DOPING CONTROL IN SPORTS: LEGAL ISSUES IN TRANSFER OF TECHNOLOGY TO THIRD WORLD COUNTRIES

By

Moni E. Wekesa

A Project in partial fulfilment of the requirements for the degree of Master of Laws (LL.M) at the Faculty of Law of the University of Nairobi

2005
I, Moni E. Wekesa hereby declare that this is my original work and has not been presented for a degree in any other University

SIGNED: ________________________________ Date: 18 Mv 05

MONI E. WEKESA

This work is submitted for examination with our approval as University Examiners:

SIGNED: ________________________________ Date: 

DR. ANNIE PATRICIA KAMERI-MBOTE

SIGNED: ________________________________ Date: 25/11/05

DR. ANDRONICO ODUOOGO ADEDE
To Roselyn, my wife and friend
ACKNOWLEDGEMENTS

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If there is any law teacher of mine who has not been mentioned in this work, it is not for lack of space as it is for the thematic. They will receive due acknowledgement in subsequent works as relevant themes are addressed.

I wish to thank my wife and children for the support they accorded me throughout the LL.M course.
Finally, I acknowledge the financial support of the University of Nairobi which turned my dreams for a Master of Laws (LL.M) degree into reality. That scholarship was an answered prayer.
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<tr>
<td>AAV</td>
<td>Adeno-associated virus</td>
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<tr>
<td>ACTS</td>
<td>African Centre for Technology Studies</td>
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<td>ANOC</td>
<td>Association of National Olympic Committees</td>
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<td>CAS</td>
<td>Court for Arbitration in Sport</td>
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<td>CBD</td>
<td>Convention on Biodiversity</td>
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<td>EPO</td>
<td>Erythropoietin</td>
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<td>ETS</td>
<td>European Treaty Series</td>
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<td>FDI</td>
<td>Foreign Direct Investment</td>
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<td>FINA</td>
<td>International Federation of Acquatic Associations</td>
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<td>GA</td>
<td>United Nations General Assembly</td>
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<tr>
<td>GDP</td>
<td>Gross Domestic Product</td>
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<td>GNP</td>
<td>Gross National Product</td>
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<td>hCG</td>
<td>Human chorionic gonadotrophin</td>
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<td>hGH</td>
<td>Human Growth Hormone</td>
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<tr>
<td>IAAF</td>
<td>International Association of Athletics Federations</td>
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<td>IADA</td>
<td>International Anti-Doping Arrangement</td>
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<tr>
<td>ICAS</td>
<td>International Council for Arbitration in Sport</td>
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<tr>
<td>IFs</td>
<td>International Sport Federations</td>
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<tr>
<td>IGF-I</td>
<td>Insulin like growth factor-I</td>
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<td>IOC</td>
<td>International Olympic Committee</td>
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<tr>
<td>I.R.</td>
<td>Islamic Republic</td>
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<tr>
<td>ISO</td>
<td>International Standards Organisation</td>
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<tr>
<td>LDC</td>
<td>Least Developed Country</td>
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<td>LEN</td>
<td>Ligue Europeenne de Natation</td>
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<tr>
<td>NCAAA</td>
<td>National Collegiate Athletics Association</td>
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<tr>
<td>NIEO</td>
<td>New International Economic Order</td>
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<tr>
<td>NOC</td>
<td>National Olympic Committee</td>
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<td>NOCSA</td>
<td>National Olympic Committee of South Africa</td>
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<tr>
<td>PAS</td>
<td>Publicly Available Standard</td>
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<tr>
<td>R &amp; D</td>
<td>Research and Development</td>
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<tr>
<td>Acronym</td>
<td>Full Form</td>
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<tr>
<td>RSA</td>
<td>Republic of South Africa</td>
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<tr>
<td>SMC</td>
<td>Standing Medical Committee</td>
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<td>SOC</td>
<td>Olympic Committee of the Soviet Union</td>
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<td>THG</td>
<td>Tetrahydrogestrinone</td>
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<tr>
<td>UN</td>
<td>United Nations</td>
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<tr>
<td>USATF</td>
<td>United States Track and Field Federation</td>
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<tr>
<td>USD</td>
<td>United States Dollar</td>
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<td>USOC</td>
<td>United States Olympic Committee</td>
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<td>WADA</td>
<td>World Anti-Doping Agency</td>
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<td>WTO</td>
<td>World Trade Organisation</td>
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INTRODUCTION

Kenya, and indeed many Third World countries, participates in competitive sports. Therefore, many people are motivated to compete or cheer their idols on. The "mouth watering" incentives given out to winners at international competitions\(^1\) make it an admirable career path for many young people. These young people look to the stars as their role models. Unfortunately, some athletes use doping to enhance performance. A few examples will serve to illustrate the use of doping in Third World countries. In March 2003, Pamela Chepchumba was banned for two years after testing positive for a banned substance, while another Kenyan, Bernard Lagat was suspended for using Erythropoietin (EPO) in August 2003\(^2\). At the Olympic Games in Athens in 2004, Kenyan, bantamweight boxer, David Munyasa, tested positive for a banned substance, cathine (local name: miraa)\(^3\) and was expelled from the Games. In February 2005, Philip Wire Opiyo, a Kenyan footballer based at Bush Bucks Football Club in South Africa tested positive for a doping substance and his services with the club were terminated. Such events hurt both the fans and individual athletes. Needless to mention that the athletes

\(^{1}\) At the Grand Prix meetings winners come home with about USD 20,000 in cash besides a brand new Mercedes car, at the Zurich event, one Kenyan winner was offered a horse and a bar of Gold. At the famed marathon events of New York, London and Amsterdam the winners prize is usually about USD 250,000.

\(^{2}\) www.news.bbc.co.uk 2004

\(^{3}\) S. Aletta, "How miraa cost Munyasa chance in the Olympic Games". The Standard, 23 May 2005, p. 28. None of the officials who accompanied the Kenyan team to the Olympics knew that cathine was on the list of banned substances. No doping tests were conducted on the athletes. The
travel to such meetings at the expense of the public. Therefore, it is important to underscore the fact that, besides the well known reasons for controlling drug use in sports, the athletes themselves as role models be regarded as human beings and not mere "pharmacological machines." The need for doping control is quite apparent, especially amongst the youth. In general, it is important that Third World countries should be in a position to conduct doping controls to ensure a "safe" sport at competitive levels.

The problem that this work focused on can be presented thus: Kenya and other Third world countries, like the rest of the world, are required to conduct dope testing and yet they do not have the requisite technology. There is therefore need for transfer of technology to such countries to enable them keep up with international requirements. This work explores the various ways by which Third World countries can acquire technology relevant to doping controls.

The research questions that emerge from the foregoing are: Firstly, whether Third World countries have the technological capacity to control doping in sports; secondly, whether the international legal framework on doping control in sport provides for transfer of technology to the Third World countries; and thirdly, whether there are sufficient financing mechanisms to facilitate transfer of technology.

athletes did not have any information on banned substances (never mind that such information is posted on the internet!). The boxer was subsequently suspended for two years according to WADA rules.
The objectives of this work are firstly, to ascertain the capability of Third World countries to control doping in sport, secondly, to find out whether the international legal instruments on anti-doping controls in sport provide for transfer of technology to third world countries, and thirdly, to explore ways through which technology transfer to third world countries could be effected.

The conceptual framework is that attempts to control drug use in sports has assumed global proportions. Consequently, all countries participating in international sport are required to join in the fight against doping. Admittedly, third world countries spent many scarce resources in an attempt to make an international appearance in sports. Of late, a number of participants from such countries have tested positive at the venue of the competitions, long after some resources have been expended on them. Clearly, there are very few dope testing laboratories in developing countries. This deficiency, firstly, militates against the ability of such countries to play a meaningful role in combating doping in sports and, secondly, it hampers proper preparation and selection of athletes. It is therefore hypothesised that countries of the third world need to acquire doping technology in order to join the global fight against doping.
This research is applied as it seeks to solve a social problem. Based on its objectives, it is both descriptive and inferential. The mode of inquiry was both comparative and qualitative. Primary data for this study was obtained from International Conventions, National legislation, case law and statistical information from various international and national sporting bodies gleaned from the Internet. Secondary sources were books, journal articles, Magazines and Newspapers. This study was based on only one assumption, namely that the international community is keen to eradicate drug use in sports.

This study is divided into five chapters. Chapter one gives background information on doping, institutions involved in doping controls, the nature of doping technology required, the state of doping technology in third world countries, the independence of institutions charged with the task of doping controls and the economic issues involved. Chapter two looks at the international legal framework on transfer of technology and intellectual property rights (IPRs) issues and establishes, inter alia, that the existing legal framework appears favourable to transfer of technology and the nature of the technology required is largely in the public domain. Chapter three focuses on the various modes of financing transfer of technology and discusses the interplay between public and private sources of finance relative to
doping technology. Chapter four examines some of the policies that need to be put in place to facilitate transfer of technology. Chapter five contains conclusions and recommendations.
CHAPTER ONE:
DOPING CONTROL IN SPORTS

1.0. Introduction

Doping is defined as the use of performance enhancing substances or methods to gain an unfair advantage over other competitors\(^4\). In its decision in the Claudia Poll case, the Court of Arbitration for Sport (CAS)\(^5\) confirmed case law with respect to strict liability in doping cases as follows:

"It is a matter for the sports federation to prove the presence of a banned substance in the athlete's body; if the federation is successful in proving this element, there is a legal presumption that the athlete committed an offence, whatever the intention of the athlete to commit such offence; the athlete can reverse this presumption of guilt by showing that the case is not one of doping and that he/she is innocent but it is for him/her to produce that proof".

The desire to gain an unfair advantage over other competitors in sport can be traced to the ancient Greek games. It has been documented that an Olympic victory at that time was worth the

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\(^5\) Claudia Poll v FINA, FINA Doping Panel 1/02; CAS 2001/A/317. A v FILA; Juan Jose Velaz v FINA, FINA Doping Panel 1/03; IOC Decision in Re Mr. Alain Baxter, Breat Britain, Men's Alpine Skiing, Slalom (2002); see also materials associated with note 88 infra
modern day equivalent of USD 500,000 (Kshs. 40 million)\textsuperscript{6}. At that
time, many athletes, the story goes, ate frogs and testicles of some
animals in an attempt to outperform their opponents\textsuperscript{7}.

But it must be observed at the outset that doping is associated
with risks to the health of athletes. The first death associated with
doping occurred in 1886 when, Arthur Linton, a cyclist, overdosed on
a drug called tri-methyl during a race\textsuperscript{8}. Fatal cases due to abuse of
stimulants in cyclists forced several European countries, including
France and Belgium to enact anti-doping legislation in 1965\textsuperscript{9}. In
1967, Tom Simpson, another cyclist died during televised Tour de
France competition\textsuperscript{10}. The public outrage that followed this latter
death prompted the International Olympic Committee (IOC) to
consider instituting doping controls in sport.

These developments compelled the IOC to carry out their first
anti-doping tests during the 1968 Olympic Games in Mexico City in
which only one athlete was caught. At the next Games in 1972 in
Munich, seven athletes tested positive. The numbers of those who
test positive have continued to rise with increasing numbers of
participating athletes.

\textsuperscript{6} 'Witness - Dying to Win': History of Doping in Sport, p.1
\textsuperscript{8} ibid., The Economist, "Drugs and the Olympics", 7-13 Aug., 2004, p. 20
\textsuperscript{10} ibid., The Economist, supra
There are about 850 million people practising sports in the world. It has been observed that although these athletes know the sanctions and penalties for being caught, the use of drugs in sports continues\textsuperscript{11}. Doping may never disappear\textsuperscript{12}.

