A regulatory framework for the trans-boundary transportation of dangerous goods in Southern Africa: an environmental perspective

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Abstract

The goal of this dissertation is to analyse the extent to which the South African legal framework governing the trans-boundary transportation of dangerous goods, provides for the regulation of environmental aspects in terms of dangerous goods transportation. The dissertation examines the role of regional and sub-regional laws in this regard in an effort to ascertain whether there is sufficient legal certainty and harmonisation of laws for environmental regulation. No specific law currently exists in South Africa regarding the regulation of dangerous goods transportation, rather the regulation of dangerous goods is effected by a multiplicity of laws. This state of affairs illustrates the difficulty that exists and may be associated with the enforcement of the regulation of dangerous goods transportation. Despite this, the multiple laws vividly elucidate the fact that there is a considerable degree of environmental protection *vis-a-vis* dangerous goods transportation premised on the fact that all environmental impacts could never be avoided or eliminated, but can be reduced to an extent.

LIST OF ABBREVIATIONS

ACCNNR	African Convention for the Conservation of Nature and Natural Resources
AEC	African Economic Community
AU	African Union
CBRTA	*Cross-Border Road Transport Act* 4 of 1998
CBRA	Cross-Border Road Agency
CBRT	Cross-Border Road Transport
CEO	Chief Executive Officer
COIDA	*Compensation for Occupational Injuries and Diseases Act* 130 of 1993
CPA	*Criminal Procedure Act* 51 of 1977
CILSA	Contemporary and International Law Journal of South Africa
DEA	Department of Environmental Affairs
DG	Director General
DGs	Dangerous Goods
DRC	Democratic Republic of Congo
EA	*Explosive Act* 15 of 2003
FCA	*Firearms Control Act* 60 of 2000
FFFARSRA	*Fertilizer Farm Feed Agricultural Remedies and Stock Remedies Act* 23 of 1947
FBSA	*Fire Brigade Services Act* 99 of 1987

HSA	*Hazardous Substance Act* 15 of 1973
IBC	Intermediate Bulk Containers
ICLQ	International and Comparative Law Quarterly
MEC	Member of Executive Council
MHSA	*Mine Health and Safety Act* 29 of 1996
NEMA	*National Environmental Management Act* 107 of 1998
NEA	*Nuclear Energy Act* 131 of 1993
NRI	National Road Inspector
NRTA	*National Road Traffic Act* 93 of 1998
NWA	*National Water Act* 36 of 1998
OAU	Organisation of African Unity
OHSA	*Occupational Health and Safety Act* 85 of 1993
RC	Regulatory Committee
SA	South Africa
SABS	South African Bureau of Standards
SADC	Southern African Development Community
SA Mer LJ	South African Mercantile Law Journal
SAJELP	South African Journal of Environmental Law and Policy
SANDF	South African National Defence Force
SANS	South African National Standards

SANPF	South African National Police Force
SAPS	South African Police Service
SAYIL	South African Yearbook of International Law
SPTCM	SADC Protocol on Transport Communication and Meteorology
TTDGs	Trans-boundary Transportation of Dangerous Goods
THRHR	Journal of Contemporary Roman-Dutch Law.
TILJ	Texas International Law Journal
TWA	Transport World Africa
UN	United Nations

1 Introduction

Transport can generally be defined as the movement of people, goods and services from one place to another via road, rail, water and air. In terms of economic activities, whatever medium of transport is employed, rules and regulations are needed to guide and regulate the movement of people, goods and services. One of the purposes for the regulation of people, goods and services is to mitigate or avoid the adverse effects that may result from transport activity. Annually, a significant quantity of dangerous goods (DGs) is transported internationally, regionally and nationally. It has been shown that significant environmental damage could be caused during this transportation.[1] Transportation of goods is intrinsically dangerous and this danger is particularly evident when transporting DGs[2] as they have the potential of endangering human health and the environment.[3] In view of this, it becomes necessary and relevant to regulate DGs transportation because of the potential harm it may have on the environment and human health in general.[4] South Africa (SA) imports and exports goods to and from

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1 Poggolini 2005 *TWA* 27. See also Rossouw 2011 *Occupational Risk* 6 and Crane 2005 *TWA* 32.

2 Examples of dangerous goods (DGs) *inter alia* include: carcinogenic substances, oxidising substances, corrosive substances, gases, petrol, radioactive wastes, toxic chemicals and explosive substances.

3 See fn 1 above.

4 Regional, sub-regional as well as national laws regulate environmental protection and human health. See for example; art 4(1) and Paragraphs 10 and 11 of the Preamble of the *Bamako Convention on the Ban of Imports into Africa and the Control of Transbounday Movement and Management of Hazardous within Africa* of 1991 (hereinafter the Bamako Convention); art 58(1) of the *Treaty Establishing the African Economic Community* of 1991 (AEC); Art III(1)-(3) to be read with art XIII(1) of *the African Convention on the Conservation of Nature and Natural Resources* of 1996 (ACCNNR) and art 2(3) and art 4(1) of the Southern Africa Development Community (SADC) *Protocol on Transport, Communication and Meteorology* of 1996 (SPTCM). See further art 21(3)(e) of the Declaration and Treaty of SADC. Moreover, environmental protection and human health are clearly enshrined in various Constitutions of SADC Member States. This include *inter alia*: Art 95(1) of *the Constitution of the Republic of Namibia*. Online at: www.orusovo.com/namcon/. Last accessed 02/05/2012. Art 13 of *the Constitution of the Republic of Malawi,* 1994. Online at: www.unpan1.un.org/intradoc/groups/public/document/cafrad/unpan004840.pdf.Last accessed 02/05/2012. Art 72 of the *Constitution of the Republic of Mozambique*, 1990. Online at:www.confinder.richmond.edu/admin/docs/constitution_ (in_force_21_05...pdf). Last accessed 02/05/2012. In South Africa (SA), the *Constitution of the Republic of South Africa*, 1996 (hereinafter the Constitution) provides in s 24 that: "(1) Everyone has the right :(a) to an environment that is not harmful to their health or well-being; and (b) to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that- (i) prevent pollution and ecological degradation; (ii) promote conservation; and (iii) secure ecological

other countries[5] of which, a greater percentage is DGs.[6] In this regard, it becomes necessary to examine the regional and sub-regional regulatory framework that might be relevant in this context. The relevant regional and sub-regional regulatory instruments include: *the Bamako Convention on the Ban of Import into Africa and the Control of Trans-boundary Movement and Management of Hazardous Waste within Africa* (the Bamako Convention),[7] the *Treaty Establishing the African Economic Community* (AEC),[8] the *African Convention for the Conservation of Nature and Natural Resources* (ACCNNR),[9] and the Southern African Development Community (SADC) *Protocol on Transport, Communication and Meteorology* (SPTCM).[10] The aim of a regional and sub-regional framework is to ascertain whether there is sufficient legal certainty and

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sustainable development and use of natural resources while promoting justifiable economic and social development." This constitutional environmental right has been given further impetus in a number of legislation to include amongst others: the *National Environmental Management Act* 107 of 1998 (hereinafter the NEMA), the *Cross Border Road Transport Act* 4 of 1998 (CBRTA), *Explosive Act* 15 of 2003 (EA) and the *Hazardous Substance Act* 15 of 1973 (HSA).

