technology Use Agreement (TUA) which describes the technology and its licensing terms.¹⁴¹ The TUA requires the farmer to buy insecticides from a particular authorised agent. Farmers have to further undertake to use the seed for planting a single crop and to sell that crop for consumption to a commercial purchaser authorised by Monsanto.¹⁴² The licensed farmers may not sell or give the seed to any third party, or save seed for replanting. Further, every licensed canola farmer has, in addition to allowing Monsanto to inspect the farm and take samples in order to verify compliance with the TUA, pay \$15 per acre as licensing fee.¹⁴³ Such agreements are not only onerous but also expensive as they are likely to drain financial reserves used for the acquisition of the basic means of food production for most Africans.

Furthermore, according to the Canadian case of *Schmeiser v Monsanto Inc*¹⁴⁴ (*Schmeiser* case), the enforcement of a patent can be had even when a user unconsciously uses an invention as long as it is proved that the use was done without the license of the patent holder.¹⁴⁵ This poses grave risks of exploitation and loss of crop

¹⁴¹ *Schmeiser v Monsanto* Supreme Court of Canada [2004] 1 S.C.R 902. para. 11.

¹⁴² As above.

¹⁴³ As above, para. 12.

¹⁴⁴ *Schmeiser* case (n 141 above).

¹⁴⁵ As above, para. 49.

yields through confiscation where a farmer's field is contaminated by a patented seed through cross pollination by a neighbouring field that has grown licensed patented seeds. In the *Schmeiser* case, Percy Schmeiser was found in possession of canola seeds that contained a gene that was patented by Monsanto. The appellant never purchased canola seeds from Monsanto but his neighbours were licensed Monsanto canola farmers who grew them next to the appellant's farm. Although, the Court of Appeal discounted the possibility that the intervention of canola seeds on the appellant's fields might have been as a result of cross-pollination, the Supreme Court of Appeal affirming the decision of the lower court went on to hold that possession can constitute use because:¹⁴⁶

The onus of proving infringement would become impractical and unduly burdensome in cases of possession were the patent holder required to demonstrate the defendant's intention to infringe.

The court went on to hold that in the case of a mere 'innocent bystander', the presumption of use arising from possession can be rebutted by proving himself as one.¹⁴⁷ However, this finding still presents difficulties especially where, for instance, the patented thing is a gene contained in an unpatented seed. This presents major problems for Africans where seed exchange is rooted in culture. In case of such a seed with a patented gene, the high levels of illiteracy and ignorance in Africa would present difficulties for farmers to discern the seed with a patented gene from an identical one that does not have the patented gene before they can exchange it with other farmers in the practise of their traditions and cultures. Since intention to infringe a patent is irrelevant to a finding of infringement,¹⁴⁸ most African farmers will continuously find themselves at variance with the law. Thus, the likelihood that African farmers will spend their financial resources, which they would have otherwise used to improve food

¹⁴⁶ As above, para. 53.

¹⁴⁷ As above, para. 95.

¹⁴⁸ *Stead v. Anderson* (1847), 4 C.B. 806, 136 E.R. 724 (C.P.); see also *Hoechst Celanese Corp. v. BP Chemicals Ltd.* (1998), 25 F.S.R. 586 (Pat. Ct.); *Illinois Tool Works Inc. v. Cobra Anchors Co* 2002 FCT 829 (CanLII) (2002), 221 F.T.R. 161, 2002 FCT 829; *Computalog Ltd. v. Comtech Logging Ltd* (1992), 44 C.P.R (3d) 77 (F.C.A).

production, to contest IPR protection lawsuits cannot be completely dismissed. This will certainly decelerate the food security drive in Africa.