### 1.1 Need for Doping controls

Certain ideals have informed doping controls, i.e. to ensure fair competition, to eliminate risk to the health of athletes, and to prevent bringing sport into disrepute\textsuperscript{13}. On fair competition, proponents of doping control aver that sporting activities relate to ethical values, more particularly, fair play. Sporting activities are also supposedly based on a social contract, making sport socially meaningful, valuable and a cultural good\textsuperscript{14}.

On the health issue, it is sometimes difficult to draw a line between treatment of the sportsperson to preserve his/her health and the prescription of drugs to enhance performance. Certain substances are useful in treating the sportsperson, while they are at the same time considered as doping substances and, therefore, banned. There is a risk of jeopardising the right of the sportsperson to medical treatment\textsuperscript{15}. However, this has been taken care of through the therapeutic use exemption rule, under which a sportsperson can

\textsuperscript{11} Delbeke, 1996, p. 434
\textsuperscript{12} Globe and Mail update, \texttt{http://sympatico.globemail.com/servlet/story/}, 2003
\textsuperscript{13} WADA, The international Standard for the Prohibited List, Sept. 2003, p.5
\textsuperscript{14} Mieth and Sorsa, supra
\textsuperscript{15} D. Mieth, and M. Sorsa, Ethical aspects arising from doping in sport. An Opinion requested by the European Commission on 22 April 1999, 2003
apply to be allowed to use a certain substance for treatment, which substance is banned.

Health impairment is associated with the use of anabolic agents, overdoses, long-term use and with drug interactions. Side effects include liver damage, reproductive disorders, behavioural disturbances, addiction\textsuperscript{16}, kidney ailments, reproductive problems in women, the growth of breasts in men\textsuperscript{17}, cancer, severe birth defects in children of doped athletes\textsuperscript{18}, heart disease, hypothyroidism, disfigurement due to bony overgrowth, and immediate death\textsuperscript{19}.

In deciding on a question of privacy violation during drug testing the Seventh Circuit Court of Appeals held that the Racing Board’s interest in safety and integrity were insufficient to outweigh the invasion of privacy through an otherwise unconstitutional random urinalysis. The court found that the urine testing possessed limited use for health purposes since it would not measure the plaintiff’s present impairment, and instead, only revealed that drug usage had previously occurred at some earlier time\textsuperscript{20}.

In \textit{Hill v NCAA}\textsuperscript{21} the Court of Appeals found no evidence that any College athlete had ever been injured in competition as a result of drug use; and on fair and equitable competition the court found that none of the banned drugs enhanced performance.

\textsuperscript{16} Mieth and Sorsa, ibid
\textsuperscript{17} Witness: Dying to win: The History of doping in sport, 2004
\textsuperscript{18} Register-Guard, Doping Athletes USA, 2004, p.3
\textsuperscript{19} Witness – Dying to win 2: Possible solutions to the doping problem, p. 1
\textsuperscript{20} \textit{Dimeo v Griffin}, 924 F. 2d 664 (7th Circ. 1991) 266
In a case in which a student sought to challenge the signing of a consent form for urinalysis, the court held that a high school consent program of urinalysis of prospective athletes was legal.

On the question of bringing sport into disrepute through doping, the year 1998 witnessed a series of media publicity relating to doping by sportsmen and women, mostly at the Tour de France. In this competition, the widespread use of EPO and anabolic steroids was exposed. This media publicity damaged the image of sport and focused public opinion on many divergent voices, opinions, and efforts at regulations on doping.

In the case of Shoemaker v Handel there was an attempt to challenge prevailing regulations, which required jockeys to submit to drug testing for drug usage. The court upheld the regulations saying that the nature of horse racing is highly regulated with people wagering on the outcome. Drug use by Jockeys could erode public confidence in the integrity and legality of the sport.

1.2. **Doping as Biotechnology**

Doping is closely linked to science and medicine. Consequently, the rapid development of new products and new technologies in these fields has a direct impact on doping. For example, the constant and rapid rise of new substances, chemical modifications of old ones and

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21 273 Cal Rptr 402 (Cal App. 6 Dist. 1990
22 Schall v Tippecanoe County School Corp., 679 F. Supp. 833 (ND. Ind. 1983, aff’d 864 F. 2d 1309 (7th Circ. 1988) 212, 274
23 Mieth and Sorsa, ibid
24 795 F. 2d 1136 (3rd Circuit 1986) 266, 273
new production techniques means that no list of prohibited substances can be complete. By 1998, the IOC said it was not able to overcome the limitations in medical science to detect the banned use of human growth hormone.

1.2.1 Definition of Biotechnology

Article 2 of the 1992 Convention on Biological Diversity defines biotechnology as:

'Any technological application that uses biological systems, living organisms, or derivatives thereof to make or modify products or processes for specific uses'.

Biotechnology is seen as a knowledge intensive field in which a set of enabling techniques is used to bring about specific man-made changes in deoxyribonucleic acid (DNA), or genetic material, in plants, animals and microbial systems, leading to useful products and technologies. For example, biotechnology makes it possible to manufacture components of red blood cells through stimulation of the bone marrow by hormones produced through genetic engineering. Red cell production achieved this way reduces the need for expensive blood transfusions for patients undergoing dialysis for kidney disease.

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25 Mieth and Sorsa, supra
28 I. Miles, "Contemporary Technological Revolutions: Characteristics and dynamics", in New Generic Technologies in Developing Countries, ed. M.R. Bhagavan, SIDA, 2001
Industry observers forecast that this will be among the top best selling pharmaceutical products in this century\textsuperscript{29}.

As opposed to mechanical technologies, biotechnology is science-intensive and its transfer or diffusion is often mediated through training and information flow and does not of necessity rely upon the movement of equipment across borders\textsuperscript{30}.

\subsection*{1.2.2 Relationship between Biotechnology and Doping}

Doping, just like biotechnology is science intensive. The analytical procedures require highly equipped laboratories in which the sciences of analytical chemistry and biochemistry are used to analyse the presence of drugs or their metabolites in the body. For example, abnormally high concentrations of human chorionic gonadotrophin (hCG) were found in the urine sample of swimmer Marko Strahija of the Croatian Swimming Federation in a dope analysis conducted in an IOC accredited laboratory in Barcelona (Spain) in March 2002\textsuperscript{31}. Other chemical compounds found in athletes samples include the anabolic steroid metenolone\textsuperscript{32}, 19-norandrosterone\textsuperscript{33}, and 3'-hydroxystanozolol\textsuperscript{34}.

Tetrahydrogestrinone (THG) is a specially designed anabolic steroid which has been tweaked by chemists to make it undetectable

\begin{footnotesize}
\begin{enumerate}
\item Financial Times, 27 May 1994, p.14
\item Re Marko Strahija, FINA Doping Panel 1/02
\item Re Mahmoud Jadaan, FINA Doping Panel 5/02
\item Re Katerina Bliamou, FINA Doping Panel 3/02
\end{enumerate}
\end{footnotesize}
under normal dope testing. Until the BALCO firm scandal broke out, it is believed many top level athletes had used THG without being found out. More recent reports say that a new drug, the "Clear III" is out and circulating among professional sportsmen and women who have the money and the urge to buy it. This new drug is believed to contain THG, EPO and insulin.

Biotechnological developments in agriculture could easily find use in sports by way of doping. Attempts to produce genetically modified foods especially, foods fortified with certain vitamins, minerals, amino acids, etc. is seen as a way of tackling nutrient deficiency diseases. In other words, instead of, for example, prescribing vitamin tablets as is the case now, it should be possible to get say a banana that is fortified with all the vitamins and proteins! Such products could easily witness a shift in the nutritional pattern of athletes as they seek to improve their performance. Already, athletes have been trying to get performance enhancing drugs included in the food by way of food supplements.

It is therefore apparent that developments in genetic engineering whether in medicine or agriculture can be brought to bear directly on

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34 Re Yuliya Pidlisna, FINA Doping Panel 5/03
37 Witness - Dying to Win 6: Sports and Drugs - a lethal team: At the BALCO Laboratory, athletes could purchase food supplements fortified with the tweaked anabolic steroid 'Tetrahydrogen
doping in sport. Indeed, it is more accurate to describe doping as a part of biotechnology.

1.3 Legal Issues in Doping controls

1.3.1 Nature of society - the expectation to win

Several researchers have attempted to explain why the use of banned substances in sport has gone on from time immemorial. For example, Doriane Coleman, Senior Lecturer at Duke University School of Law and two-time Swiss National Champion in the 800 m says:

"I think the answer is in the money and the fame and the fact that it's sometimes the only thing in their lives".

Dr. Robert Voy, former Chief Medical Officer for the USOC and Ed Derse, Co-editor: Doping in Elite Sport: The Politics in the Olympic Movement think that the large sums of money and prizes available to winners are responsible.

Taru Lintunen, Professor of sports psychology at the University of Jyvaskyla, Finland, says:

"Evidently many athletes believe the others are all cheating, too. This way a subculture of athletes and coaches who think alike emerges. The group develops its own set of values, and is forced to keep things secret from others".

One of the possible explanations for the continued use of prohibited substances in sport could be the acceptance by society of

39 Ibid.
40 Ibid.
certain practices, i.e. self-stimulation by the use of artificial substances and methods, self-medication and the use of medicines without proper medical supervision\textsuperscript{42}.

In a randomised study at the 2001 Nordic World Championships to examine the prevalence of abnormal haematological profiles in elite cross-country skiers, blood from 68\% of all skiers and 92\% of all those finishing in the top ten was analysed. Results showed that 50\% of the medallists and 33\% of the top ten had very abnormal blood profiles that were suggestive of blood doping. It was also reported that the dope testing practices of the time were unable to pick any of the athletes\textsuperscript{43}. Before the 2000 Olympics, out of a total of 3,000 tests, the IOC had reported a total of nine positive cases from the Games\textsuperscript{44}.

1.3.2 Standard of proof

Proceedings in doping cases are governed by civil law principles. These do not provide room for a presumption of innocence or the standard of proof beyond a reasonable doubt\textsuperscript{45}. A doping offence is considered to be one of strict liability\textsuperscript{46}. In \textit{Mette Jacobsen v FINA}, the swimmer did not successfully argue that she acted neither

\textsuperscript{41} cited in: H. Virkunen, "There's cause for concern if there's stuff you can't talk about", in: \textit{Motion-Sport in Finland}, 1/2002, p. 17

\textsuperscript{42} J. Andreu, "Medical and Regulatory aspects". EU action in the fight against doping. The First EU Conference on Sport held at Olympia, 23 May 1999, A Report ed. J. Andreu

\textsuperscript{43} xcskiworld.com: Brief History of Doping\textit{News}, 2001

\textsuperscript{44} Ananova: IOC reports two more doping cases, http://www.ananova.com/sports/story/sm_75258.html

\textsuperscript{45} CAS 2001/A/337 \textit{B v/ FINA}, Award of 22 March 2002
intentionally nor negligently. Her doctor admitted the possibility of giving her the wrong medicine which contained the banned substances prednisolone and prednisone (glucocorticosteroids). It was held that the swimmer was responsible for the prohibited substances found in her body\(^47\). In a related case in which an athlete claimed that she was given some medicine for treatment, she was found guilty of doping\(^48\). However, in *Cezar Badita*\(^49\), the athlete was given a sanction below the minimum because he was able to establish that the prohibited substance got in to his body fluids via food supplements and that it was neither intentional nor negligent. The FINA Doping Panel has given a sanction below the minimum where a “convicted” athlete has appeared very “remorseful” and where it was shown that the athlete used cannabis more out of habit than to intentionally influence his performance in swimming\(^50\). In *Linda van Herk v FINA*, the athlete succeeded in arguing that the doping offence alleged in her case (skipping a doping test) was neither due to her negligence nor was it done intentionally. This earned her a sentence below the minimum.