5 Du Plessis "Cross-Border Gas Pipeline" 279.

6 SA exported 66,542 goods in 2009, 85,830 in 2010 and 97,551 in 2001. In the same years, SA imported 66,008 goods in 2009, 81,682 in 2010 and 99,769 in 2011. Source IMF, EIU Statistics SA. Online at:www.hktdc.com/info/mi/a/mp/en/1x006513/1/market-profiles/s. Last accessed 21/06/2012. See further Kotzé 2002 *SAYIL* 171. Du Plessis "Cross-Border Gas Pipeline" 279. Sasol, a major South African company imports gas from Mozambique.

7 The Bamako Convention was adopted by the Organisation of African Unity (OAU) on the 29th of January 1991 in Bamako, Mali. The Convention establishes a unanimous commitment for African states to prohibit the importation of hazardous waste substances into Africa and to establish a management regime for hazardous waste generated on the continent (Kummer *International Management of Hazardous Waste* 100). It posits the African position against the *Basel Convention on the Control of Trans-boundary Movement of Hazardous Waste and their Disposals*, Basel 1989. According to the General Assembly (GA) Resolution 119 of the former OAU (name is changed to African Union, AU) May, 1988, that adopted the Bamako Convention, it explicitly provided that the Basel Convention was insufficient in itself to address African problems and that a prohibition rather than ban was necessary to curb this problem in Africa. The Resolution further provided that the import of waste into Africa is a crime against Africans and the African continent. For further reading on the Bamako Convention see Kummer *International Management of Hazardous Waste* 100; Kummer *ICLQ* 1992 536; Naldi 2000 *SAJELP* 223-226; Van der Linde 2002 *CILSA* 107-108 and Morrison and Muffet *Hazardous Waste* 417. The Bamako Convention only entered into force in 1998.

8 AEC was adopted by the OAU in 1991 with the purpose of enhancing cooperation and integration among African countries in the economic, social and cultural fields. See art 4(1)(a)-(d).

9 The ACCNNR was adopted by the OAU in 1996 to amongst others preserve and conserve the environment and reinforce African commitments for the conservation of the environment. See further art II(1)-(3) to be read with art III(1)-(3).

10 The SPTCM was adopted in 1996 to establish amongst others transport, communication and meteorology systems that encourage and promote economic and social developments while being environmentally and economically sustainable.

harmonisation of laws for environmental protection as far as the trans-boundary transportation of dangerous goods (TTDGs) in Southern Africa is concerned.

In the SADC region,[11] SA, and its neighbours (Zimbabwe, Namibia, Mozambique, Swaziland, Lesotho and Botswana) are linked by road and this linkage accounts for huge quantities of goods being transported across the region of which a greater percentage is DGs.[12] In addition, Lesotho and Swaziland are predominantly land-locked countries surrounded by SA. This means that for goods to reach these countries they must pass through SA,[13] and this further emphasises the need for the regulation of TTDGs.

It is against this background that the *Constitution of the Republic of South Africa,* 1996,[14] (hereinafter the Constitution) and legislation provides extensive protection against TTDGs. The relevant legislation include amongst others: The *National Road Traffic Act* (NRTA),[15] the *National Environmental Management Act* (NEMA),[16] the *Cross*

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11 SADC is an association or regional integration, in the Southern part of the African Continent. SADC was established with the objective of enabling member states to co-operate and pool resources with the goal of attaining collective self-reliance and improved living standards. Headquarter is in Gaborone, Botswana. Members include: SA, Botswana, Zimbabwe, Namibia, Lesotho, Swaziland, Angola, Democratic Republic of Congo (DRC) Madagascar, Mauritius, Malawi, Tanzania, Zambia and Mozambique. Online at: http//www.sadc.int/English/about/history/index.php. Last accessed 09/09/2011.

12 Kaboyakgosi "Air and Road Transport in Botswana" 12. The completion of the Trans-Kalahari Highway in 1998 links SA, Botswana, Zimbabwe and Namibia to the Maputo corridor. This brings to light the stated ambition of SADC for an integrated road network. Hence, this becomes an import reason(s) to observe and adhere strictly to the rules of SPTCM, so as to curb the adverse impact (environmental) of TTDGs in the SADC region. See further Du Plessis "Cross-Border Pipeline" 279.

13 An illustrative example of this would be fuel, which cannot be transported on air neither water, but land as the most appropriate means of transport. See in this regard SABS 0231 *Transportation of Dangerous Goods: operational requirement for road vehicles*, SABS 0233 *Intermediate Bulk Containers for Dangerous Substances Transported by Road* and SABS 1518 *Transportation of Dangerous Goods: design requirement for road tankers*. See further Keith 2010 *RéSource* 56-59.

14 Though no specific reference is made to DGs transportation in the Constitution, its general application in environmental act and other socio-economic concerns is worthy to note.

15 93 of 1996. The NRTA regulates transport related activities in the Republic. Attention is made to DGs transportation on land. See s 275 and 275(a) in this regard.

16 107 of 1998. NEMA deals exclusively with the avoidance and mitigation of harmful effects on the environment and people alike. Its application in terms of DGs transportation is useful as it highlights measures for the regulation of the possible environmental and human impacts of DGs transportation.

Border Road Transport Act (CBRTA),[17] the *Hazardous Substances Act* (HSA*),*[18] and the *Explosive Act* (EA).[19]

Premised on the fact that a detailed exposition of all SADC member countries' laws would be too voluminous for this dissertation, this research will rather focus on the regulation of DGs in SA, while paying particular attention to the relevant SADC law-SPTCM, in this regard.[20] Hence, the purpose of this research is to analyse the extent to which the South African legal framework governing TTDGs provides an adequate regulatory framework of DGs transportation from an environmental perspective within the context of regional law. To this end the legal question posed is: to what extent does the South African legal framework governing the trans-boundary transportation of dangerous goods provides for the regulation of environmental aspects within the context of the Southern African legal framework?

The research consists of five parts. Part one introduces the problem to be investigated and defines the main terms used in this study. Part two will focus on the possible environmental impact of TTDGs. Part three examines regional and sub-regional regulatory frameworks of TTDGs. Part four examines the national regulatory instruments in SA. The conclusion and possible recommendations are covered in part five. This research entails a literature survey wherein the aforementioned rules and instruments are investigated. The findings of this research reveal two important issues in relation to the legal frameworks governing TTDGs. Firstly, in terms of the regional and sub-regional laws; DGs transportation is regulated by some relevant specific provisions that either exclusively regulates transport or environmental matters. While the Bamako Convention and the AEC regulates both transport and environmental matters, the ACCNNR rather exclusively regulates environmental concerns and the

17 4 of 1998. The CBRTA is equally another important national piece of legislation that deals with cross-border road transport. The nomenclature of the legislation speaks for itself. Hence, all cross-border DGs transportation are cover by the legislation.

18 15 of 1973.

19 15 of 2003.

20 The relevance of this approach is because SA is a member of the SADC.

SPTCMA regulates transport matters. Secondly, with regard to the South African legal framework, there is at present no specific law regulating TTDGs. Instead TTDGs is regulated by a multiplicity of laws which include amongst others: the Constitution, environmental laws, transport laws and others. Given this scenario, the research seeks to examine the regulation of TTDGs from this array of laws and their relevant legal provisions.