3.3.3.2 Genetic use restriction technologies (GURTs)

Safeguards against the exploitation of products and processes of agricultural biotechnology protected by patents and plant breeders' rights largely depend on contracts. These contracts are signed between farmers and patent holders in which the former agrees to comply with the terms of the contract. However, in the field of agricultural biotechnology where reproduction of plant varieties is relatively simple, patent holders may have difficulties to prevent the unauthorised exploitation of their patented technologies by non licensed farmers. The advent of genetic use restriction technologies (GURTs) absolves the need for patent holders to sign contracts with farmers but still be able to recoup profits of their investment. GURTs come in two forms, viz. variety-based GURTs and trait-based GURTs.¹⁴⁹ With variety-based GURTs, innovators can engineer seeds which will generate the desired plant variety whose seeds become sterile upon harvest such that farmers cannot replant them in the next crop season as they will not germinate.¹⁵⁰ With trait-based GURTs, seeds are engineered to have the potential to generate a patented innovative trait but which can only come into fruition through the application of a complementary product.¹⁵¹ In other words, a seed would have a potential trait which is patented but which can only show if the farmer purchases and applies a particular initiator to the seed without which the trait will not show.¹⁵²

Thus GURTs provide in built protection for the exploitation of a patented product which is convenient to patent holders than the onerous protection of intellectual property rights through contracts. However, GURTs have far-reaching implications on the right to food. They create a dependence syndrome such that farmers will always have to look to the seed producers for their farming practices. With GURTs farmers cannot keep or

¹⁴⁹ Swanson (n 42 above) 8.

¹⁵⁰ Cullet (n 136 above).

¹⁵¹ Swanson (n 149 above) 8.

¹⁵² As above.

exchange seeds as they will be forced to buy them every cropping season because they become sterile after the first harvest. In the case of trait-based GURTs, the non availability and accessibility of an initiator in a particular season will have serious food security repercussions as the emergence of particular traits in plant varieties depends on their treatment with an initiator to be purchased from a particular agent that is licensed to sell it. Furthermore, such dependence leaves seed companies at their own devices to dictate market prices. Since most of the establishments that are pioneering agricultural biotechnology R&D are private profit driven companies, the possibility of exploitative increases in market prices cannot be discounted. The upshot of such increases will have the attendant repercussion of inhibiting economic accessibility to the means of food production for most Africans who live on less than one US dollar a day.¹⁵³ Such trends would be blatantly inimical to the dictates of GC 12 which demands that the means of food production should be economically accessible to people.

3.4 Conclusion

Agricultural biotechnology presents numerous benefits to African countries in their quest to realise the right to food as it provides modern tools for achieving food security that continues to be constrained by climatic uncertainties. Some of the benefits concomitant with these tools include nutritional enhancement of foods for some of the chronically malnourished African populations, reduced maturation of crop varieties thereby increasing crop yield, enhanced tolerance to abiotic stresses and reduced dependence on agro-chemical use. However, just like any other modern technology, agricultural biotechnology presents potential liabilities that would hamper the realisation of the right to food in Africa. It, therefore, follows that the introduction of agricultural biotechnology largely depends on striking a proper balance between its benefits and potential costs on the right to food. Perhaps the most daunting task for African countries is to devise measures aimed at mitigating the risks of agricultural biotechnology so that Africans can comfortably reap its benefits that come with increased food production.

¹⁵³ United Nations Development Programme (UNDP), *Human development Report* (2005) <http://www.undp.org> (accessed 10 September 2006).

CHAPTER FOUR: ANALYSING STATES' DUTY TO PROGRESSIVELY REALISE THE RIGHT TO FOOD IN THE LIGHT OF AGRICULTURAL BIOTECHNOLOGY

4.1 Introduction

The advent of new technologies in the field of agriculture which hold great promise to improve food production in line with the objective of article 11 of the CESC, resuscitates the debate on primacy of varying international legal obligations that states have assumed under international law. Within the human rights discourse, questions arise between differing human rights norms that seek to protect particular interests that might have the effect of subordinating others. In the context of agricultural biotechnology and the right to food, the conflict rages between the right to benefit from the moral and material interests of production (IPRs), the right to food and the right to benefit from scientific progress and its applications. Further, the interface between the right to food, environment and health presents intractable problems of reconciling the legal obligations arising under each realm of law in order to advance the interests of each without unfairly compromising the other. In the context of agricultural biotechnology and the right to food, these problems present a further difficulty because of the need to mitigate the costs of agricultural biotechnology without compromising these international obligations. This chapter, therefore, analyses the various international obligations that relate to those undertaken under the CESC on the right to food. It analyses the obligations under the CESC on the right to food and those arising out of agricultural biotechnology. The idea is to suggest various courses of action that can be undertaken in order to mitigate some of the costs of agricultural biotechnology on the right to food without negating any obligations that African states have undertaken under various instruments.