The Court of Arbitration in Sport (CAS) upheld the IOC decision to strip 16 year old Romanian gymnast Andrea Raducan her Gold medal after she tested positive for the banned stimulant pseudo-

\(^46\) *Reza Ojagh v FINA*, FINA Doping Panel 2/03; *CAS 2000/A/317, A v/ FILA; CAS 2000/A/310, L v/ FILA; CAS 2000/A/312, L v/FILA*

\(^47\) *Mette Jacobsen v FINA*, FINA Doping Panel 2/04

\(^48\) *Natalya Khudyakova v FINA*, FINA Doping Panel 4/03

\(^49\) FINA Doping Panel 2/01
The banned substance was allegedly contained in the cold medicine prescribed to her by her doctor. The Court, citing other authorities said:

"It is the presence of a prohibited substance in a competitor's bodily fluid which constitutes the offence irrespective of whether or not the competitor intended to ingest the prohibited substance".

Under regular private law in many countries, a parent is responsible for the acts of his/her child. However, within sports federations, the rules do not distinguish between minors and adults. Individual members below and above the age of majority enjoy the same rights and obligations.

1.3.3 Political will

For many years, governments the world over turned a deaf ear to calls to effectively ban doping in sport. There was no political will to stamp out this vice. The cold war era made things worse as sport was used as an avenue for superiority. The non-compliance of the former East Germany and the Soviet Union weakened western commitment to anti-doping.

At the 1984 Olympic Games it was revealed much later after the Games that the US cycling team did blood doping via blood transfusions and won nine medals. In 1988, sprinter Ben Johnson
tested positive for stanozolol, a steroid and was deprived of his gold\textsuperscript{54}. Although thousands of tests were carried out during a period of 35 years under the IOC, only 52 athletes were caught\textsuperscript{55}.

According to information attributed to Dr. Wade Exum, former USOC drug control Director\textsuperscript{56} between 1988-2000, US athletes tested positive for banned substances more than 100 times but only a few were barred from competing.

The United States Olympic Committee (USOC) and the Olympic Committee of the Soviet Union (SOC) signed a Doping Control Agreement on 21\textsuperscript{st} November 1988, which committed their organisations to work together to eliminate blood doping and the use of performance enhancing drugs in athletes under their control\textsuperscript{57}. This agreement did not achieve much due to cold war suspicions.

In Belgium, doping control is regulated since 1987 by the Flemish Government\textsuperscript{58}. Not only does the National Olympic Committee of South Africa (NOCSA) Anti-doping policy prohibit doping but it also lays out elaborate measures to be taken in testing, hearings

\textsuperscript{54} ibid.
\textsuperscript{55} 'Witness - Dying to Win': The history of doping in sport
\textsuperscript{57} W.T. Champion, Jr, Sports Law, West Publishing Co., St. Paul, Minneapolis, 1993
and sanctions in case of a positive test. In Australia, doping controls are governed by an Act of Parliament.

In 1993, the Danish government passed a law banning certain doping substances. The law forbids the substances to be produced, imported, exported, sold, supplied, distributed or possessed, except for prevention or treatment of illness or for scientific purposes. Denmark has a serious anti-doping programme. For example, in the year 2000, all Danish athletes were tested for doping prior to the Olympic Games in Sydney.

Legal scandals rocked the sports world in 1996 when several doping results could not be released for fear of not being able to survive the scrutiny of the court. At the same time, seven Russian athletes were caught having used a stimulant Bromantan.

In 1998 the sport of cycling came under severe scrutiny. A coach of the Festina team was caught with a trunkload of blood doping products. The team was thrown out of competition. Several other teams left the competition in protest. In the same year, Australian Customs officials caught a Chinese swimmer with 13 vials of human growth hormone.

It was strongly suspected that the US Olympic track champion Marion Jones used steroids at the Sydney Games though she was not

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60 Australian Sports Drug Agency Act 1990
61 Anti-Doping Danmark – Danish Law and Regulations, 2002
"caught"\textsuperscript{64}. In yet another recent report, the World 100 m champion Torri Edwards admitted using the banned stimulant nikethamide. Edwards inherited the crown from banned American Kelli White, who had earlier admitted using several performance-enhancing drugs\textsuperscript{65}.

Canada has doping regulations that set out the procedures to be followed in the case of a doping infraction. These regulations provide for a Doping Control Review Board. This Board is the highest Tribunal charged with doping matters and to which all sporting bodies are answerable in matters of doping\textsuperscript{66}.

The International Anti-Doping Arrangement (IADA) is a government to government agreement that reflects the desire of a number of nations to deal with the problems of drug use in sports. The current signatories to IADA are the governments of Australia, Canada, New Zealand, Norway, The Netherlands, Sweden, United Kingdom, Finland and Denmark\textsuperscript{67}.

During the 2004 Olympic Games in Greece, two athletes skipped doping tests. The IAAF has now charged the two Costas Kenteris and Katerina Thanou for missing the mandatory drug tests in the Olympic village. At the same time, Greek prosecutors charged the

\begin{footnotesize}
\begin{itemize}
\item \textsuperscript{63} ibid.
\item \textsuperscript{64} Sunday Standard, Sunday, July 25, 2004, p.35
\item \textsuperscript{65} Sunday Nation, July 25, 2004, p.47
\item \textsuperscript{66} Centre for Sport and Law, Inc., Canadian Doping Control Regulations, 1 January 2000
\item \textsuperscript{67} Anti-Doping Danmark – International Anti-Doping Arrangement – IADA, 2002
\end{itemize}
\end{footnotesize}
two sprinters with repeatedly obstructing doping officials by failing to attend requested drug tests\textsuperscript{68}.

Within the European Union (EU), there are two groups of countries with respect to domestic legislative approach to doping. The first group of countries has specific laws on doping (Austria, Belgium, Denmark, France, Greece, Italy, Portugal, Spain and Sweden); and the second group of countries have laws of a general nature about the use of drugs which have an impact on doping (Finland, Germany, Ireland, Luxembourg, The Netherlands and the United Kingdom).

On May 23, 1999 the EU organised the Conference on Sport where it spoke with one voice against doping. It advocated for the setting up of an international anti-doping agency that would be independent\textsuperscript{69}.

In 1999, a conference was held in Lausanne at which the World Anti-Doping Agency (WADA) was born. WADA took charge of doping controls at the Olympic Games in Australia the following year. The anti-doping effort was not unified until WADA came on the scene\textsuperscript{70}. It is not clear yet how WADA hopes to work with Nation states. An international agreement to set up an anti-doping agency (WADA) was hailed as a triumph for sport\textsuperscript{71}. This was the strongest show of commitment ever by countries of the world to fight doping in sport.

\textsuperscript{68} Hughes supra note 34
\textsuperscript{69} Supra, note 41
By the year 2004, all major sports organisations and over 100 Governments had signed off and agreed to the Code.

Some critics are sceptical about the reliability of dope testing and argue:

"They say they are testing, but they are running some random tests that are not nearly enough to make a difference. They need to research and develop good tests that are targeted at the substances that the athletes today are misusing. You have to invest in research and development. You have got to have effective and fair drug testing. Effective in that you catch them, and fair, in that the system assures that you are not catching innocent people".\(^72\)

For a very long time therefore, there was no strong international will to fight doping in sports. This has, however, changed with the EU approach and the coming into being of WADA.

1.3.4 Independence of Institutions responsible for Doping controls

Conflict of interest has previously undermined the independence of organs charged with the fight against doping. National sports federations have traditionally played a role in setting rules, promoting athletes as well as selling sports events to the media. Considering that these are also involved in doping controls and their analyses, a conflict of interest is sure to arise\(^73\). In addition, this

\(^{71}\) BBC News Online: Sport, Thursday, Feb. 4, 1999, http://news.bbc.co.uk/1/low/sport/272083.stm
\(^{72}\) http://more.abcnews.go.com/sections/sports/DailyNews/oly_doping000927.html: Doping Dilemma: Why should top athletes risk using banned substances?
\(^{73}\) Mieth and Sorsa, supra
could also partially explain why many stakeholders wanted and settled for the independent WADA to take control of doping.

Issues of jurisdiction have also arisen, thereby putting the question of the independence of bodies in charge of doping to test. For instance, Yuliya Pidlisna tested positive at a swimming competition organised by the Ligue Europeenne de Natation (LEN), who also conducted dope tests. LEN conducted doping controls according to FINA Rules. The above named swimmer tested positive for 3'-hydroxystanozolol. She belonged to the Ukrainian Swimming Federation. LEN suspended the swimmer provisionally and informed the Ukrainian Swimming Federation. The national federation suspended her and informed FINA. A FINA Doping Panel hearing this case stated that:

"Despite the doping offence having been committed at a LEN event the swimmer is under the jurisdiction of FINA."

Issues have also arisen with respect to the conflict of jurisdiction between municipal courts and arbitral tribunals appointed by international sports sports federations. In the case of the swimmer Katerina Bliamou who tested positive for norandrosterone the FINA Doping panel, relying on case law, said that the judgement made by a national civil court may be binding on the national swimming federation in the domestic jurisdiction, but certainly not on FINA, especially, where FINA was not a party to the
proceedings\textsuperscript{75}. In a related case, where a national federation has not followed the rules of the international federation within its jurisdiction, its decision has been overturned. In \textit{Reza Ojagh v FINA}, the I.R. Iran Amateur Swimming Federation suspended the swimmer for 2 years instead of 4 years as recommended by FINA. This decision was overruled by FINA, which insists that its rules be enforced by its affiliates within an affiliate's jurisdiction\textsuperscript{76}. CAS confirmed the decision of FINA in the case of Claudia Poll, thereby throwing out her appeal\textsuperscript{77}. FINA and CAS overruled the findings of a domestic court of New Zealand in doping matters\textsuperscript{78}.

The Football Association handed out a seven-month ban on Chelsea striker Andrian Mutu for testing positive for cocaine. WADA criticised this decision as being too lenient and not in line with the minimum recommended two-year ban\textsuperscript{79}.

The USA Track and Field Federation (USATF) and IAAF have been accused of a cover-up in the doping case of Jerome Young. It was not until after the 2000 Olympics that it became clear that Jerome had tested positive and that he should have been banned from participating in those games\textsuperscript{80}.

\textsuperscript{74} Yuliya Pidlisna \textit{v} FINA, FINA Doping Panel 5/03; Mette Jacobsen \textit{v} FINA, FINA Doping Panel 2/04

\textsuperscript{75} Bray \textit{v} FINA, FINA Doping Panel 01/01; Katerina Bliamou \textit{v} FINA, FINA Doping Panel 3/02; Vaseleios Demetis \textit{v} FINA, FINA Doping Panel 2/02

\textsuperscript{76} Reza Ojagh \textit{v} FINA, FINA Doping Panel 2/03

\textsuperscript{77} Claudia Poll \textit{v} FINA, FINA Doping Panel 1/02

\textsuperscript{78} Bray \textit{v} FINA, FINA Doping Panel 01/01


\textsuperscript{80} WADA, WADA/IOC Commission issues further report on Young Case, 30 September 2004
In the case of Ben Johnson, who tested positive for the banned steroid nandrolone at the Seoul Olympics in 1988, he continued to train despite the ban imposed on him then. In 1999, a Canadian arbitration ruled that Johnson had not received due process and would therefore be allowed to compete in Canada. The IAAF, however, upheld the life ban on him\textsuperscript{81}.

The US Olympic Committee cleared three athletes (Lewis – a nine time Olympic Champion, Joe DeLoach and Andre Phillips) to participate in the 1988 Olympics although they had tested positive. They all won Gold medals at the games. Whereas USOC thought it acted properly and within the rules, WADA said USOC acted improperly and the athletes should have been ruled ineligible for the Olympics\textsuperscript{82}.