1.2. Definitional issues

1.2.1 Dangerous goods

This section examines the definition of DGs, so as to provide a better understanding of its impacts and how DGs is being regulated by legislation. Without referring to any legislation or relevant law for meaningful guidance on the definition of DGs, the term could simply be defined as: goods that pose significant risks to human health, property and the environment when transported. These goods may include: fuel, carcinogenic substances, radioactive waste and toxic substances which may impact on human well-being as well as the environmental.[21] For example, health respiratory problems may occur due to fuel fumes being inhaled from a spill of fuel.[22] Cancer and other bodily harm may result from carcinogenic substances that spill on the ground in the event of an accident. In terms of environmental harm, toxic substances ciphering into the soil may lead to loss of soil nutrients and environmental degradation.[23] DGs could be defined from a legal and non-legal point of view.

1.2.2. Non-legal definition of dangerous goods

Although the Oxford Dictionary[24] does not define the term as one word, the meaning of DGs can be deciphered from its definition of “dangerous” and “goods”. “Dangerous” is defined as being: “able or likely to cause harm or injury.” “Goods” on the other hand is

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21 See fn 1 above.
22 See fn 1 above.
23 See fn 1 above.
24 The Oxford Dictionary online at: http//www.oxfordictionaries,com/definition/dangerous. Last accessed 09/09/2011.

defined as: “merchandise or possession”. From these two words DGs can be defined as: merchandise that can cause harm or injury to people or the environment. The Mosby Medical Dictionary defines the term as:

> Hazardous materials…substances or materials that have been determined by government to pose an unreasonable risk to health, safety, and property when transported in commerce, such as toxins, marine pollutants, and substance at high temperature.[25]

Another definition states that DGs are:

> Articles or materials capable of posing significant risk to people, health or environment when transported in quantity. It includes items of common use such as aerosol cans, perfumes and paints.[26]

From the above definitions of DGs, it could be deduced that DGs are goods that are likely to cause significant adverse impacts on health, property and the environment when transported. In view of this, it could be said that the definitions support the regulations of DGs premised on the adverse harm it may have on the environment.

1.2.3 Legal definition of dangerous goods

The South African legislation provides for a definition of DGs, though an unclear one. The NRTA defines DGs, as: “[T]he commodities, substances and goods listed in the South African Bureau of Standards.”[27]

The SPTCM does not define the term. However, the Bamako Convention provides a meaningful definition of DGs. It defines DGs from the perspective of hazardous waste. According to article 2(1) waste which possess any of the characteristics as contained in

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25 The Mosby Medical Dictionary online at: http//www.medical-dictionarythefreedictionary.com/ dangerous+goods. Last accessed 09/09/2011.

26 Online at: http//www.businessdictionary.com/definition/dangerous-goods.htm. Last accessed 09/09/2011.

27 S 1(xi). SABS 0228 *Identification and Classification of Dangerous Goods Substances* list the following substances as DGs: explosive substances, gases, flammable liquid, instantaneously combustible solids, oxidising substances, toxic substances, radioactive materials, corrosive substances and miscellaneous DGs.

Annex II are deemed hazardous waste.[28] Article 2(1)(d) further shed more light on the regulation of hazardous waste. It states that:

> Hazardous substances which have been banned, cancelled or refused registration by government regulatory action, or voluntarily withdrawn from registration in the country of manufacture, for human health or environmental reasons.[29]

From the above provision, it seems reasonable to suppose that because hazardous waste is waste that pose adverse effects on human health and the environment when transported, it should be banned by national government. This position could favourably apply to TTDGs.[30] Taking all of the above into consideration, DGs could be defined as: material substances of a physically inherent dangerous nature which, when transported either by road, air, water or rail, has the capacity of causing significant harm to the environment, persons and property.

Having defined what is meant by DGs, and noted that its transportation is not always prohibited,[31] the question that arises is, what is the possible environmental impact of TTDGs? This is considered in the next part.

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28 Art 2(1)(c) of the Bamako Convention. See further Kummer 1992 *ICLQ* 543 and Kummer *International Management of Hazardous Wastes* 49. It is important to note that the characteristic of hazardous waste listed in Annex II aligns with the nine classes of DGs contained in SABS 0228 *The Identification and Classification of Dangerous Substances and Goods.* They include: class 1- explosive substances; class 2- gases; class 3- flammable liquid; class 4- flammable solids; class 5- oxidising substances; class 6- toxic and infectious substances; class 7- radioactive substances; class 8- corrosives substances and class 9- miscellaneous substances. These nine classes also align with the nine classes of DGs under the *United Nation Recommendations on the Transport of Dangerous Goods: Model Regulation.*

29 Art 2(1)(d) of the Convention.

30 Though regulation rather than banning is used in the latter context. Despite the fact that the Convention refers to hazardous waste and not DGs, meaning could be read into it that hazardous waste by extension incorporate DGs(Terblanche "A legal framework" 36) and so is a useful definition for this research.

31 However, s 54 of the NRTA prohibits the transportation of DGs by providing that no person shall operate on a public road any vehicle in or on which DGs is transported. Nevertheless, the very section provides an exception to this which reads: "unless such DGs is transported in accordance with this chapter: provided that- (a) DGs which is required under this chapter to be transported in a vehicle in respect of which standards specification SABS 1398 " Road Tank Vehicle for Petroleum based Flammable Liquid" or SABS 1518 "Transportation of Dangerous Goods- Design Requirements for Road Tankers" apply-(i) may be transported in such a vehicle ; and (ii) shall be so transported in accordance with the said appropriate standards specification if the vehicle in which the said DGs is being transported was registered for the first time on and after 1 October 2001 and (b) vehicle

2. Possible Environmental Impacts

2.1 Environmental impacts

NEMA defines the environment as:

> The surroundings within which human exist and that are made up of (i) the land, water and atmosphere of the earth;(ii) micro-organisms, plant and animal life;(iii) any part or combination of (i) and (ii) and the inter-relationships among and between them and (iv) the physical, chemical, aesthetic and cultural properties and conditions of the foregoing that influence human health and well-being.[32]

This is rather a broad definition of 'environment'. The environment is not restricted to the physical environment, but encompasses the marine environment, the chemical, aesthetic and cultural properties as well as the interrelationships between them that have the potential of influencing human health and well-being. In view of the above, it is important to implement measures aimed at regulating the harmful impact on the environment when involved in the TTDGs. The transportation of DGs in the event of an accident may cause severe damage to the environment and it could affect a widely defined environment and various environmental aspects either directly or indirectly. Toxic substances released into the environment damages soil nutrients, leading to unproductivity.[33] The release of toxic substances and other pollutants into the water system may affect marine ecosystems as well as fresh water systems with a consequential shortage of aquatic food supplies.[34] Accidents can also lead to the destruction of biodiversity and protected areas, for example, when a tanker transporting flammable liquid is involved in an accident resulting in a fire outburst, this may destroy

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carrying DGs in respect of which a placard is required to be fitted to such vehicle, may be fitted with, but shall after 1 October 2001 be fitted, with the appropriate placards prescribed in code of practice SABS 0232-1-*Transportation of Dangerous Goods- Emergency Information System Part 1: Emergency information system for road transportation*." The above highlight the fact that in terms of s 54 of the NRTA DGs transportation is prohibited. However, the use of the word "unless" provides an exception to this which by inference implies that DGs are rather regulated and not prohibited.