4.2 The normative content of the right to adequate food

The Committee on ESCR in GC 12 clearly spells out the core content of the right to food. According to paragraph 6 of GC 12, the right to adequate food is realised when 'every man, woman and child, alone or in the community with others, has physical and economic access at all times to adequate food or means of its procurement'. The critical elements of this right include availability, accessibility and safety. Availability has been interpreted to mean the availability of food in a 'quantity and quality sufficient to satisfy the dietary needs of individuals, free from adverse substances, and acceptable within a

given culture'.¹⁵⁴ This has been further interpreted to mean that food must not only be safe for human consumption but further that states must take into account 'perceived non-nutrient-based values attached to food' and 'informed consumer concerns'.¹⁵⁵ Accessibility encapsulates two norms viz. economic accessibility and physical accessibility. The former concept implies that costs associated with the acquisition of food to meet an adequate diet at both personal and household levels are at such levels that they do not threaten or compromise the attainment and satisfaction of other basic needs.¹⁵⁶ The latter concept implies that 'adequate food must be available to everyone' including vulnerable groups.¹⁵⁷

These elements are critical to the analysis of the varying international obligations that this study examines in this chapter considering that GC 12 expressly recognises that the right to food demands the adoption of appropriate economic, environmental and social policies because of its inseparable link to these areas.¹⁵⁸ It, therefore, behoves states to balance the various international obligations obtaining under article 11 of the CESCRC as they relate to the right to food and other disciplines that are inextricably linked to the duty to realise the right to food such as the duty to ensure the best attainable standard of health, and the duty to ensure a clean and healthful environment.

4.3 The scope of the duty to realise the right to food in the light of agricultural biotechnology

The human right to food like all other socio-economic rights guaranteed under the CESCRC requires state parties to take steps with a view to 'achieving progressively the full realisation' of this right by 'all appropriate means'.¹⁵⁹ One of the positive steps that the CESCRC recognises includes the improvement of the methods of food production.¹⁶⁰

¹⁵⁴ GC 12, para. 8.

¹⁵⁵ As above, para. 11.

¹⁵⁶ As above, para 13.

¹⁵⁷ As above.

¹⁵⁸ As above, para.4.

¹⁵⁹ Article 2(1) of the CESCRC.

¹⁶⁰ As above, article 11(2)(a).

General Comment 3 (GC 3) of the Committee on ESCR states that while these rights may be achieved progressively, steps towards that goal must be within a short time after the entry into force of the CDESCR.¹⁶¹ Further, such steps must be ‘deliberate, concrete and targeted’ such that they must be aimed at meeting the obligation to realise the right to food.¹⁶² Although, the prescription ‘to progressively achieve the full realisation of the right’ admits some margin of discretion on the part of states, the *raison d’être* behind the CDESCR is to impose an obligation that demands states to move ‘expeditiously and effectively’ towards achieving the goal.¹⁶³ In the context of the right to food, such a goal would mean that states must ensure the attainment of the maximalist standard set by the right to adequate food norm by moving expeditiously and effectively through the utilisation of various scientific technologies that would improve the current methods of food production. It follows, therefore, that the expeditious and effective application of agricultural biotechnology with the view to improve food production being one of the means that recognised by the CDESCR is obligatory on the 49 African states that are party to the CDESCR.¹⁶⁴

The obligation to achieve progressively the full realisation of the right to food in the context of agricultural biotechnology therefore entails, among other things, the adoption of legislative measures aimed at mitigating the various risks and costs that agricultural biotechnology presents. This is because any inactivity on the part of states to adopt ‘deliberate, concrete and targeted’ measures to ensure the safe application of agricultural biotechnology would be a violation of article 11 of the CDESCR as there is overwhelming evidence that agricultural biotechnology has the potential to improve food production. This argument raises the question whether the margin of discretion that states enjoy as regards selecting the means for implementing their obligations under the CDESCR permits them to completely refuse to introduce agricultural biotechnology. It further raises the question of inability and unwillingness in implementing the obligations under the CDESCR. The Maastricht Guidelines on violations of Economic, Social and

¹⁶¹ GC 3, para. 2.