It can thus be concluded that an international federation is free to impose a sanction independent of the outcome of the proceedings at a national level\textsuperscript{83}.

Another problem associated with the ability of sports bodies to control doping relates to national legislations. Some national courts have made decisions that are contradictory to those of IFs\textsuperscript{84}. For example, at about the time that British courts were rejecting an

\textsuperscript{81} Witness – Dying to win 4: The Ben Johnson story, 2004
\textsuperscript{82} Wilson, S. (2003). “IOC asks for more information on US doping cases, including Lewis”, http://ca.sports.yahoo.com/030517/6/t5zh.html
\textsuperscript{83} CAS 96/156 Foschi v/ FINA, Award of October 6, 1997, p. 38; CAS 2001/A/337 Bray v/ FINA, Award of March 22, 2002, p. 115
\textsuperscript{84} B. Houlihan, “Anti-Doping political measures: the new approaches after the Lausanne Meeting on Doping”, IEC Conference, 1999
appeal by Paul Edwards against an IAAF imposed 4 year ban and the Canadian court was rejecting Ben Johnson's appeal against his life ban, the German courts gave opposing signals. A Munich Regional Appeals Court in March 1995 declared in the matter of Katrin Krabbe's suspension for three years for steroid use that such a decision was invalid because a suspension of more than two years contravenes the constitutional principle of proportionality. Additionally, German courts have argued that "the maxim 'nulla poena sine culpa' " (no penalty without fault) has the status of a constitutional principle. Hence, the application of the strict liability approach violates the constitutional principle and therefore cannot be enforced. Be that as it may, the application of this concept has been challenged by local courts in USA and Germany. In USA, a swimmer, Jessica Foschi tested positive for the anabolic steroid mesterolone in 1995 and was penalised under the rules of FINA. She appealed against the penalty to the American Arbitration Association (AAA). The AAA, departing from the decision of CAS, rejected the idea of 'strict liability' and said:

"having concluded that the claimant and all those connected with her are innocent and without fault, we unanimously conclude that the imposition of any sanction on the claimant so offends our deeply rooted and historical concepts of fundamental fairness so as to be arbitrary and capricious."

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85 B. Houlihan, Anti-Doping political measures: the new approaches after the Lausanne meeting on doping, IEC Conference, 1999
This turn of events calls for a need to harmonise national legislations with the rules touching on doping controls, and also the confirmation as to whether strict liability is the law in doping cases.

The harmonisation of lists of banned substances and practices across different sports has also been an issue. This is due to two reasons. Firstly, some federations have decided to vary the IOC list in order to take account of the particular characteristics of their sport. For example, beta-blockers are not banned in basketball whereas alcohol is banned in motor sports. Secondly, some federations fail to update their lists after the IOC has made some changes. Within a given sport, IFs impose a uniform list on their domestic federations. However, WADA is now responsible for producing a uniform list called the “Standard” and this is available on the Internet.

In a Declaration of the Conference of Stakeholders hereinafter referred to as the Lausanne Declaration on Doping in Sport, the question of responsibilities of various stakeholders with respect to doping matters does not appear to have been well settled. The Declaration says under paragraph 5: Responsibilities of the IOC, the IFs, the NOCs and the CAS that:

"The IOC, the IFs and NOCs will maintain their respective competence and responsibility to apply doping rules in accordance with their own procedures, and in cooperation with the International Anti-Doping Agency. Consequently, 

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86 Supra, note 84
87 Lausanne Declaration on Doping in Sport, adopted by the World Conference on Doping in Sport, 4 February 1999, Lausanne, Switzerland
http://www.cannock.ac.uk/sports/sport_zip/Declaration_e.html
decisions handed down in the first instance will be under the exclusive responsibility of the IFs, the NOCs or, during the Olympic Games, the IOC. With regard to last instance appeals, the IOC, the IFs and the NOCs recognise the authority of the Court of Arbitration for Sport (CAS), after their own procedures have been exhausted".

Although the Lausanne Conference gave birth to the World Anti-Doping Agency (WADA), a major problem concerns the relationship of the federations to the Agency and the willingness of the former to transfer authority. Major federations such as FIFA, UCI and IAAF have shown reluctance to let go. For example, FIFA and UCI refused the IOC benchmark penalty for steroid use of two years. In like manner, the IAAF has threatened not to recognise CAS88.

The Court of Arbitration for Sport (CAS) was founded on 30 June 1984 to help resolve sports related disputes. It has its headquarters in Lausanne89. In 1993, the Swiss Federal Supreme Court issued a judgement in which it expressed reservations about the independence of CAS vis-à-vis the IOC based on its organisational structure and financial links90. This judgement led to the formation of the international Council of Arbitration for Sport (ICAS) in Paris on 22 June 1994 and the Code of Sports-related Arbitration came into force on 22 November 1994. The ICAS is a private law foundation subject to Swiss Law and it has its headquarters in Lausanne.

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88 Supra, note 84
89 Swiss Federal Tribunal: Judgement of 27 May 2003, 1st Civil Chamber
90 ATF 119 II 271 rec. 36, p.280
On the question of the independence of CAS after the above changes, some writers think it is now independent\textsuperscript{91}. Some other scholars are not convinced that CAS has become independent through the said changes at all\textsuperscript{92}. The independence of CAS was challenged based on its structure, mode of appointment of arbitrators and on its organisation, financing and functioning before a Swiss Federal Tribunal\textsuperscript{93}. The Court held that CAS was independent.

By November 2003, 98 sports organisations and 89 countries had signed the Copenhagen Declaration, signalling their acceptance of the WADA Code. Plans are underway to prepare a Convention under the auspices of UNESCO before the 2006 Olympic Games\textsuperscript{94}. Hopefully, such a Convention will iron out some of the areas of conflict presented in this section.

Kenya does not have legislation on doping control. However, there are some Acts of Parliament that deal with some of the prohibited substances.

1.4. Economic Issues


\textsuperscript{93} Swiss Federal Tribunal: Judgement of 27 May 2003, 1\textsuperscript{st} Civil Chamber.

\textsuperscript{94} WADA, http://www.wada-ama.org/en/t1.asp?p=29627&x=1&a=80609
In what came to be known as the Truman doctrine, President Harry Truman\(^95\) tried to link economic development to technological capacity in which he said:

"More than half the people of the world are living in conditions approaching misery. Their food is inadequate, they are victims of disease. Greater production is the key to prosperity and peace. And the key to greater production is a wider and more vigorous application of modern scientific and technical knowledge."

Many years after that inaugural address, the situation with regard to distribution of wealth has not changed. In fact, what followed this "dream" were massive underdevelopment and impoverishment, untold exploitation and oppression. Many countries in Sub-Saharan Africa and most parts of Asia are experiencing a severe debt crisis, increasing poverty, malnutrition and violence. The 1999 GNP figures (in USD) for selected countries in Sub-Saharan Africa are: Botswana (3,240), Kenya (360), Tunisia (2,100) and South Africa (3, 160). Overall, Sub-Saharan Africa recorded a GNP of USD 500, Middle East and North Africa (2, 060), South Asia (440), East Asia and Pacific (1,000), Europe and Central Asia (2, 150), Latin America and the Caribbean (3, 840)\(^96\). This picture clearly shows the disparity in the distribution of wealth globally. It has been suggested that technology can be measured in terms of existing stock\(^97\), such as, firstly, capital goods and its most skill-intensive part, the machinery

\(^{96}\) World Development Report 2000/2001, p. 275
\(^{97}\) Bhagavan, p.3
sub sector, secondly, professionally skilled people (scientists, engineers and technicians), and, thirdly, R & D personnel and R & D investment. Following such classification, developing countries can be grouped into "strong", medium" and "weak" South. Countries of the strong South include Brazil, China, India and Mexico. They are self-reliant. These countries export some of their technology, but they are not at the same level as the North. The "medium" countries import technology and are not self-reliant. These include Argentina, Chile, Indonesia, Malaysia, Pakistan, Thailand, and RSA. The "weak" South countries import all the technology. Examples here include Sub-Saharan Africa (except South Africa), parts of South and West Asia, the Caribbean, Central America and the northern areas of the Andes.

Developments in the South are rated as uneven. Although private investments seem to be increasing in the South, these appear to be concentrated in some ten better off developing countries. Third world countries as a group get less than 2% of foreign direct investment (FDI). Their share of World trade is estimated at 0.2% and foreign aid is decreasing by the day. Over a billion people in the South live in abject poverty.

The Republic of South Africa (RSA) spends approximately USD 12.5 million on biotechnology. Of this, international support constitutes about 10%. By 1998, RSA had about 1,200 skilled professionals.

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researchers of whom 40% were Masters degree and PhD holders. RSA has several centres of excellence although it generally has a shortage of expertise and skills. For example, the 1997/98 R & D Survey indicated that RSA had 7 researchers per 10,000 labour forces, compared to USA's 59 per 10,000 and Korea's 64 per 10,000.

In Kenya, it has been observed that the majority of scientists have basic knowledge in genetics and molecular biology, but they lack hands on experience. Research is under funded as 90% of the allocations for research are spent on staff emoluments. A major problem in Kenya is that the existing capacity of scientists may be under utilised due to low levels of funding for R & D activities and poor working conditions. As opposed to RSA, R & D activities in Kenya depend on donor funding.

In Uganda, a shortage of highly trained manpower in fields of biotechnology has been reported. Also, it is estimated that the government of Uganda spends less than 0.2% of her GDP on R & D activities. Most of the funds obtained from donors are used to finance equipment in laboratories.

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100 I. Parker, A national Biotechnology Strategy for South Africa, 2001
102 B. Keizire, P. Asiimwe, and D. Kyetere, Agricultural Biotechnology Assessment in Sub-Saharan Africa: Country specific study - Uganda, ACTS: Nairobi, 2000
This economic picture has an influence on decisions regarding technology transfer. For many countries it makes more sense to address mundane food, health and education issues before thinking technology. This could be partly why many developing countries have not given doping control the serious attention it deserves. Nevertheless, so long as these countries want to stand up and be counted among the sporting nations of the world, they cannot continue burying their heads in sand regarding doping controls.

1.5. Technological capacity

Technological capacity takes two forms: Firstly, the technical standards of a laboratory conducting doping tests; and secondly, whether the technology is able to cope with the ever changing face of doping. On the one hand, a laboratory to be used for doping controls must meet stringent technical requirements which include accreditation by the IOC. The accreditation process involves a set of initial requirements regarding experience, official support and ethical commitment of the applicant laboratory; several comprehensive pre-accreditation tests and the Accreditation test itself. In the last test, a laboratory is expected to analyse a set of control samples in the presence of an IOC Medical Commission Delegate. An annual Re-Accreditation Process, similar to the Accreditation step but

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without the inspection, keeps track of the ongoing capacity of the accredited laboratories\textsuperscript{104}.

The process of accreditation and re-accreditation of laboratories by the IOC has become increasingly rigorous, as well the specification of urine collection and training of doping control officers. Some of these measures have been taken in response to appeals by athletes based on poor laboratory procedures. For example, in the case of the swimmer Claudia Poll\textsuperscript{105}, she alleged that the procedure used by the doping control officer in collecting, and transporting her urine could have introduced some form of contamination leading to her positive test. She alleged further that the sampling kits presented to her were faulty, she was not given a choice between several utilisable sampling kits, the officer did not present an appointment letter, and that samples taken on different days were exchanged. Although the swimmer was unable to prove that any of the above alleged faults led to a positive test, such complaints serve as a wake up call for sealing procedural loopholes. Arbitral Tribunals consider IOC accredited laboratories to be able to carry out tests and analyses in accordance with the highest standards and the results of such analyses are presumed to be scientifically correct\textsuperscript{106}.