32 S 1. According to Indira and Uma the environment is everything (Indira and Uma *Environmental Law* 27).

33 See fn 1 above. The damage to the environment runs contrary to the constitutional environmental right in s 24 of the Constitution as well as s 2(4)(a),(ii) and (o) of the NEMA.

34 Stokes 2008 *Occupational Risk Management* 15. This also contravenes s 2(a)-(k) of the *National Water Act* 36 of 1998 (NWA). See further the Preamble of the Act.

parts of the protected area and impact on biodiversity.[35] The impact of TTDGs are not only limited to the environment, they also include social and economic impacts. These are considered below.

2.3 Social impacts

TTDGs seem to have a very serious and notable consequence, namely the social impacts thereof. From the perspective of road transport, personal injury may result from TTDGs. The impact is personal because it affects the health and safety of people and range from severe bodily harm or injury to the loss of lives. The loss of life may appear to be a recurrent impact of TTDGs irrespective of the mode of transport.[36] As far as road transport is concerned, death or loss of life may result from accidents involving tankers transporting DGs such as fuel, toxic chemicals, explosives, carcinogenic substances, paints, radioactive substances, and electric cables, amongst others.[37] Accidents involving big tankers carrying fuel for example, can lead to death. In the event of a tanker carrying carcinogenic substances is involved in an accident, the release of these substances into the environment has the potential of causing skin cancer and other skin related diseases.[38] Furthermore, explosions from flammable liquids have a serious impact on people and property. Health related problems such as respiratory diseases are another cause for concern. For example, when a tanker transporting of toxic chemicals or radioactive substances overturns, the spilled substances could pollute the

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35 Bocchino in one seminar lecture illustrate the impacts DGs transportation could have on biodiversity and protected areas (Bocchino "Understanding the Law").

36 Stone 2011 *TWA* 25. See further fn 1 above.

37 Stone 2011 *TWA* 25. Paragraph 275 of the NRTA Regulation 2000 explicitly requires that road tankers designed for the transportation of DGs must comply with SABS rules applicable in the year of manufacture. This however is problematic. Firstly, no SABS standard existed before August 2001. Hence, road tankers built prior to this date despite their deficiencies in transporting DGs are deemed legal. Many still operate till date. Secondly, there is no single standard and this makes enforcement difficult. SABS 1398- *Road Tank Vehicles for Petroleum-Based Flammable Liquids* has two versions- 2001 and 2004, while SABS 1518- *Transportation of Dangerous Goods- Design Requirements for Road Tankers* also has two versions- 2005 and 2008 with a rewritten 2011 version due for consideration by the SABS technical committee. This evidently makes enforcement of standards difficult.

38 See fn 1 above.

air, leading to health respiratory problems in the victims.[39] Another social impact of TTDGs is the developmental impact it may have. This concerns damage to social development and includes *inter alia* the destruction to roads and infrastructure.[40]

2.4 Economic impacts

The objective of transporting DGs, as with all economic activity, is to make a profit. However, the loss of revenue companies suffer as a result of accidents in the transportation of DGs is alarming.[41] It could be said that the loss to companies is far more than the benefits made.[42] A fire that destroys the products and the transported vehicle is a good example. In the event of transporting such goods as petrol or toxic chemicals worth R50 million, the company will have suffered a huge loss. It thus could be said that excessive speed has the potential of leading to devastating impacts, and such impacts do not differentiate between goods and persons.[43] The accident victim(s) -in this case the employee or truck driver may be confronted with the loss of employment. This may be as a result of permanent disablement of the employee or bankruptcy of the company.[44] At worst the employee can die as a result of an

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39 Crane 2005 *TWA* 32.

40 Explosions on tarred road have the potential of destroying the road.

41 Poggolini 2005 *TWA* 27. Such accidents can cause a DGs transporter millions of rands. The amount could be higher if it occurs outside of the Republic.

42 Poggolini 2005 *TWA* 27.

43 See in this regard *Safe Transportation of Dangerous Goods: Safety and Innovation* (2010 *TWA* 32). Online at: http://thor.sabinet.co.za.nwulib.nwu.ac.za/WebZ/images/ejour/sh_twa/sh_twa_v8_n1_a15.pdf?sessionid=01-60164-1109249729&format=F. Last accessed: 01/09/2012. Most drivers of DGs trucks are inexperienced and this has partly resulted in numerous deaths on the highway. Moreover, drivers of DGs are under obligation to deliver the transported goods on time. This elevates pressures on the driver leading to high speed driving. Again, most drivers come to work early and retire late. This constitutes a serious problem of driver fatigue, which has the potential of translating into unwanted accidents leading to numerous deaths and destruction of the goods transported.

44 S 22(3)(a)(i) of *the Compensation for Occupational Injuries and Diseases Act* 130 of 1993 (COIDA) which regulates compensations of disabled employees in this regard. S 53 explicitly prescribes rules for the calculation of compensation. However, in terms of s 63(5) the Commissioner is empowered to calculate compensation in any manner considered equitable, where the Commissioner does not believe it is practicable to use the prescribed method. See Olivier *et al Social Security* 477- 487. See further *Beukes v Knight Deep Ltd* 1971 TPD 683 694 and *Johannesburg City Council v Marine and Trade Insurance Co* 1970 (1) SA (W) 181 183-186.

accident.[45] However, whether the victim dies or is permanently disabled, the ensuing impacts are disastrous. In view of the above, it becomes understandable why laws are enacted at international, regional, sub-regional and national levels to regulate the TTDGs. The next part examines the regulation of TTDGs within the framework of regional and sub-regional laws.

3. Regional and Sub-Regional Frameworks

3.1 Introduction

The previous part examined the possible environmental impacts of TTDGs. It noted that it is as a result of these impacts that laws are enacted at international, regional, sub-regional and national levels to ensure its regulation. The purpose of this part is to examine the relevant regional and sub-regional regulatory frameworks relating to the TTDGs. The relevance of regional and sub-regional law is twofold. Firstly, it is to ascertain whether in terms of the regional legal framework there is regional harmonisation of laws relating to the TTDGs and secondly, to determine if there is sufficient legal certainty in relation to environmental protection in terms of the TTDGs.

3.2 Regional Framework

3.2.1 The African Economic Community of 1991 (*AEC*)

Although the AEC was established with the sole purpose of enhancing co-operation and integration among African countries in the economic, social and cultural fields, it could rightly be interpreted that the AEC by extension concerns DGs transportation.[46]

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45 S 22(3)(a)(ii) which allows for the payment of compensation to an employee's family because the employee died leaving dependants depending wholly or partly on him. Payment of compensation to disabled employees' lies in the fact that an employee was involved in an accident during the course of employment. S 1(i) defines accident as: "an accident arising out of and in the course of employment resulting to personal injuries, illness or death of the employee."

46 See in this regard arts 61(1)(a)-(g) and art 61(2)(a) and (b). See further art 35(1)(f) that obliges Member States to impose restrictions or prohibitions on the control of hazardous waste within their territories. It flows from this that the requirement to impose restrictions or prohibitions on hazardous waste could be taken in the context of this research to mean a requirement to regulate DGs transportation since hazardous waste by extension incorporates DGs.