¹⁶² As above.

¹⁶³ As above, para. 9.

¹⁶⁴ United Nations, (n 10 above).

Cultural Rights (Maastricht Guidelines) provide that states cannot use 'progressive realisation' as a pretext for non-compliance.¹⁶⁵ It would, therefore, appear that refusal to consider the application of agricultural biotechnology which is one of the scientific means that can improve the methods of food production recognised under the CESCR hinges on unwillingness. At the same time, a state can successfully plead inability where it proves that it is still developing legal and institutional frameworks for the safe application of agricultural biotechnology. In such a case, however, it must be demonstrated that steps engaged in the development of such frameworks are 'deliberate, concrete and targeted' as prescribed by GC 3. Furthermore, resource constraints would not absolve states from liability for failing to make use of agricultural biotechnology in order to realise the fundamental right to be free from hunger, which is the minimum core obligation of the right to adequate food, if it be established that agricultural biotechnology can be safely applied in a particular state.

4.3.1 The right to food and IPRs

The advent of various technologies in the field of agriculture has witnessed an increased conflicting interrelationship among various legal obligations that states have undertaken under international law. The protection of products of agricultural biotechnology through IPRs partly engages the debate on the primacy between the human right to food and the protection of IPRs which are also protected under the CESCR. The link between the right to food and IPRs emerges at two different levels of operation under the CESCR. The CESCR guarantees everyone the right to enjoy the benefits of scientific progress and its application.¹⁶⁶ This right implies the duty to ensure that everyone benefits from the products that scientific novelty has to offer in the field of agricultural biotechnology, namely, increased food production and foodstuffs with improved nutritional content in order to satisfy dietary needs as prescribed by GC 12. At the same time the CESCR guarantees everyone the right to 'benefit from the protection of moral and material interests resulting from any scientific, literary or artistic production of which he is

¹⁶⁵ See Guideline 8 of the Maastricht guidelines on violations of economic, social and cultural rights, January 1997, Netherlands. See also V Dankwa et al 'Commentary on the Maastricht guidelines on violations of economic, social and cultural rights' <http://www.uu.nl/content/20-02.pdf#search=%22The%20Limburg%20Guidelines%22> (accessed 14 September 2006).

¹⁶⁶ See article 15(1)(b) of the CESCR.

author'.¹⁶⁷ The strict observance of this right would produce results that are diametrically opposite to the objective of the right to 'enjoy the benefits of scientific progress and its applications'. It epitomises a possible scenario of a conflict of primacy of obligations that would arise between trade and human rights regimes. The question would arise whether a state can be held to have violated its obligations on the right to food if it implemented its TRIPS Agreement obligations in such a way as to reduce its scope of action with regard to the duty to implement the right to food. This baffling conundrum that lies at the heart of the debate on the introduction agricultural biotechnology in Africa, in so far as states are concerned with the costs that IPRs present, has been impliedly addressed by the United Nations Sub-Commission on the Promotion and Protection of Human Rights (UN Sub-Commission).¹⁶⁸ The UN Sub-Commission, after acknowledging the conflicts that exist between the implementation of the TRIPS Agreement and the realisation of socio-economic rights, reminded governments of the primacy of human rights obligations over economic agreements.¹⁶⁹ It would appear that states have a leeway to subordinate their obligations under the TRIPS Agreement in favour of advancing their obligations undertaken under human rights instruments. Such an interpretation affords African states the freedom to mitigate the costs of IPRs in the field of agricultural biotechnology by affording primacy to the obligations on the right to food in favour of their obligations under the TRIPS Agreement. However, this interpretation is arguable because no treaty is subordinate to the other unless so stated. In fact, under article 26 of the Vienna Convention on the Law of Treaties (Vienna Convention), states are under an obligation to fulfill all their international obligations. It would be argued, therefore, that the implementation of obligations relating to the right to food that in turn violates other obligations runs counter to the prescription afforded by the Vienna Convention.

It is patent from the foregoing that the issue about the legal effect of a strict compliance with the obligations under the TRIPS Agreement at the expense of those obtaining under international human rights law is vexed. However, the TRIPS Agreement permits several exceptions and flexibilities that have been largely utilised in the pharmaceutical industry which can tremendously counter the costs that IPRs present in the field of agricultural

¹⁶⁷ As above, article 15(1)(c).