\textsuperscript{105} Re Claudia Poll, FINA Doping Panel 1/02

\textsuperscript{106} Re Katerina Bliamou, FINA Doping Panel 3/02; Re Mahmoud Jadaan, FINA Doping Panel 5/02; Re Marko Strahija, FINA Doping Panel 1/02
Failure to abide by the IOC stipulations leads to de-certification. The costs of setting up such a laboratory have been estimated at over USD 100 million, and the annual operating budget is estimated at about USD 1 m. These costs put such laboratories out of reach of many countries in the Third World as evidenced by the distribution of IOC accredited laboratories shown in table 1 below:

Table 1: Distribution of IOC accredited Laboratories\textsuperscript{107}

<table>
<thead>
<tr>
<th>Africa</th>
<th>Asia</th>
<th>USA/Canada</th>
<th>Latin America</th>
<th>Europe\textsuperscript{108}</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>6</td>
<td>2</td>
<td>2</td>
<td>17</td>
</tr>
</tbody>
</table>

In Africa, there are only two IOC-accredited laboratories, one in Tunisia and the other at the University of the Orange Free State in South Africa. The scarcity of doping control laboratories together with costs of dope analysis as well as poor transport infrastructure in third world countries make it difficult for these countries to conduct doping control tests on a regular basis. This point is best illustrated by the doping control test results submitted to the International Federation of Aquatics Associations (FINA).

FINA requires Member Federations to send in all results of doping controls in accordance with FINA Rules DC12.i:

"Member Federations shall report at the end of every quarter (March 31, June 30, September 30, and December 31) all results of doping controls within their jurisdiction to FINA sorted by

\textsuperscript{107} FIFA: Regulations Doping Control for FIFA competitions and out of competition, pp. 32-35

\textsuperscript{108} The EU countries are committed to having at least one laboratory of the accreditable standard in each of the Member States as per the Anti-Doping Convention (ETS No. 135)
competitor and identifying each date on which the competitor was tested, the entity conducting the test, and whether the test was in or out of competition.\textsuperscript{109}

In the National Federation Doping Controls Report, results for 2001 and 2002 were as shown in table 2\textsuperscript{110}:

\begin{table}[h]
\centering
\begin{tabular}{|c|c|c|}
\hline
 & 2001 & 2002 \\
\hline
Africa* & 103 (RSA) & 120 (RSA) \\
\hline
Americas & 563 & 939 (USA, Canada, Brazil) \\
\hline
Asia & 1017 (Japan & China) & 767 (Japan, Korea, China, Singapore, Taipei) \\
\hline
Europe & 2185 & 1713 \\
\hline
Oceania & 723 (Australia & NZ) & 488 \\
\hline
\end{tabular}
\caption{Doping control reports from the World submitted to FINA for the years 2001 and 2002}
\end{table}

It is apparent from table two that there are very few countries that have the capacity to comply with FINA requirements. For Africa, it is only South Africa! Kenya, alongside many other countries in the Third World, suffers from the absence of requisite technology\textsuperscript{111}.

The second technological challenge refers to the ability of current methods of testing in combating doping in sport. Difficulties have been experienced in this area. There is a high increase in new drugs, and this, together with chemical modifications of the old ones, makes it difficult to tell which substances to test for. Additionally,

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{image}
\caption{Graphical representation of the data}
\end{figure}

\textsuperscript{http://www.fina.org/DopingControl_NF2001_Reports.html: FINA Doping Control Programme; in Africa, only RSA seems to be carrying out doping control tests. In the Americas Brazil, Canada and USA are actively involved. Four countries in Asia namely, China, Japan, Korea and Singapore carried out tests. Only Australia and New Zealand carried out tests. The spread of countries that carried out tests in Europe is far much better.}
there is a scientific ambiguity that the inclusion criteria of compounds might be vague or inconclusive, since the side effects of compounds and their various interactions cannot be extrapolated with certainty\textsuperscript{112}. A major challenge lies in the detection of the administration of "endogenous-like" substances, such as some androgenic anabolic steroids or a full set of peptide hormones (EPO, high, IGF-1, insulin, etc.). In these cases, a presumption of doping will often be based on especially abnormal concentrations of the drugs themselves or some specific biomarkers. The extent to which the concentrations found differ from those occurring in the "normal population distributions" will be fundamental to the decisions taken. Even for some extreme values, some probability of "false negativeness" or "false positiveness" will be "statistically" present. This, therefore, makes room for some standard concepts of legal certainty, such as, "on a balance of probabilities", "prevalence of evidence" or "beyond reasonable doubt" to be applicable in legal cases related to doping using "endogenous-like" substances\textsuperscript{113}. A case in point is that of Claudia Poll, a Costa Rican swimmer, who tried to fasten onto such an ambiguity in her appeal to the CAS against a decision of FINA by arguing \textit{inter alia}, that the quantities of nandrolone, an endogenous anabolic steroid, detected in her urine samples were too low, considering that this substance can be produced naturally by

\textsuperscript{111} See notes 2 & 3 supra
\textsuperscript{112} Mieth and Sorsa, supra
athletes. In its ruling, the CAS Panel found that the quantity of nandrolone detected in Ms Poll's urine (7.5 ng/ml) was above the threshold of 5 ng/ml which is provided for by FINA Regulations\textsuperscript{114}.

Certain drugs can be used to dilute or mask urine samples. This difficulty has been overcome by including "masking" agents on the list of prohibited substances. In certain cases, some drugs used in training may be untraceable by the time competition and testing takes place, yet still provide the desired effects on performance. The regulation requiring "out of competition" testing is meant to cure this mischief.

Many cheating athletes have always tried to be ahead of the existing technology\textsuperscript{115}. Also, the BALCO Laboratory scandal illustrates how much the drug cheats try to stay ahead of the current doping control technologies. For Third World countries therefore to effectively participate in doping controls, they will not only need "start-up" technology but also continuous upgrading of that technology.

\textsuperscript{113} Segura, J. Supra at note 120
\textsuperscript{114} Claudia Poll v FINA, FINA Doping Panel 1/02
\textsuperscript{115} Witness: Dying to win: The History of doping in sport, 2004
CHAPTER TWO:
INTERNATIONAL LEGAL FRAMEWORK ON TRANSFER OF TECHNOLOGY FOR DOPING CONTROL

This chapter reviews the clamour by third world countries in the 1970s for transfer of technology on "preferential and non-commercial terms" tempered by concepts accompanied with the call of the 1970s, for a New International Economic Order (NIEO) and discusses the issues involved. A general willingness to transfer technology for doping control can be gleaned from the 1989 Anti-Doping Convention of the Council of Europe, the 1999 Lausanne Declaration and the 2002 Moscow Memorandum. On the question of intellectual property rights (IPRs), it emerges that the technology for doping control is in the public domain and the would be rights holders are not emphasising strict enforcement of IPRs.

2.1 Historical Aspects

The world became aware of the plight of third world countries in matters of technology towards the end of the sixties. The seventies therefore witnessed a beehive of activity by way of attempts to transfer technology to developing countries. The 1970 Resolution on the Development of Strategy for the Second UN Development Decade\textsuperscript{116} stressed the need for among other things, identifying and reducing obstacles to the transfer of technology to developing countries, and

\textsuperscript{116} International Development Strategy for the Second United Nations Development Decade, UN Res. 26/26 of 24\textsuperscript{th} Oct. 1970, paras 60-64
facilitating access to patented and non-patented technology for developing countries under fair and reasonable terms and conditions. During the same period, calls for the establishment of a new international economic order (NIEO) were made by a Special Session of the General Assembly of the UN. Attempts by the UN at producing a Code of Conduct for the Transfer of Technology became a cropper. Nations failed to agree on what would constitute a multilateral framework for the smooth transfer of technology. This left the issue of transfer of technology to be dealt with at a bilateral level and through specialised treaties.

There have been attempts to address the question of transfer of technology through a host of treaties. One such treaty that provides for transfer of technology is the UN Convention on Biological Diversity, commonly referred to as the CBD. Article 16 of the CBD is titled: Access to and transfer of technology and provides that:

"16(1): Each contracting Party ... undertakes ... to provide and or facilitate access for and transfer to other contracting Parties of technologies that are relevant to the conservation and sustainable use of biological diversity or make use of genetic resources and do not cause damage to the environment.

16(2): Access to and transfer of technology ... to developing countries shall be provided and/or facilitated under fair and most

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118 Draft International Code of Conduct on Transfer of Technology; Draft United Nations Code of Conduct on Transnational Corporations
favourable terms, including on concessional and preferential terms ...."

These treaties are not compelling enough in their provisions for transfer of technology. There are no sanctions imposed for failure to transfer technology to third world countries. It should be appreciated, however, that such treaties lay the basis for further negotiations under bilateral and multilateral arrangements.

Two issues emerged during the talks on transfer of technology. Firstly, developed countries stated that the technology that is so much sought after by developing countries does not belong to the state but to private companies, i.e. the technology is in private hands. These countries therefore found it difficult to commit themselves through obligations to transfer what they did not have. The second point is that third world countries want technology transferred to them on preferential and non-commercial terms. In this argument, one would, on the one hand, sympathise with developing countries because they suffer from a chronic budgetary deficit. In fact, they live on loans and their economies are unable to support the lifestyles they lead. Most third world countries have borrowed heavily from the Bretton Woods institutions and from other lenders. To this end, acquisition of technology at market values would mean further borrowing. On the other hand, technology transfer does not come about freely. It has been demonstrated that such transfer of technology between a home plant and a foreign plant could cost 20-60% of total investment costs
of a new plant. These costs are attributable to divergent technological capabilities of the parties involved\textsuperscript{120}.

Transfer of technology takes either a direct or indirect route. Directly, this could be through trade in technology, e.g. licensing, joint ventures and Foreign Direct Investment (FDI). Indirectly, this could take place through international trade in goods and services, cross-country movement of labour, and imitation\textsuperscript{121}.

Three factors that are likely to complicate the situation of third world countries with respect to transfer of technology for doping controls are: firstly, technology acquisition is not a one-off trade decision, but rather, an ongoing process. A simple dichotomous\textsuperscript{122} approach of "make it or buy it" choice does not accurately reflect the complexity of technology transfer. Secondly, if the war on doping is to be won, there is need to conduct random doping tests both during competition and out of competition. In fact, most sports organisations have already made provisions for such a continuous process of doping control\textsuperscript{123}. Thirdly, it is in the nature of doping itself that countries should endeavour to constantly renew their technology in order to efficiently perform the task of doping controls. The 1999 World Anti-Doping Code Article 4.5 on monitoring provides that:

\textsuperscript{121} Ibid.
\textsuperscript{122} Ibid.
\textsuperscript{123} FIFA Regulations. Doping Control for FIFA Competitions and out of Competition; International Olympic Committee. Medical Code and Explanatory Document
"WADA, in consultation with other Signatories and governments, shall establish a monitoring program regarding substances which are not on the Prohibited List, but which WADA wishes to monitor in order to detect patterns of misuse in sport...."

This emphasises the point that doping control is an ongoing activity that requires constant renewal of technology.

2.2 Aspects of Transfer of Technology in International Agreements on Doping Control

It has been recognised that since sport is in its very essence international, so must all problems that arise in connection with sport be resolved by means of international commitments.\(^{124}\)

The 1989 Anti-Doping Convention of the Council of Europe\(^ {125}\) sets out a clear agenda on transfer of technology in article eight. This article provides:

"8(2) (b). to promote co-operation between the staffs of their doping control laboratories....
8(2) (c). to initiate bilateral and multilateral co-operation between their appropriate agencies, authorities and organisations in order to achieve, at the international level as well....