This is because DGs transportation is an economic activity. It is against this background that the AEC contain some relevant provisions relating to DGs transportation. According to article 61(1), Member States are required to achieve harmonious and integrated development, transport and communication networks. However, in achieving this, Member States are called upon to promote the integration of transport and communication infrastructure,[47] co-ordinate the various modes of transport so as to increase their efficiency,[48] progressively harmonise their rules and regulations relating to transport[49] and organise structures that promote and ensure a good transport service at regional and community level.[50] Acknowledging the view that TTDGs could have a detrimental impact on the environment, the AEC obliges Member States to promote a healthy environment.[51] Article 58 states that:

> Member States undertake to promote a healthy environment. To this end, they shall adopt national, regional and continental policies, strategies and programmes and establish appropriate institutions for the protection and enhancement of the environment.[52]

It flows from the above provision that it is only by regulating TTDGs that harm to the environment could be curbed. This also has the potential of accelerating reforms and innovative processes, leading to ecologically rational, economically sound and socially acceptable development.[53] To further portray the AEC's intention to protect the environment, article 59 corroborates the provision of article 4(1) of the Bamako Convention. It places an obligation on Member States to individually and collectively take the appropriate steps or measures to ban the importation of hazardous waste into their respective territories. The article further requires states to co-operate in the trans-boundary movement (transport), treatment and management of waste

47 Art 61(1)(a).
48 Art 61(1)(b).
49 Art 61(1)(c).
50 Art 61(1)(g).
51 Art 58(1).
52 Art 58(1).
53 Art 58(2).

produced in Africa.[54] This appears a significant provision for SA,[55] given that SA also imports and exports goods to and from other countries.[56] In view of the fact that SA has ratified the AEC, the qualification for states to co-operate in the trans-boundary movement of waste, has the potential to effectively regulate the environmental impacts that may result from such movement from a trans-boundary perspective and to a greater extent influence the regulation of such movement by national law.[57]

2.2 The African Convention on the Conservation of Nature and Natural Resources (*ACCNNR*)

The adoption of the ACCNNR was, *inter alia,* to further emphasise the willingness of African countries to recognise and enforce environmental protection.[58] The reason for environmental protection stems from the fact that TTDGs may have a potentially detrimental impact on the environment. In view of this, the ACCNNR is relevant for this study. Article XIII specifically deals with hazardous waste and states the following:

> The parties shall, individually or jointly, and in collaboration with the competent international organisation concerned, take all appropriate measures to prevent, mitigate and eliminate to the maximum extent possible, detrimental effects on the environment, in particular from radioactive, toxic and other hazardous substances and wastes. For this purpose, they shall use the best practicable means and shall endeavour to harmonise their policies, in particular within the framework of relevant conventions to which they are parties.[59]

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54 See also art 35(1)(f) which obliges states to impose restrictions on the control of hazardous wastes within its territory. Arguably, the control within its territory here has the connotation of the regulation of DGs.

55 SA signed the AEC on the 10/10/1997 (with the Abuja treaty giving birth to AEC), ratified it on the 31/05/2001 and this was deposited at the secretariat on the 25/06/2001. Online at: www.africa-union.org/root/au/documents/treaty/lists/treaty%20establishing%20the%20african%20economic%20community.pdf. Date accessed 06/08/2012.

56 Du Plessis "Cross Border Gas Pipeline" 279. Hence, this highlights the necessity to effectively regulate the environmental impact that may result from the transportation of DGs.

57 See also Art XIII (1) of the ACCNNR.

58 Arts II (1)-(3) to be read with arts III(1)-(3).

59 Art XIII (1).

Though the above provision deals with hazardous waste, it also concerns DGs. This is because hazardous waste by extension incorporates DGs.[60] Noting the devastating environmental impacts that may result from hazardous waste movement, the Convention obliges Member States to undertake concerted efforts in relation to hazardous waste movement.[61] Furthermore, Member States are obliged to implement and individually support instruments relating to the trans-boundary movement of hazardous waste such as the Basel and Bamako Conventions. This seems a potential problem for SA, because SA has neither signed nor ratified the ACCNNR and as such cannot benefit from its environmental protection.[62] In this regard, it is strongly recommended for SA to sign and ratify the ACCNNR as an active member of the African Union (AU).[63] The ratification of the ACCNNR by SA will possibly give impetus to the provision of Article 59 of the AEC that requires Member States to co-operate jointly in the area of trans-boundary movement of hazardous waste. This should have a snowball effect on the regulation of TTDGs based on the fact that international and regional laws to a great extent influence national law.

3.2.3 Bamako Convention of 1991 (the Bamako Convention)

The Bamako Convention is primarily concerned with the ban of waste import into Africa and the control of trans-boundary movement and management of hazardous waste

60 See part 1 concerning the definition of terms.
61 Arts XXII (2)(g).
62 Out of the 42 countries that have signed the ACCNNR, only 30 have ratified it. They include: Algeria, Burkina Faso, Cameroon, Central African Republic, Cote D'ivoire, Comoros, Congo, Djibouti, Democratic Republic of Congo, Egypt, Gabon, Kenya, Liberia, Madagascar, Mali, Malawi, Mozambique, Nigeria, Niger, Rwanda, Senegal, Seychelles, Sudan, Swaziland, Tanzania, Togo, Tunisia, Uganda, Zambia and Zimbabwe. Online at: www.africa- union.org/root/au/documents/ treaties/lists/African%20convention%20nature%20&%20natural%20resources.pdf. Date accessed 06/08/2012.
63 The ratification of the ACCNNR by SA may have the potential of accelerating environmental protective measures for DGs regulation if read together with Ss 231(1) and (5) and s 233 of the Constitution.

within Africa.[64] It is a useful regional regulatory framework as far as TTDGs is concerned.[65] Paragraph 10[66] of the Preamble of the Convention read together with Paragraph 11 (line 6)[67] vividly illustrates the importance of this Convention in relation to the TTDGs. Furthermore, since hazardous wastes are transported via road and water amongst others, the provisions of this Convention are relevant to ensure the regulation of DGs with the ultimate objective of curbing its effects.[68] Accordingly, it is against this background that article 4(3)(b) provides for unlimited liability as well as joint and several liability on hazardous wastes generators.

The implication of the above provision in terms of TTDGs is to the effect that strict measures including joint and several liabilities should be instituted on DGs transporters who violate the law. This becomes the most appropriate means of curbing the adverse environmental impacts that result from the activity. Similarly, while acknowledging the harmful effect of hazardous waste, (which also involves TTDGs in this case), the Convention in article 4(1) obliges all parties to take appropriate legal, administrative, and other measures within the area under their jurisdiction to prohibit the import of all hazardous wastes into Africa. Member States are further required to co-operate with

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64 The Bamako Convention was adopted to decry African position for *the Basel Convention on the Control of Trans-boundary Movement of Hazardous Waste and their Disposal* Basel 1989. Pursuant to Resolution 119 of the OAU that adopted the Convention it was explicitly stated that the Basel Convention was insufficient in itself to solve African problems and that a prohibition rather ban was a solution to African problem. For detail understanding of the Bamako Convention see Kummer 1992 *ICQL* 536, Naldi 2000 *SAJELP* 223-226, Van der Linde 2002 *CILSA* 107-108, Kummer *International Management of Hazardous Waste* 100 and Morrison and Muffet *Hazardous Waste* 417.

65 It has been argued above that the definition of hazardous waste by the Convention is a useful definition of DGs for the purpose of this research.