¹⁶⁸ The United Nations Sub-Commission on the promotion and protection of human right: Resolution on intellectual property and human rights of 17 August 2000. UN Doc E/CN.4/Sub.2/2000/7.

¹⁶⁹ As above, para. 1.

biotechnology. These exceptions can significantly mitigate the costs that IPRs pose on the realisation of the right to food if African states decide to introduce the application of agricultural biotechnology with the view to improve food production. Firstly, the TRIPS Agreement in article 8 permits states to adopt measures necessary to protect public health and nutrition. This provision gives states the freedom to adopt measures to ensure that IPRs do not vitiate efforts aimed at protecting public health and nutrition. In this regard, African states have the liberty to regulate IPRs on agricultural biotechnology products with the view of promoting and protecting the right to food by citing public health and nutritional reasons. Secondly, the TRIPS Agreement permits states to exclude from patentability where this is necessary to protect human, animal or plant life or health, or to avoid serious prejudice to the environment.¹⁷⁰ This freedom affords states the opportunity to significantly cut out the bemoaned costs that are concomitant with IPRs as they relate to the exercise of the right to food on the basis of the listed grounds. Perhaps the most significant exception in the context of agricultural biotechnology is that provided under article 27(3)(b) of the TRIPS Agreement. It requires states to provide for the 'protection of plant varieties either by patents or by an effective *sui generis* system or by any combination thereof'. This provision provides a blank cheque freedom to states to adopt *sui generis* legal frameworks on the protection of plant varieties which they can model in such a way as to address costs that a strict patent protection provided under the TRIPS Agreement entails. African states can, therefore, couch their plant varieties protection laws in such a way that they promote and protect the right to food. Lastly, African states can utilise exceptions such as government use, parallel imports and compulsory licensing, which are being exploited in the pharmaceutical industry to contain the unavailability of medicines due to high prices resulting from exploitative patent protections.¹⁷¹ In this regard, the concerns raised about high prices of agricultural biotechnology products due to exploitative patent protections by patent holders can be mitigated by resorting to these flexibilities and exceptions permitted under the TRIPS Agreement.¹⁷²

¹⁷⁰ Article 27(2) of the TRIPS Agreement.

¹⁷¹ Musungu, (n 13 above) 219-222.

¹⁷² See C Breining-Kaufmann 'The right to food and trade in agriculture' in T Cottier, J Pauwelyn & E Bonanomi (eds) *Human rights and international trade* (2005) 356.

4.3.2 The right to food and transnational corporations (TNCs)

As observed in chapter three, much of the R&D in the field of agricultural biotechnology is pioneered by profit driven TNCs who unsurprisingly own most of the patents on the products of agricultural biotechnology. Concern has been raised that dependence on the patented products of these TNCs would give them a leverage to dictate and hence inflate market prices of agricultural biotechnology products. It is feared that this will have the resultant effect of impeding economic access to the means of food procurement by poor Africans. However, international law is now replete with obligatory references that point to states' duty, as primary duty bearers under international law, to protect the public from the debilitating effects of the operations of private actors. Such operations and activities would include exploitative commodification and marketism in the field of agricultural biotechnology that in turn inhibit sustainable food production and agricultural growth. GC 12 imputes liability on states if they fail to 'regulate the activities of individuals or groups so as to prevent them from violating the right to food of others'.¹⁷³ Under paragraph 20 of GC 12, TNCs are urged to 'pursue their activities within the framework of a code of conduct conducive to respect of the right to adequate food'. The Maastricht Guidelines bluntly provide that states are responsible for violations of socio-economic rights 'that result from their failure to exercise due diligence in controlling the behaviour' of TNCs and other non state actors.¹⁷⁴ This position has been echoed by the African Commission in *Commission Nationale des Droits de l'Homme et des Libertes v Chad* which communication alleged massive and serious violations of human rights that were allegedly committed by private persons.¹⁷⁵ The African Commission held that:¹⁷⁶

Even where it cannot be proved that violations were committed by government agents, the government had a responsibility to secure the safety and the liberty of its citizens, and

¹⁷³ GC 12, para. 19.