Article 8(2)(b) and (c) paves way for staff exchanges as a way of capacity building. Additionally, even those that do not have laboratories or are planning on having laboratories are covered under bilateral and multilateral initiatives. This is even more explicitly put under article 8(3) as follows:

"8(3). The Parties with laboratories established or operating ... undertake to assist other Parties to enable

\(^{124}\) Italy Evaluation Team (2002). Compliance with Commitments Project - Respect by Italy of Anti-Doping Convention.

\(^{125}\) ETS 135 - Anti-Doping Convention, 16.XI.1989
them to acquire the experience, skills and techniques necessary to establish their own laboratories."

The tenor of Article 8 as a whole reflects a unique willingness on the part of developed countries to seek to transfer their technology to other countries. The argument that they previously used that they did not own technology but that technology was in private hands appears to have been abandoned. Article 8 of this Convention as read together with Article one would appear to suggest that there is no geographical limit to the international co-operation anticipated in article 8. Article one provides:

"Article 1 - Aim of the Convention

The Parties, with a view to the reduction and eventual elimination of doping in sport, undertake, within the limits of their respective constitutional provisions, to take the steps necessary to apply the provisions of this Convention."

Articles one and eight cited above can be relied upon by developing countries not only for capacity building but also for other aspects of technology transfer.

Under Article five of the said Convention, States Parties not only undertake to carry out research but to publish and circulate promptly new data from their research. Article seven provides for co-operation with national and international sports federations. The EU Council emphasised in its conclusions of its meeting in Vienna in December 126 this could probably be due to the fact that as opposed to the "industrial technology" that is "machine-intensive", biotechnology is knowledge-intensive, is cheaper to transfer, and that most of it is to be found in publicly funded institutions in those countries, over which institutions the respective governments have a direct influence as opposed to private firms.
1998 that Member States should co-operate with international sports bodies in the fight against doping\textsuperscript{127}. This way again, new technologies developed in Europe can reach third world countries directly through publications and seminars and indirectly through IFs.

The 1999 Lausanne Declaration which was adopted at the World Conference on Doping in Sport with the participation of representatives of governments, of inter-governmental and non-governmental organisations, and of sports persons throughout the world, is silent on the question of international co-operation. Paragraph 6 which deals with collaboration between the Olympic Movement and public authorities states rather vaguely that:

"The collaboration in the fight against doping between sports organisations and public authorities shall be reinforced according to the responsibilities of each party. Together, they will also take action in the areas of education, scientific research, social and health measures to protect athletes, and coordination of legislation relative to doping."

The 2002 Moscow Memorandum of Understanding on Anti-Doping in Sport, which is a follow-up on the World Conference that produced the Lausanne Declaration, is silent on the question of transfer of technology. However, article two on commitments of governments to co-operate internationally on anti-doping states that:

"2.1. The Parties will undertake to work individually and collectively in the international fight against doping in sport.

2.2. Specifically, the Parties will co-operate to harmonise international anti-doping practices and policies, and

\textsuperscript{127} Mieth and Sorsa, supra
"legislation in areas of distinct Government authority and capacity."

The commitment expressed herein requires bilateral and multilateral agreements to identify the specific areas and modalities of cooperation.

2.3 Intellectual Property Rights issues in Doping

Some scholars profer the view that biotechnology has two faces, viz. The knowledge discovery face (scientific R & D) and the use of such technology for economic purposes (technological change)\textsuperscript{128}. They consider the former to be a "public good" activity since pure knowledge is non-excludable. In other words, it is difficult for the producer of information to exclude its use once it enters the public domain. Such knowledge is also said to be non-divisible, i.e. such information does not easily lend itself to subdivision into units to which property rights can then be assigned. As a result, such technology is usually produced through some form of collective action through public financing and public institutions. It is knowledge that leads to technological change that becomes private property and acquires the character of a private good.

Adherence to IPRs is known to increase transaction costs of gaining access to biotechnology. However, with respect to least developed countries, this would appear to be more of a scape coat than a real obstacle in the transfer of technology. It is noteworthy

\textsuperscript{128} Kameri-Mbote et al., supra
that developing countries have failed to fully utilize the technological information that is already in the public domain, or that whose patents have expired. In fact, most of the biotechnologies that least developed countries need are in the public domain and are based on conventional practices. Some writers aver that countries that cannot utilise technologies in the public domain are not likely to utilise patented technologies.\textsuperscript{129}

In order to foster the transfer of technology, it is important that countries facilitate training of personnel and accessibility to information. The first category of knowledge and expertise required is the know-how needed to transfer and set up production facilities and all the various operational services associated with any investment project. The second level includes the expertise needed to maintain the new technology once it is in place, i.e. both the codified knowledge in manuals, schedules, charts and diagrams and the 'people-embodied know-how' fostered through training, information services and on-the-job training. The third level of knowledge and expertise is that needed to implement technical change: an understanding of how technological systems work and the techno-managerial capabilities needed to evaluate and transform technologies already operating to meet new conditions. It thus becomes imperative for third world

\textsuperscript{129} Juma and Mugabe, pp. 127-128
countries to develop a broad base of knowledge and expertise in complementary fields and promote research\textsuperscript{130}.

It has been argued that without access to information and knowledge, poorer nations will be forced into exclusion and marginalisation\textsuperscript{131}. Such a situation would not help solve an international problem like doping control in sport. Issues of IPR have been disposed of in the 1989 European Convention on Anti-Doping in Sport. This Convention allows for exchange of personnel (Article 8), prompt publication and circulation of any new information (Article 5(2) (c)) and access by sports organisations to laboratories on the territory of another Party (Article 5(1) (b)). For instance, the IADA International Standard for Doping Control is a publicly available standard (ISO PAS). This standard is now publicly available to all organisations around the world and is expected to contribute to the harmonisation of the anti-doping standard throughout the world\textsuperscript{132}.

It therefore appears that issues of intellectual property rights should not be allowed to cloud the debate on transfer of technology relevant for doping controls to developing countries.

2.4 Summary

The initial resistance to transfer of technology to third world countries exhibited by the North in the '70s appears to have waned. Latter day treaties have explicit provisions on transfer of technology.

\textsuperscript{130} ibid, p.129
\textsuperscript{131} Wijkman, supra
Even where such transfer is not on “preferential and non-commercial terms”, the willingness to transfer is well documented. In fact the Conventions on Doping control are more explicit on the issue of transfer of technology. It emerges that technology for doping control is usually publicly funded and directly under the control of individual governments. In relation to IPRs, most of the required technology is in the public domain. It should be re-emphasized that two major weaknesses in all international conventions that have provisions for transfer of technology are, firstly, the countries with the desired technology, have no time frame within which to transfer such technology, and secondly, there are no sanctions against those countries that may decline to transfer technology. The would be owners do not insist on “selling it”. However, when all is said, there remains some costs that are associated with transfer of technology. The question of transfer of technology is thus far from settled. Hence, developing countries need to pay attention to modes of financing transfer of technology.

\[132\] Anti-Doping Danmark – International Anti-Doping Arrangement – IADA, 2002, p. 4
CHAPTER 3:
FINANCING OF TRANSFER OF TECHNOLOGY

3.0. Background

Finance is a critical aspect of technology transfer. Transfer of technology for doping purposes involves, training of personnel (both scientific and administrators), provision of infrastructure, i.e. laboratories, provision of ICT and other equipment, and regular exchange of information through publications, seminars and exchange visits. These various aspects are indicative of the diverse forms of financing that must be adopted in order to realise transfer of technology for doping purposes. It has been observed that the introduction of a new technology into a country usually requires investment, as does the diffusion of existing technologies within a country. This chapter examines the possibilities of various forms of public and private sector sources of financing transfer of technology for doping purposes.

3.1. Public-Sector Finance and Investment

The term public sector finance is used to include finances derived from government, official development assistance (ODA), trade finance, export credit agencies, and multilateral development banks. Public sector finance is vital in supporting transfer of technology. This involvement arises because the public sector has direct responsibility for managing public and common goods, and investing
in their protection and conservation. Public sector finance can be useful in three main ways, firstly, the public sector typically directly invests in a range of infrastructure, although this is changing. Such finance can be useful in setting up laboratories for doping control. Secondly, the public sector can also provide various incentives (tax benefits, grants, subsidies, etc) to private firms to encourage investment in technology. Here, the required infrastructure can be set up by private firms in the light of an enabling environment. Thirdly, the public sector is a major purchaser of goods and services, and can use its purchasing power to buy technologies. Public sector finance can thus be useful in maintenance and acquisition of materials for doping control. Public finance is more important with respect to long-term and infrastructure investment, and assumes different roles in different sectors. Public sector finance can be particularly useful in setting up laboratories or in upgrading existing facilities for doping control.

3.1.1. Government Finance

Traditionally, governments have been the principal suppliers of finance for infrastructure projects, which are seen as being in the public interest. The need to control doping practices should be understood as being in the public interest.
The allocation of government finance is subject to a number of influences, such as political pressure and central spending limits. Whenever a doping scandal breaks out, the image of the state to which the athlete caught doping belongs becomes equally tainted. Hence, doping should feature in political considerations in resource allocation.

Laboratories for doping control in many countries are public institutions housed at Universities or hospitals. Besides their role of dope testing they are used for teaching, diagnosis and research. It is highly unlikely that such laboratories will be of great interest to the private sector. Hence, government finance may remain useful for infrastructural development.

3.1.2 Official Development Assistance (ODA)

It is highly considered that ODA should not be seen as a leading source for investment in technologies, but rather be used to address the fundamental determinants of development, which include a sound

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policy environment, strong investment in human capital, well-functioning institutions and governance systems\textsuperscript{134}.

It is now accepted that aid can be more effective and useful to development if it is focused on areas such as capacity-building, in providing incentives for direct investment (public or private) or in supporting the public private partnerships\textsuperscript{135}. In matters of doping control, Support for the dissemination of technological know-how must concentrate on developing the necessary human, scientific, technological, organisational, institutional and resource capabilities to underpin the long-term application of new doping technologies. Clearly, ODA can be useful in exchange programs of staff (capacity building), setting up information centres (ICT) and in acquisition of information, i.e. books, CDs, Tapes, Films etc. relevant to doping issues.

\textbf{3.1.3 Trade Finance and Export Credit Agencies}

The largest source of public sector support for cross border finance is trade finance in its various forms, where a government agency provides a guarantee on loans to support exports. Export credit is a massive area - in 1996 export credit agencies (ECAs) supported exports totalling US$432.2 billion\textsuperscript{136}. Such guarantees normally require that the business is either a state entity or is backed

\textsuperscript{134} OECD Application of Climate-Friendly Technologies in Developing Countries: the Role of International Collaboration. OECD/IEA Forum on Climate Change, March 1998a.

by a local bank guarantee. This mode of financing (medium and long-term) could enable LDCs set up infrastructure for doping over long periods of time and in the form of projects.

3.1.4 Financing by Multilateral Development Banks

The Multilateral Development Banks (MDB) look at technology transfer as part of their mission to encourage development. The International Finance Corporation (IFC), an affiliate of the World Bank, is most directly involved in private sector investment\(^{137}\). Some of the examples where private sector investment interface with the public sector in biotechnology include the Merck-INBio\(^{138}\) collaboration as well as the agreement between Dupont and the Indian Research Institute. These examples are pointers to the possible role of multilateral financing for doping control technology.

3.2 Private-Sector Finance and Investment

Private sector finance is increasingly important in both the national and international diffusion of technology, and the relationship between public and private is particularly important in the context of technology transfer. The pharmaceutical industry makes products that are used either in enhancing doping or controlling the same. The public sector may have the resources

\(^{136}\) Berne Union,. *Berne Union Yearbook*, Berne, 1998


\(^{138}\) Infra, note 140
(human capital) whereas the private sector has the finances. Collaboration between the two sectors can be mutually beneficial.