66 The paragraph clearly states that: "…noting that a number of international and regional agreements deal with the problem of the protection and preservation of the environment with regard to the transit of dangerous goods…"

67 Paragraph 11 line 6 provides that: "Taking into account…the recommendations of the United Nations Committee of Expert on the Transport of Dangerous Goods (formulated in 1957 and updated biennially)…"

68 The ultimate objective of the Bamako Convention is to ban the importation of hazardous waste into Africa as well as controlling its movement (transportation of DGs) within Africa, due to it devastating social and environmental impacts. Kummer posits in this regard that, the Bamako Convention seeks to establish a unanimous commitment for African States to prohibit the importation of hazardous waste into Africa and to establish a management regime for hazardous waste generated on the continent (Kummer *International Management of Hazardous Wastes* 100).

one another to ensure that hazardous waste from a non-party does not enter the jurisdiction of a party to the Convention.[69] The requirement "to take appropriate legal, administrative, and other measures under their jurisdiction"[70] imposes an obligation on Member States to enact laws and embark on administrative measures within their jurisdiction to prohibit the import of hazardous waste. In the context of this research it implies that Member States are called upon to institute legal and administrative measures against the TTDGs within the frameworks of their domestic laws. However, the application and compliance of the above provision in the South African context is problematic, because SA is not a member of the Convention. Therefore, like the ACCNNR, it is suggested that SA should ratify the Convention so as to benefit from it.

Furthermore, the importance of the Bamako Convention in relation to TTDGs cannot be overemphasised. Article 4(3)(m)(i) prohibits all persons in the jurisdiction of Member States not to transport, store, and dispose of hazardous waste unless permitted to do so.[71] Such permission, can only be allowed after due adherence of the regulations in force.[72] The CBRTA supports this view.[73] Arguably therefore, by adhering to the regulation in force, it is hoped that the adverse impacts (mostly environmental impacts) that result from TTDGs could be reduced, avoided, prevented, or minimised. Conversely, it is explicitly required that hazardous waste subject to trans-boundary movement (which is transport in this case) must be packaged, labelled and transported in conformity with generally acceptable and recognised international rules and standards in the field of packaging, labelling, and transport while also taking cognisance of relevant internationally recognised best practices.[74] This conforms to the provision of

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69 Art 4(1)(b). This aligns with art 59 of the AEC which explicitly enjoins Member States to cooperate collectively in regulating the trans-boundary transportation of hazardous waste within their terrorities. It is reasonable to say from this provision that, the Bamako Convention does not regulate trans-boundary movement of hazardous waste from a non-contracting party to a contracting party.

70 Art 4(1).

71 Art 4(3)(m)(i).

72 Art 4(3)(m)(i).

73 See part 4 in this regard and the section dealing with CBRTA for a detailed understanding.

74 Art 4(3)(m)(ii). See also the *United Nations Recommendation of Transport of Dangerous Goods*. The above provision of the Bamako Convention aligns with the provision of SABS rules. See *inter alia*, SABS 0229 *Packaging of Dangerous Goods for Road and Rail Transport*.

the South African Bureau of Standards (SABS) regarding packaging, labelling and ultimate transportation of DGs.[75] This implies that in terms of DGs transportation under the Convention, if goods are transported without due regard to the above provision, it is tantamount to contravening the provisions of the Convention, which is punishable under article 12 of the Convention.[76] Moreover, like the CBRTA and NRTA that require drivers of DGs vehicles to possess some documents of the goods transported, the Bamako Convention in article 4(3)(m)(iii)[77] requires a movement document to accompany hazardous waste. This document must contain information specified in Annex IV B from the time the transaction took place to final disposal of the hazardous waste. The essence of this document is to ascertain consistency of the goods transported, while also noting that the transportation conforms to the regulations in force.

3.3 Sub-Regional Framework

3.3.1 Southern African Protocol on Transport Communication and Meteorology **(SPTCM)**

SPTCM is a regional protocol found in the SADC region. It regulates *inter alia* transport activity in the region. In this regard, it is a relevant legal instrument to consider in this study. SADC was established with the aim of enabling Member States to co-operate and pool their available resources so as to promote collective self-reliance and

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75 See in this regard SABS 0229 regarding packaging. See further the amended SANS rules 10299-2 *Transportation of Dangerous Goods, Packaging and Large Packaging for Road and Rail Transport.* It is important to note that though these rules specify road and rail transport, they apply to all modes of transport.

76 Although the Bamako Convention stipulates for punishment of defaulters in art 12, art 12 does not explicitly provide the penalty. It only states that "The Conference of the Parties shall set up an ad hoc expert organ to prepare a draft protocol setting out appropriate rules and procedures in the field of liabilities and compensation for damage resulting from the trans-boundary movement of hazardous wastes". This means that a defaulter will only be penalised until such a time when the ad hoc expert set out the procedures and rules for liability and compensation and a defaulter can go unpunished premised on the fact that till date no such expert organ has been set up by the Conference of the Parties (COPs).

77 The paragraph states that "Each party shall; ensure that hazardous wastes will be accompanied by a movement document, containing information specified in Annex IV B, from the point at which trans-boundary movement commences to the point of disposal."

improved living standards.[78] To achieve this objective, it is necessary to have measures and mechanisms in place to guarantee environmental protection. Arguably, environmental protection can be guaranteed via appropriate rules regulating the TTDGs. It is against this backdrop that article 5 of the Declaration and Treaty of SADC (hereinafter the Declaration) recognises the need for effective environmental protection. In terms of article 21(3)(e) of the Declaration, Member States agreed to collaborate in the area of environmental matters, which arguably include matters relating to DGs. The reason for this view is that transport and environment are also social concerns. Since transport activity may have an impact on the environment, it is reasonable to merge their regulation. Therefore, as Member States of SADC agreed by virtue of article 21(3)(e) of the Declaration to collaborate in forging environmental protection, it is assumed that this extends to TTDGs. This joint aspects of environmental and economic (transport) protection is clearly provided for in article 2(3) of the SPTCM. SPTCM also contains some specific provisions that could regulate TTDGs. The prime objective contained in article 2(3) states that:

> Members states' general objective is to establish transport, communication and meteorology systems which provides efficient cost effective and fully integrated infrastructure and operation which best meet the needs of customers and promote economic and social development while being environmentally and economically sustainable.[79]

It seems reasonable to read from the above provision that a good transport system or network is necessary to ensure environmentally (socio-economic) sustainable transportation of DGs, across borders, and between and beyond countries. Article 3(1)(e) requires the establishment of an integrated transport network that is compatible

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78 SADC 2006, available at: http//www.sadc.int/English/about/history/index.php. Accessed on 09/09/2011. See further *Frank "SADC Trade Protocol" Summary*. Frank noted that: "Experience internationally and in SADC show that the development of internationally competitive industries requires flexibility in the sourcing of raw materials and intermediate inputs. An environment that encourages this flexibility is essential to foster the investment necessary for the region's long term development and to generate badly needed employment opportunities for its workers. Non restrictive rules of origin can help make SADC a platform for reducing costs and thus increase the competitiveness of the region in the global economy."