¹⁷⁴ The Maastricht Guidelines (n 164 above) guideline 18. See also D Brand 'The Maastricht guidelines on economic, social and cultural rights' http://www.communitylawcentre.org.za/ser/esr1998/1998march_maastricht.php (accessed 14 September 2006).

¹⁷⁵ Communication 74/1992. See also *SERAC* case (n 25 above); *Velásquez Rodríguez v Honduras*, IACHR (19 July 1988), Ser. C, No. 4.

¹⁷⁶ Communication 74/1992 above, para. 22.

to conduct investigations into murders. Chad therefore is responsible for the violations of the African Charter.

This position of law mandates states as primary duty bearers to protect the public from the activities of TNCs that are engaged in agricultural biotechnology if such activities have the potential of curtailing the enjoyment of their right to food. It follows, therefore, that African states have the necessary leverage to mitigate the costs of agricultural biotechnology in so far as they relate to the exploitative operations of TNCs especially those performed under the pretext of affording IPR protection to their inventions.

4.3.3 Biosafety regulation and the right to food

It is trite that agricultural biotechnology has the potential to improve food production and avail Africans with a number of other benefits. However, set against these benefits are potential risks which they have to address in order to safely utilise and benefit from its application. Some of the issues that need to be addressed in relation to the right to food as captured by GC 12 encompass food safety, environmental hygiene, and the accessibility of food in ways that are 'sustainable and that do not interfere with the enjoyment of other human rights'.¹⁷⁷ The emphasis on sustainable accessibility of food is pertinent to the application of agricultural biotechnology because of its interface with human health and environmental conservation. It follows, therefore, that any application of agricultural biotechnology that is intransigent to the exercise of other human rights such as the right to the best attainable standard of health and the right to a clean and healthful environment is inimical to the provisions of GC 12 and violates the right to food. There is, therefore, a pressing need to contain the known and potential risks that agricultural biotechnology poses on human health and the environment which provides mankind with genetic resources for food and agriculture. It is against this background that biosafety becomes relevant. Biosafety seeks to ensure the safe and sustainable application of biotechnology with a view to optimise its potential benefits whilst minimising and containing its adverse effects on human health and the environment for present and future generations.¹⁷⁸ The need to protect human health and the

¹⁷⁷ GC 12, para. 8.

¹⁷⁸ Kameri-Mbote (n 48 above).

environment from the adverse effects of biotechnology application led to the adoption of the Cartagena Protocol on Biosafety to the CBD of 2000 (Biosafety Protocol).¹⁷⁹ The Biosafety Protocol, among other things, seeks to address issues surrounding the safe transfer, handling and use of living modified organisms resulting from modern biotechnology that may have effects on the conservation and sustainable use of biodiversity, which is the overall objective of the CBD.¹⁸⁰ However, the effective implementation of the Biosafety Protocol is linked to the development of national biosafety regimes.¹⁸¹ It also gives states the discretion to adopt more protective measures in biosafety regulation than the agreed minimum standards that it sets.¹⁸² This discretion affords African states the opportunity to develop biosafety laws that protect the right to food in line with their obligation under article 2(1) of the CESCRR to adopt legislative measures that protect and promote this right.

Biosafety is essentially about risk assessment and management.¹⁸³ The former concept entails the identification of potential environmental adverse effects or hazards, and the determination of their probability of occurring.¹⁸⁴ The latter concept refers to the methods applied to minimise potential hazards or adverse effects which have been identified through risk assessment.¹⁸⁵ The application of the precautionary principle is one of the ways of minimising the occurrence of potential hazards as it takes into account the needs of both present and future generations. It fosters the application of 'appropriate biotechnologies'.¹⁸⁶ In the context of agricultural biotechnology, the precautionary

¹⁷⁹ Adopted in Montreal on 20 January 2006.

¹⁸⁰ As above, para. 3 of the preamble.

¹⁸¹ As above, article 2.

¹⁸² As above, article 2(4).

¹⁸³ Kameri-Mbote (n 48 above).

¹⁸⁴ As above.

¹⁸⁵ As above.