Certain types of finance appear to offer particular potential for helping to finance the transfer of technology. These include project finance, leasing, portfolio investment, venture capital and micro-credit.

3.2.1 Project financing.

Project finance is the packaging of investment into specific, stand-alone projects. Notably there is only limited recourse to other parties (e.g., the promoters and financiers) if the project runs into difficulties, so the project has to stand on its own merits. Of particular relevance to doping are laboratories, which are frequently financed this way. Project finance uses a range of finance instruments and typically consists of a mixture of debt (normally secured loans) and equity (strategic investors and institutions). Often there can be some flexibility over ownership of the facility - such as build-operate-transfer (BOT) structures. Project finance is particularly relevant where a government intends to set up a laboratory for doping analysis on a BOT basis. Project financing can also come in handy where there is need to upgrade certain laboratories to international standards.

3.2.2 Leasing.

Leasing is a highly flexible form of finance used throughout business to finance everything from photocopiers to aircraft. In 1994
over US$350 billion of new equipment, machinery and vehicles were financed through leasing, and some US$44 billion in developing economies. Leasing offers several advantages such as simplified security arrangements, convenience and speed, flexibility, low transaction costs and frequently tax advantages. Leasing can thus be useful in the acquisition of computers, software, fax machines, scanners, copiers and other equipment relevant to doping control.

3.2.3 Venture capital.

Venture capital is particularly relevant to the development and transfer of new technologies. Venture capitalists are prepared to back risky investments in return for high returns and will invest in small companies, such as those who have developed new technology, and/or have difficulties raising capital from most other investors. Venture capitalists have tended to focus on high-return sectors such as computer software and biotechnology. Venture capital can be used to set up local companies that can produce/supply materials and equipment for doping control. This mode of financing can help set up local shops that manufacture and or import spare parts of equipment required in doping control laboratories.

3.3. Multinational Corporations (MNCs) and Foreign Direct Investment (FDI)

Western multinational corporations are sometimes at the leading edge of lean production techniques and new ways of working
with the community. Transfer of these approaches through foreign direct investment by MNCs can be a critical pathway for developing countries to acquire new technology.

The importance of MNCs and FDI can be seen in the fact that those countries in Africa with a heavy presence of MNCs, namely, Tunisia and South Africa, are the only ones with doping control laboratories. MNCs have three major advantages, firstly, they can recruit the best manpower and compensate them well thereby retaining them, and secondly, they can afford state of the art technology; thirdly, they can generate new technology where such technology is necessary but lacking. Governments can therefore use MNCs to acquire technology for doping control.

3.4. Public-Private Partnerships

Public private partnerships are increasingly seen as an effective way in which the public sector can work with the private sector to achieve public policy objectives.

An example of private sector-university collaboration is provided by the 1974 collaboration agreement between Harvard Medical School and Monsanto. These two entered into a 12-year agreement with funding of $23 million. This collaboration aimed at using the human capacity of the biochemistry department of the University. Under the contract, the industry (Monsanto) agreed to construct industrial facilities and to provide biological research materials. The University
on her part gave Monsanto the right to secure an exclusive worldwide licence for all inventions or discoveries made in connection with the project contract\textsuperscript{139}.

Another successful story of private sector/public sector collaboration is provided by the agreement between Merck & Co. Ltd and the Costa Rica National Biodiversity Institute (INBio). Hereunder, INBio agreed to supply Merck & Co. Ltd with chemical extracts from wild flora and fauna and micro organisms from Costa Rica's conservation areas in return for a range of financial and other benefits. This was a two year research and sampling budget totalling $1.135 million and royalties on any resulting commercial products. Merck also agreed to provide technical assistance and training to establish research capacity in Costa Rica\textsuperscript{140}. INBio has been a success story. Now INBio has signed an agreement with the Indonesian Institute of Sciences and the Ministry of State for Population and the Environment to provide services with a view to helping Indonesia establish a similar institution.

Most of these partnerships manifest themselves in the form of build operate transfer projects, voluntary agreements, technology partnerships programmes and informational initiatives in private finance.

\begin{itemize}
  \item P. Culliton, “Harvard and Monsanto: The $23 Million Alliance”, \textit{Science}, 25\textsuperscript{th} February, 1977
\end{itemize}
3.4.1 Build Operate Transfer Projects

The Build-Operate-Transfer (BOT) structure for projects has gained considerable popularity as a form of private-public partnership that enables private participation in the development of public infrastructure. BOT and related arrangements (e.g. BOOT Build Own Operate Transfer and BOO Build Own Operate) have been very successful in opening up public infrastructure to the private sector finance. BOT, BOOT and BOO can be used by governments to acquire state of the art laboratories for doping control.

3.4.2 Technology Partnership Programmes

The essential characteristics of technology partnerships between enterprises from industrial and developing countries are typically the following: (a) they are long-term arrangements; (b) they are mutually beneficial; (c) they contain an explicit commitment to cooperation; (d) they have as one of their central goals the learning process of both partners; (e) they occur within a technology system and within specific economic relations; and (f) they enhance the level and depth of both partners' technological capabilities. South Africa and the EU signed in May 2005 an agreement on the European-South Africa Science and Technology Advancement Programme to run for two years. This cooperation will involve workshops, conferences and developing

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141 UNCTAD, supra
The same report contains information to the effect that India's chemical laboratory has entered into a partnership with Dupont, one of the top biotechnology firms in the USA. India hopes to benefit through upgrading of the Laboratory's facilities and human capacity. Dupont sees this as an opportunity to globalize her R & D activities and get closer to the market.

Technology partnerships can be useful in effecting staff exchanges, sharing of information and upgrading of equipment for doping control.

3.4.3 Informational Initiatives in Private Finance

The public sector can aim to encourage private finance to be more active in the development, dissemination and transfer of technology through a variety of activities such as: providing particular support to businesses on accessing finance to help them in their dialogues with financiers. They can also be used in raising awareness within the financial sector on doping control, through seminars and working groups. Some countries have actively tried to get the financial sector involved in discussions on the appropriate response to Doping control.

3.5 Summary

Both public and private finance can be used in the acquisition of technology for doping control. Government finance is useful in

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infrastructural financing. Tied aid as exemplified through ODA is more useful at targeting areas such as capacity building and project preparation. Public-private partnerships are increasingly seen as an effective way in which the public sector can achieve public policy objectives by working with the private sector. Here, collaboration between university laboratories, hospitals and the private sector could result in upgrading of facilities at these institutions and training of personnel for doping control. All in all, numerous alternatives for financing transfer of technology exist. Kenya has several options to formulate appropriate policies that can foster the transfer of technology relevant to doping controls.
CHAPTER FOUR:
NATIONAL POLICY FRAMEWORKS ON TRANSFER OF TECHNOLOGY

4.0. Overview

In order to effect transfer of technology, there must be an enabling environment. Enabling environments include all stakeholders such as governments, research institutions, national NGOs, technology developers and businesses. Both developed and developing countries need to take actions to promote enabling environments\(^{143}\) for doping control purposes.

Policy tools for technology transfer can be useful in overcoming a variety of barriers to technology transfer. The United Nations\(^{144}\) sees the lack of indigenous technological capabilities, infrastructure and institutions as key barriers to developing countries conducting technology transfer\(^{145}\). Successful technology transfer policies must aim to strengthen national systems of innovation, social infrastructure and participatory approaches, human and institutional capacities,
macroeconomic policy frameworks, national legal institutions, and research and development (R & D).

4.1 National Systems of Innovation

Doping is an acknowledged international problem. At national level, several institutions need to combine their efforts in order to curb this menace. National systems of innovation are seen as the networks of institutions that initiate, modify, import and diffuse new technologies\textsuperscript{146}. Some scholars define it as:

"the set of institutions to create, store and transfer the knowledge, skills and artefacts which define technological opportunities"\textsuperscript{147}.

National systems of innovation reflect a complex mixture of institutions (e.g., financial; legal; scientific and technological; educational), public policies and business and social relationships. National systems of innovation depend upon the development of so-called technology infrastructure\textsuperscript{148}. Some scholars content that

"Technology infrastructure consists of science, engineering and technical knowledge available to private industry"\textsuperscript{149}.

On the need for social cohesion, Lundvall (1999)\textsuperscript{150} states:

\begin{thebibliography}{99}
\bibitem{145} G.R. Heaton, Jr., R.D. Banks. and D.W. Ditz, \textit{Missing Links: Technology and Environmental Improvement in the Industrializing World}, World Resources Institute, Washington, DC., 1994, p. 21
\bibitem{147} Managing National Innovation Systems, Paris, 1999
\end{thebibliography}
"today industrial and technology policies must be devised more broadly than has been the case—the societal framework is imperative for the effects of the policy."

Public policies should be favourable to the promotion of doping control. National-level systems of innovation must maintain a rhythm with global, regional and sub-regional levels of innovation151. Information communication technologies act as a powerful vehicle for the diffusion of information across distant communities152.

With respect to doping control there is need for close networking of laboratories in hospitals and colleges, information technology centres and the chemical industry responsible for production and supply of the required chemicals for doping analysis. Additionally, laboratories with a country need to enter in collaborative agreements with laboratories in other countries to promote state of the art knowledge in doping control.

Transfer of technology both within a country and between countries, are influenced greatly by national systems of innovation. LDCs should therefore focus on building or strengthening scientific and technical educational institutions and modifying the form or operation of technology networks.

4.2 Participatory approaches

On the one hand it has been shown that many projects initiated in Western capitals for implementation in LDCs have become a cropper. On the other hand, participatory approaches have been shown to improve the quality, effectiveness, and sustainability of development projects, and strengthen ownership and commitment of government and stakeholders. Traditional African culture is associated with communalism, low competitiveness and an absence of a work ethic. Contrastingly, Western culture has individualism, cutthroat competition and lack of "humanity" as its keystones. Professor B.A. OGot captures this with the words:

"... traditional African culture and Western and Islamic tradition coexist in Africa in a state of tension and conflict. Traditional African culture is characterised by a humanist and socialist ethos, Western culture is motivated by acquisitive capitalist values and Christian ideas of man as sinful and Islam has its own rules on how to organise a society and on what is a good life."

These contrasts call for discussion, negotiation and understanding before Western technology can be successfully transferred to Africa and other third world countries.

Participation of the main stakeholders in the assessment stages can help establish a process that will produce a technology selection
better matched to local needs. Participation has been found to be a crucial tool to engage the 'main protagonists' rather than regarding them as 'targeted beneficiaries' and thus increased success. It is widely recognised that people and civil society are key players to maintain long-term efforts on anti-corruption programmes. Public awareness campaigns can focus on the harm done by corruption, the misuse of public money, denied access to public services, and the public duty to complain when public officials act corruptly. Such campaigns can empower civil organisations to monitor, detect and reverse the activities of the public officials in their midst, by drawing on the expertise of accountants, lawyers, academics, non-governmental organisations, the private sector, religious leaders and ordinary citizens. Participatory approaches can ensure that governments do not import obsolete machines for doping analysis.

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158 G. Kindra, Social marketing strategies to fight corruption. In Transparency International and Economic Development Institute (eds), New Perspectives on Combating Corruption, Publication prepared for Transparency International’s Annual General Meeting held in Kuala Lumpur, Malaysia,
4.3 Human and Institutional Capacities

The building, developing and strengthening of institutions' and people's skills is said to underpin an enabling environment for technology transfer. Many studies acknowledge that technological capacity varies greatly from country to country, and stress that case studies and other types of analyses should assess the needs of particular countries.