79 Art 2(3) of the Protocol.

with responsible environmental management,[80] so as to support the development of major regional development corridors[81] and facilitate travel between their territories. It is for this reason that Member States are required to promote acceptable levels of safety in terms of TTDGs to be in line with one of the objectives of SPTCM, namely environmental protection.[82] Article 2(4)(a) requires Member States to give effect to the Protocol by promoting integration of a regional transport, communication and meteorology network to be facilitated by the implementation of compatible policies, legislation, rules, standards and procedures. This implies that an integrated regional transport, communication and meteorology network will only work well in the region if the policies, rules, legislation, standards and procedures are compatible with transport activities of DGs. Therefore, it is suggested that in terms of TTDGs the relevance of such compatible rules, legislation, policies, standards and procedures is necessary to effectively regulate DGs in the region and thereby meeting with one of the objectives of the Protocol which is to establish viable and sustainable transport communication and meteorology systems.[83] Furthermore, Member States are obligated to develop and implement a co-ordinated regional road traffic management plan so as to protect the

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80 The article states that: "Member States shall promote economically viable integrated transport services provision in the region – (e) that is compatible with responsible environmental management. See also art 3(1)(b)."

81 Corridor as defined by the Protocol means: "A major regional transportation route along which a significant proportion of Member States or non member states, regional or international imports and exports are carried by various transport modes, the development of which is deemed to be a regional priority."

82 Art 6(1). According to the article Member States shall enhance the overall quality of road traffic in the region with emphasis on promoting acceptable levels of safety, security, order, discipline, and mobility on the roads and protecting the environment and road infrastructure. See also Terblanche "A Legal Framework" 39. Art 6(12) obliges country parties to develop and implement a co-ordinated regional road traffic management plan. This road traffic management could provide measures on the regulation of environmental impact resulting from DGs transportation and hence protect the environment against willful and unnecessary damage. The article states clearly that: "Member States shall co-operate to develop and implement a co-ordinated regional road traffic quality management plan – (a) to improve road traffic safety which contributes to the quality of life of the region's inhabitants,(b) reduce the burden imposed on their economies by traffic related fatalities injuries suffered by inhabitants and damage to property (c) improve discipline on the road (d) protect the road infrastructure and environment against willful and unnecessary damage and (e) enhance the levels of administrative and economic order on the road network…."

83 Art 2(3).

environment against damage.[84] Equally important is the provision made to national road authorities contemplated in article 4(4). These authorities are charged with the responsibility of collaborating with road transport and traffic authorities to strengthen the enforcement of road transport and traffic regulations[85] as well as reviewing the classification of national road systems and the definition of the regional trunk road network.[86] This implies that the national road authority gives impetus to the road transport and traffic regulations in the region which arguably involves DGs. Therefore, it could be said that the national road authority could regulate DGs in the region.[87]

Transport is an important aspect in the Protocol and transportation relates to this research in terms of DGs. Road transport policy is expressly provided for in the Protocol.[88] Article 5(2) provides that in order to achieve the objectives of road transport Member States are accordingly required to develop a harmonised road transport policy that provides for equal treatment and reciprocity amongst others.[89] In this regard, article 5(4) further requires members to comply with the Protocol by concluding standardised bilateral or multi-lateral agreements that are based on non-discrimination, reciprocity as well as extra territorial jurisdiction that addresses issues such as: single carrier permits or licence,[90] carrier registration,[91] quota and capacity management systems,[92] harmonised administrative procedures, documentation and fees,[93] information management including a harmonised format of supporting information systems and exchange of information procedures,[94] the establishment of a joint route management

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84 Art 12(1)(d).
85 Art 4(4)(h).
86 Art 4(4)(i).
87 Art 4(4)(h)(i).
88 Art 5(2).
89 Art 5(2) reads: "In order to obtain road transport objectives, Member States agree to develop a harmonised road transport policy providing for equal treatment, reciprocity and unfair competition, harmonised operating conditions and promoting the establishment of an integrated transport system."
90 Art 5(4)(a).
91 Art 5(4)(b).
92 Art 5(4)(c).
93 Art 5(4)(d).
94 Art 5(4)(e).

committee on a bilateral or multi-lateral basis,[95] harmonised transport law enforcement including carrier identification to facilitate on the road signs,[96] carrier obligation in respect of drivers' vehicles, passengers manifest, cargo manifest and returned permits or licence as well as sanctions against carrier in the case of contravention,[97]

Moreover, article 5(5) obliges Member States to ensure that domestic measures (national laws governing TTDGs) conform to regional policies and to co-ordinate their efforts in this regard. One could arguably read into the above provision that the non conformity of national measures in terms of transport (TTDGs) with regional policies is a contravention of the SPTCM rules. However, notwithstanding the above extensive measures for the development and implementation of co-operative transportation systems by SPTCM in the SADC region, the Protocol does not lay down concrete rules in this regard. Hence, there is a strong need for the concretisation of these provisional measures. It is hoped that with the concretisation of the SPTCM rules, TTDGs in the SADC region could be effectively regulated. Further, it is important to note that SADC members are obliged to encourage acceptable levels of safety with one another and this reinforces one of its main aims, namely environmental protection.[98]

Despite the co-operative manner in which transport related activities must be regulated in the region, Member States are called upon in terms of article 6(15)(1)(c) to develop and implement incident management systems for environmental incidents that occur during road transportation. Such environmental incidents may include for example hazardous spills and hence the incident management system should provide for the removal of such spilled substances, debris and wreckage.[99] This has the potential of

95 Art 5(4)(f).
96 Art 5(4)(h).
97 Art 5(4)(g).
98 Art 6(1).
99 Art 6(14)(2)(d).

effectively safeguarding the scene of action[100] as well as mitigating the impact of the incident on the environment.[101]

As evident from above the AEC, the ACCNNR, the Bamako Convention, and the SPTCM provide measures for the regulation of TTDGs with the objectives of curbing its harmful environmental impacts. This part noted that although the AEC is not primarily concerned with TTDGs, its specific provisions relating to transport as an economic activity is useful in this regard. This is evident from the fact that article 61(1)(c) requires Member States to progressively harmonise rules and regulations relating to transport. The necessity of this is further emphasised by article 58(1) which enjoins Member States to promote a healthy environment taking into consideration that the transportation of goods and in particular DGs may have a detrimental impact on the environment.

The ACCNNR though does not principally relate to transport activities, and it is suggested that the ACCNNR should be reviewed to encompass provisions relating to transport regulation. The regulation of transport activities and notably TTDGs has the potential of seriously reducing the harmful impact transport activities may have on the environment. Moreover, being an active member of the AU it is important for SA to sign and ratify the ACCNNR. The ratification of the ACCNNR by SA also has the potential to spur reforms and measures for the regulation of environmental impacts that may result from TTDGs.

Furthermore, this part noted that it is important for SA to ratify the Bamako Convention so as to benefit from its provisions.[102] Finally, this part also noted that the concretisation of SPTCM measures will go a long way to effectively regulate the environmental impacts of TTDGs from the perspective of road transport. Therefore, the regional and

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100 Art 6(14)(2)(c).

101 Art 6(14)(2)(e). This provision aligns with s 30(1)(i)-(iii) of NEMA.

102 The SADC member countries that have ratified the Bamako Convention include: DRC, Mauritius, Mozambique Tanzania, Zambia and Zimbabwe. Some have signed but have not ratified it. They include: Angola, Lesotho, Madagascar and Swaziland. The rest have neither signed nor ratified it. They are: Botswana, Malawi, Namibia, SA, and Seychelles.

sub-regional regulatory framework of TTDGs canvassed above clearly illustrates, that there is to some extent harmonisation of laws and sufficient legal certainty for the protection of the environment in terms of the TTDGs. The next part will focus on the regulation of DGs within the framework of the national laws.