¹⁸⁶ The concept 'appropriate biotechnologies' implies that biotechnologies must be environmentally safe as well as socio-economically and culturally acceptable. This concept found expression in the Preliminary Draft of the International Code of Conduct on Plant Biotechnology as it affects the Conservation and Utilisation of Plant Genetic Resources, October 2002, Rome, Doc. CGRFA-9/02/18/Annex. Article 3 of this Draft Code defines appropriate biotechnologies as technologies which promote the development of a sustainable agriculture through the rational use of plant genetic resources while properly considering local culture and techniques.

principle demands that where the application of a particular technology presents potential harm, albeit unknown, it is safe to err on the side of caution by not applying that technology rather than to take the risk. This principle, which is the organising concept of the African Model Law on Safety in Biotechnology (African Model Law)¹⁸⁷ as regards the use, release and the placing on the market of genetically modified organisms (GMOs), is of particular importance to African countries which might not have the technical know-how and economic muscle to address the hazards of agricultural biotechnology on food production when such hazards occur. Potential hazards of agricultural biotechnology on human health and biodiversity for food and agriculture in Africa can, therefore, be averted by adhering to the precautionary principle and by subjecting GMOs to rigorous risk assessments as provided by the African Model Law. If all African countries modeled their biosafety laws in line with the African Model Law, this will further address the transboundary (spill over) effects of the application of agricultural biotechnology by a country that adopts a very permitting biosafety law.¹⁸⁸ In that case, the African common position to develop biosafety regimes in the interest of sustainable agriculture, biodiversity conservation and human health, which have significant repercussions on the enjoyment of the right to food as expounded by GC 12, would be otiose.

4.4 Conclusion

The interface between the right to food and other disciplines dealing with environmental conservation, human health and IPR protection brings to the fore pertinent issues about the primacy of states' obligations under international law. In the context of agricultural biotechnology, the advent of modern biotechnologies that seek to enhance food production has heightened the concern about the ancillary effects that these technologies might have on biodiversity, human health and other socio-economic aspects of life. This in turn raises the question whether states' obligations in these areas

¹⁸⁷ Endorsed by the Council of Ministers of the African Union at its 74th Ordinary Session in Lusaka, Zambia in July 2001.

¹⁸⁸ Mariam Mayet observes that the biosafety laws and guidelines of Swaziland, Tanzania and Ghana have been principally drafted to permit the planting of GMOs. However, Ghana's biosafety laws completely exclude the issue of human health from the biosafety enquiry. M Mayet 'Biosafety in Africa: A complex web of interests' African Centre for Biosafety, September 2005 (Unpublished). Such a trend would vitiate efforts by neighbouring countries that adopt restrictive laws on biotechnology application in order to safeguard human health because products can easily be smuggled to neighbouring countries and cause harm.

can be foregone. This chapter has striven to demonstrate how the differing international obligations obtaining under various disciplines that deal with the right to food and agricultural biotechnology can be reconciled with the view to promote the safe application of agricultural biotechnology by minimising its costs. It has been established that the set of rules under some of the legal regimes such as those obtaining under the TRIPS Agreement permit some exceptions and flexibilities that lessen the costs that agricultural biotechnology presents on the right to food without having to deal with the vexed question of primacy of states' international obligations. The chapter has also demonstrated how uniform domestic biosafety laws can counter the transboundary effects of the application of technologies that impact on the right to food in Africa in order to ensure sustainable agricultural productivity.