Factors that contribute to the lack of expertise in biotechnology include lack of opportunities for these graduates in either academic or industrial positions, brain drain, poor remuneration of qualified personnel (e.g. a post-doctoral fellow in South Africa earns 40% of the amount his/her counterpart earns in Europe or America). A similar situation obtains in Australia where there are reports that Universities are unable to fill top positions because of poor pay. In less than three decades Africa is reported to have lost a third of her professionals. Africa is said to have lost about 60,000 middle- and high-level managers between 1985 and 1990, and about 23,000

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159 K. Hoffman, and N. Garvin, Managing International Technology transfer; A Strategic Approach for Developing Countries. IDRC-MR259e, International Developing Research Center, Ottawa, 1990

professionals emigrate each year in search of "greener pastures". At the same time, Africa is said to spend $4 billion a year to replace their professionals with expatriates\textsuperscript{163}. These factors also apply to experts for doping control.

Capacity building is neither easy nor quick: Capacity building involves tacit and uncodified knowledge that is difficult to purchase on the international market\textsuperscript{164}. As a way of acquiring technology, it is recommended that training programmes for local experts be viewed in the context of long-term institutional development. Such training should involve both university education and specialised courses\textsuperscript{165}. Developing countries have the added burden of retaining the expertise thus trained.

### 4.4 Macroeconomic Policy Framework

Macroeconomic conditions that act as barriers to technology transfer include lack of access to capital, a poorly developed banking sector, lack of available long-term capital, high or uncertain inflation or interest rates, high import duties, uncertain stability of tax and tariff policies, investment risk (real and perceived), and risk of expropriation. Policy tools related to macroeconomic conditions to encourage foreign direct investment (FDI) and access to technology

\textsuperscript{161} I. Parker, A National Biotechnology Strategy for South Africa, 2001, p.24
\textsuperscript{162} Stackhouse, supra
\textsuperscript{163} M. Machuka, & M. Memeu, M. "How brain drain is costing Africa billions", The Standard, Monday, 30 May 2005.
\textsuperscript{165} ibid, p.134
can include macroeconomic stability, such as low inflation and stable and realistic currency. Also the deregulation of the investment regime, and free movement of private capital are favourable to FDI. The presence of an independent legal system based on the rule of law which provides for the settlement of disputes ranging from direct negotiation among the disputing parties to third party arbitration is also seen as a plus point by private investors.

Another policy tool is the removal of mandatory local ownership requirements. Companies that trade in drugs and chemicals or spare parts for equipment useful for doping control should be allowed to set up shop even with 100% foreign ownership. There is, however, a real fear that allowing foreigners to control the commercial sector would impact negatively on the political management of a sovereign state.

4.5 Fiscal Measures: Tax Incentives and Guarantees

Governments can take a number of fiscal actions to encourage the uptake of technology. It is necessary to streamline and reduce tax rates to competitive levels. Low tax rates have been found associated with high levels of direct foreign investment. Pricing of both the new technology and its complements and substitutes is just as important.

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Some of these measures are investor tax incentives, capital expenditure tax incentives, and loan guarantee schemes.

4.5.1 **Investor tax incentives.**

Governments can seek to encourage investment by supplying tax incentives for investors in certain types of companies or investments. One example is in the UK where private investors buying venture capital funds and new shares in unlisted businesses can partially offset the investment against income thus reducing tax liabilities. This has helped to encourage investors to put capital out into new technologies. An alternative approach has been taken in the Netherlands where the Government has given a tax-free status to returns on investments in approved projects. These have succeeded in attracting substantial amounts of capital and in reducing the cost of finance. Other possible tax incentives could include tax holidays as currently practiced in the EPZ and zero-rating of tax on machines, chemicals and materials for doping control. Investor tax incentives can help "localise" technology so that materials and equipment required for doping control can be locally accessed.

4.5.2 **Capital expenditure tax incentives.**

Another way to encourage the uptake of new technology is by providing accelerated capital depreciation on certain equipment - in extreme cases all in the first year, or alternatively on a faster schedule than normally used. One advantage of accelerated capital allowances
is that they can usually be combined with leasing to provide an accessible and flexible sort of financing.

4.5.3 Loan guarantee schemes.

In order to help support new business development, a number of governments have introduced loan guarantee schemes to support domestic small business development. They consist of the central government guaranteeing loans made by domestic banks to the small business sector to encourage the development of that sector. In most cases only a partial guarantee is provided so the participating private sector banks have an incentive to lend prudently. Such schemes can be useful in setting up firms that deal in materials and equipment for dope analysis.

4.6 National Legal Institutions

A variety of national legal institutions are needed to secure intellectual property rights and promote good governance and eliminate corruption.

4.6.1 Intellectual Property Rights Protection

Weak legal institutions in host countries can be a serious barrier to technology transfer agreements. If actors with IPRs or their licensees cannot protect income flows, they will either avoid transferring leading technologies into jurisdictions with weak IP laws or enforcement systems, or will export only second line, more exposed
technologies which put at risk less of their capital stock\textsuperscript{169}. Luckily enough for doping control, most of the technology required is already in the public domain. Where this is not the case, the international mood to control doping is so high that the North appears ready to overlook IPRs. However, this does not rule out the general need for IPRs laws. Thanks to the World Trade Organisation (WTO), most countries of the world, who are members of WTO are either already TRIPS compliant or are about to enact laws to become TRIPS compliant. The new kid on the block in this regard is India, which until recently, never respected foreign owned IPRs.

\subsection*{4.6.2 Governance and corruption}

Good governance speaks to transparency, political stability, public audits, participation, accountability and fairness, the rule of law, and the absence of corruption\textsuperscript{170}. One of the most controversial elements of good governance, the absence of corruption continues to be a challenge to third world countries.

Corruption has been defined as

\textit{"behaviour which deviates from the formal duties of a public role because of private regarding (personal, close family, private...}
clique) pecuniary or status gains; or violates rules against the exercise of certain types of private regarding influence"\textsuperscript{171}, or more recently as "the abuse of public roles or resources for private benefit"\textsuperscript{172}. In developing countries corruption rears its ugly head particularly in procurement processes which public officials may want to use to get rich quickly. To these ends, governments can strengthen national legal institutions.

4.7 Research and Development (R & D)

Technology capacity at both the inception/assessment and replication stages of the technology transfer process have to be underpinned by R & D. This calls for participation of national systems of innovation and international cooperation between research institutions (public) and private sector entities in research and technology development. The technological capacity of the poor countries is at present far too limited to bring about adequate responses. It is estimated for instance, that only 4% of the world's R & D activities take place in the South\textsuperscript{173}. It is also estimated that an out of competition doping test can cost between USD 500 and USD 1000, and that clinical trials to confirm a substance like human growth hormone could cost as much as USD 5.5 m\textsuperscript{174}. The budgetary

\textsuperscript{171} J.S. Nye, "Corruption: a cost - benefit analysis", American Political Science Review, LXI (2), 1967
\textsuperscript{174} Houlihan, supra
allocations for research in third world countries may require enhancement to accommodate doping control.

Collaboration at the international level is considered good for bridging the gap in biotechnology research and development (R & D) by enabling the transfer of technology and expertise from developed to developing countries. Through such partnerships, international institutions are able to diffuse their technologies, products and services to developing countries. Such collaboration is provided for in the Anti-Doping Convention of the EU Council. Developing countries need to take a brave step and make R & D in doping controls a budgetary priority.

4.8 Technology Intermediaries

The World Bank and many other agencies have recognised that technology intermediation is needed to reduce barriers to technology transfer associated with information, management, technology, and financing. Examples of technology intermediaries include specialised government agencies, non-governmental organisations, university liaison departments, regional technology centres, research and technology organisations, and cross-national networks. Non-

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governmental organisations in particular are playing a greater role in technology intermediation\textsuperscript{177}. The functions of technology intermediaries can include: education, information dissemination, and communication. They can also help in identification of skill and human resource needs. Technology intermediaries may be useful in selection, training, and development of personnel as well as in locating key sources of new knowledge. They can build linkages with the external sources of information among other functions.

Consumers or purchasers must be aware that technologies exist, must know their performance characteristics, reliability, capital costs, operating costs, and economic benefits, and must know how to maintain and service technologies or know of firms who can. While in most of the developed countries there are a multitude of information sources, the same is not the situation in the developing countries. Interviews with more than a hundred negotiators and policymakers in developing countries can be summed up in the words of one interviewee:

"we do not know what is available and what we really need"\textsuperscript{178}

Many sports officials have confessed to not knowing about doping—the rules, the substances, and penalties. Developing countries

\textsuperscript{177} K. Kozloff and O. Shobowale, \textit{Rethinking Development Assistance for Renewable Electricity}, World Resources Institute, Washington, DC., 1994

\textsuperscript{178} J. Gupta, \textit{The Climate Change Convention and Developing Countries: from Conflict to Consensus?} Kluwer Academic Publishers, Dordrecht, The Netherlands, 1997
should consider setting up technology intermediaries to facilitate the flow and exchange of information and services on doping control.

4.9 Summary

Third world countries need to put favourable policies in place in order to realise transfer of technology for doping purposes. Governments can build or strengthen scientific and technical educational institutions and modify the form or operation of technology networks—the interrelated organisations generating, diffusing, and utilising technologies. Governments can devise participatory mechanisms and adopt processes to engage the brain power inherent in these groups. Macroeconomic policies include direct and indirect financial support. Governments can be proactive in upgrading existing facilities, constructing new ones, providing targeted research grants, strengthening technical education, and directly investing in research and development. All these measures should be put together to promote doping control in developing countries.
CHAPTER FIVE:
CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions

The need to strengthen the control of doping in sport has been clearly demonstrated and efforts must be made to ensure that all developing countries participating in this human activity are properly equipped to join in this campaign effectively. In this context, the case of the developing countries needs special attention. Both the science of doping (drug use) and that of doping control are branches of biotechnology. It is apparent that third world countries lack both the infrastructure and the technical know-how in terms of doping control. However, for developing countries to meaningfully participate in international sport, they must of necessity acquire such technology.

It is gratifying to note that as opposed to the spirit of the failed attempts to come up with an international Code of Conduct on Transfer of Technology in the '70s, the North has shown more willingness to transfer technology as provided for in the UN Conventions that followed thereafter. It is noteworthy that all international conventions concluded in the '80's and beyond have provisions for transfer of technology. Respecting doping technology, the Anti-Doping Convention of the EU provides a lot of scope for transfer of technology.
Third world countries have gradually, albeit grudgingly, accepted that acquisition of new technology is not a free lunch. They cannot get it on "preferential and non-commercial" terms as they had demanded in the '70's. However, acquisition of technology for doping control is feasible. The options available for financing of various aspects of technology transfer indicate that the acquisition of doping technology by developing countries is no longer a mirage.

5.2. Recommendations

Several recommendations can be made. Firstly, third world countries need to enter into bilateral arrangements with individual member States of the EU with a view to tapping into the doping technology. Secondly, appropriate national institutions need to be either strengthened or established to support transfer of technology. Thirdly, as an aspect of good governance governments in developing countries should involve the local public in all aspects of acquisition of the preferred technology to promote acceptance and reduce all appearances of corruption. Fourthly, as an attribute of capacity building, the existing laboratories for chemistry/biochemistry can be renovated to accommodate doping technology. Alternatively, new projects can be initiated in the form of BOT. Fifthly, the ever changing nature of doping demands that the acquired technology be renewed from time to time. This means that funds must be availed in the
short- and medium-term for the purchase of new equipment, information modems and for staff exchange.

Sixthly, it is imperative that developing countries use the most appropriate and economical forms to "purchase" doping technology. And seventhly, third world countries should consciously include facilities for doping in their prioritisation of either health or education as such facilities can double up for either research, teaching or diagnostics.
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