CHAPTER FIVE: CONCLUSIONS AND RECOMMENDATIONS

5.1 Overall conclusion

The right to be free from hunger is the only right in the CESCRR that has been proclaimed fundamental. However, this is a minimalist standard that the CESCRR sets as the first step towards the realisation of the right to adequate food which is the grand norm. The latter norm sets a maximalist standard whose attainment will remain a chimera in the absence of any significant agrarian reform to ameliorate the current appalling food production trends in Africa. Agricultural biotechnology presents innumerable opportunities that will help to overcome the shortfalls of traditional plant breeding which is seemingly failing to boost food production to be able to counter the food insecurity problems that have rocked almost all African countries. In line with the objective of the CESCRR to improve methods of food production, agricultural biotechnology promises fast and high yielding transgenic crops that, among other things, have increased tolerance to drought that would hence counter climatic uncertainty which is the major cause of low food production in Africa. Therefore, agricultural biotechnology which resides in the domain of scientific knowledge, which states are mandated by the CESCRR to utilise with the view to improve methods of food production, is evidently handy for most African states to counter the ills of low food production. However, African countries must not embrace agricultural biotechnology because of need alone. In other words, this need must not be propelled by euphoria arising out of desperation to rid out hunger and fully realise the right to adequate food because agricultural biotechnology is not entirely a silver bullet. Notwithstanding its potential to improve food production, it presents a number of risks and costs on the right to food which, if not properly checked, would curtail the realisation and enjoyment of this right. Some of the risks and costs that form an integral part of the enjoyment of the right to food relate to food safety, the erosion of biodiversity for food and agriculture, impediment to access the means of food procurement due to strict protection of IPRs and devices that restrict seed re-germination and exchange.

Clearly, the challenge to improve food production through the utilisation of agricultural biotechnology entails the duty to ensure its safe application in all African countries. The adoption of the African Model Law is, therefore, a laudable cause which should enable African states to deal with the application agricultural biotechnology and its concomitant

costs with a common stance. It is, therefore, necessary that African countries should model their biosafety laws in line with the African Model Law because conflicting pieces of legislation will fail to curb transboundary spill over effects in the event that some countries adopt very liberal and permissive laws. Thus, uniform legislation developed under the organising concept of precaution that informs the African Model Law would ensure the application of 'appropriate biotechnologies' in order to preserve genetic resources for food for both present and future generations. This would in turn serve as a safety-valve for African states not to yield to the consequences of sheer desperation arising out of 'need' to ensure food security in total disregard of the multifarious risks that agricultural biotechnology presents.

5.2 Recommendations

Clearly, agricultural biotechnology has the potential to improve food production and help in the realisation of the right to food. However, some of the perceived risks which have not been proven with utmost scientific certainty can curtail its application if African states comply with the strict dictates of the precautionary principle. It, therefore, behoves African states to invest in R&D so that some of the fears and perceived risks about agricultural biotechnology that are expressed without any empirical evidence can be allayed by appropriate scientific findings. Investing in R&D would also help to establish whether some of the risks that have proven occurrence in industrialised countries can also occur on African soils. This is also the only way that African states can establish whether biotechnologies developed in industrialised countries which have been certified as safe by those countries can also be applied safely on African soils. However, such R&D demands concerted efforts amongst African countries in order to eschew duplication in various fields of research. This would also enhance research output as human resource capacity will rally up with a clear focus on how agricultural biotechnology can benefit all Africans and not just one country.

It is also crucial that African states harmonise their national policies as they relate to the safe application of agricultural biotechnology. Particularly, they must harmonise and develop their biosafety laws by utilising the framework that the African Model Law lays down. Failure to do so would render efforts to ensure the safe application of agricultural biotechnology futile considering the debilitating transboundary effects of agricultural

biotechnology on genetic resources for food and agriculture where states adopt laws that foster conflicting interests. Related to this is the need to expedite the development of *sui generis* legislation that protects farmers' rights to preserve and exchange seed in order to mitigate the costs of IPRs. It is recommended that those countries that protect plant varieties under strict patent regimes should repeal those laws and adopt *sui generis* legislation that enhances the protection of the right to food.

African states must also adopt laws that foster consumer protection and information about the processes that various products of agricultural biotechnology have undergone. This would enhance consumer choice by raising awareness about concerns on things like allergens and whether certain foodstuffs that have undergone numerous genetic engineering processes are still culturally acceptable and can hence be consumed.

Lastly, where the application of a particular technology presents risks that are bound to occur which cannot be contained, it is proper that recourse be had to traditional farming systems. It is, therefore, significant that traditional plant breeding systems should not be completely discarded. In fact, they must be integrated into the new methods of agricultural biotechnology as they remain the bulwark for safer and sustainable food security initiatives in the event that agricultural biotechnology fails to address some of the food needs of Africans. It is in this regard that this study recommends that traditional knowledge and conventional agricultural methods of food production should continue to be strengthened by African countries by engaging in meaningful agrarian reform.

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