4. The South African legal framework

4.1 Constitution of the Republic of South Africa, 1996 (the Constitution)

The *Constitution of the Republic of South Africa*, 1996, in the Bill of Rights Chapter, makes provision for an environmental clause. This clause guarantees the right of all citizens to an environment that is not harmful by stating that:

> Everyone has the right
>
> (a) to an environment that is not harmful to their health or well being; and
>
> (b) to have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that:
>
> (i) prevent pollution and ecological degradation;
>
> (ii) promote conservation; and
>
> (iii) secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development.[103]

It could be inferred from the above that since the Constitution strives to ensure an environment that is not harmful to its citizens, it is logical to say that this constitutional imperative for the protection of the environment must be taken into consideration when transporting DGs given that TTDGs may have a significant detrimental impact on the environment.[104] This concerns for instance DGs like radioactive wastes and other

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103 S 24(a)-(b)(i),(ii),(iii). This aspect of environmental protection via the Constitution is common among SADC member countries. See for example art 13 of the Constitution of Malawi, 1994; art 95(1) of the Constitution of Namibia, 1990; art 72 of the Constitution of Mozambique, 1990. From the above provisions of these Constitutions of SADC Members States, it seems reasonable to suppose that because the state has a duty to protect and preserve the environment for the benefits of both present and future generations alike, the attainment of this objective requires a strict observation of the regulation in force when transporting DGs.

104 See part 2 of this research that deals with the environmental impact of TTDGs for a detailed understanding.

hazardous waste that spill on the ground in the event of an accident leading to pollution and contamination of the environment.[105]

As a result of the fact that the harmful impact of TTDGs (in terms of environmental impact) may hinder or act as a barrier to the fulfilment of this constitutional provision, the Constitution in this regard invariably calls for a strict observance of the regulation in force when transporting DGs.[106] The Constitution does not only place a constitutional mandate on individuals to enjoy the environmental right clause, but also places on government the duty to protect the environment through reasonable legislative and other measures that prevent pollution and ecological degradation; promote conservation; and secure ecological sustainable development and use of natural resources while promoting justifiable economic and social development.[107] It flows from this however that it is only by adhering to these legislatives enactments that the objectives of the constitutional environmental right enshrined in section 24 will be met.[108]

4.3 National Environmental Management Act 107 of 1998 (NEMA)

Section 24 of the Constitution gives everyone the right to an environment not harmful to their health or well-being, and to have the environment protected. NEMA gives effect to

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105 This constitutional imperative was an issue in the case of *Director: Minerals Development, Gauteng Region and Sasol Mining (Pty) Ltd v save the Vaal Environment and Other* 1999 (2) SA 709 SCA (C) 719. The Court of Appeal held that "Our Constitution, by including environmental right requires that environmental consideration be accorded appropriate recognition and respect in the administrative process in our country (at 179, Par 20)". See further Cowen 1989 *THRHR* 52.

106 S 24(1)(b). The reasonable legislative and other measures referred to in the Constitution imply the national regulatory framework that governs DGs transportation. Hence, it is safe to say the Constitution as the supreme law of the country sets the ball rolling for the regulation of DGs transportation.

107 S 24(1)(b)(i)-(iii). See further Van der Linde and Feris *Compendium* 5. See again Currie and De Waal *Bill of Rights* 522 and 528. Given the view that DGs transportation could have a significant impact on the constitutional environmental rights, the application of the constitutional remedies encapsulated in s 8 becomes relevant. Currie and De Waal posit that s 24 read together with s 8 of the Constitution seems to suggest that individuals (or the public) may, where appropriate, assert their constitutional rights directly against the state (Currie and De Waal *Bill of Rights* 524).

108 S 24 to be read jointly with s 8 of the Constitution. See also in this regard principles contained in s 2 of the NEMA.

section 24,[109] by interacting with the Constitution in fulfilling the duty of the state, to protect the environment through legislative measures, provided for in section 24(b) of the Constitution.[110] Though NEMA is not transport legislation, it is a framework environmental legislation that regulates environmental concerns. This makes it a useful piece of legislation to take into consideration when transporting DGs, taking into account that TTDGs may encroach upon the fundamental right to a healthy environment. The necessity of this legislation is further outlined by its definition of pollution[111] and environment.[112] Moreover, in view of the fact that customary international law automatically forms part of the South African law provided it is not inconsistent with the Constitution or an Act of parliament,[113] it seems reasonable to suppose that principles like the preventive, polluter-pays and the precautionary principle invariably forms part of the South African environmental law.[114] It is argued that these principles culminate to give effect to constitutional environmental rights in section 24.[115] Therefore, because TTDGs could encroach upon the fundamental right to a healthy environment, these principles along with section 24 of the Constitution and NEMA provisions against environmental degradation, become essentially relevant to adhere to

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109 S 2(4)(a)(ii) of the Act. See also s 2(1)(a) of the Act. The s 2 principles of NEMA underscore the susceptibility of natural resources and in this way seek to reinforce measures for their protection (Kotzé 2006 *Obiter* 135).

110 Soltau 1999 *SAJELP* 33.

111 S 1(xxiv) defines pollution as: "Any change in the environment caused by-(i) substances; (ii) radioactive or other waves; or (iii) noise, odour, dust or heat, emitted from any activity, including the storage or treatment of waste or substances, construction and the provision of services, whether engaged in by any person or organ of state, where that change has an adverse effect on human health or well-being or on the composition, resilience and productivity of natural or managed ecosystem, or on materials useful to people, or will have such an effect in the future."

112 S 1(xi) defines the environment as: "The surrounding within which humans exist and that are made up of (i) the land, water and atmosphere of the earth; (ii) micro-organism, plant and animal life; (iii) any part or combination of (i) and (ii) and the interrelationships among and between them; and (iv) the physical, chemical, aesthetic and cultural properties and conditions of the foregoing that influence human health and well-being."

113 Kotzé 2002 *SAYIL* 175. See further s 232 of the Constitution.

114 See s 2 principles of the NEMA where these principles have been incorporated as part of South African environmental law.

115 Kotzé 2006 *Obiter* 132, by making the transporter of DGs internalise the costs of pollution in terms of the polluter-pays principle, the principle gives effect to the s 24 environmental right of the Constitution. See further Murungi and Kotzé 2005 *CILSA* 47, Havenga 1995 *SA Merc LJ* 188, Sands P*rinciple of International Environmental Law* 246, Birnie and Boyle *International Law and the Environment* 115 and Glazweski *Environmental Law* 148-150.

when transporting DGs.[116] Hence, NEMA's provisions against environmental degradation are worth noting in this regard.[117] One of such provisions is section 2(4)(a)(ii) which requires that pollution and degradation of the environment should be avoided, or where they cannot be altogether avoided they should be minimised and remedied.[118] To safely transport DGs and comply with the operation of section 2(4)(a)(ii),[119] it is suggested that DGs transporters adhere strictly to the regulation in force because TTDGs may lead to environmental harm.

To portray its purpose of environmental protection, section 2 of the Act endorses environmental law principles like the polluter-pays,[120] the preventive,[121] and the precautionary principle.[122] The incorporation of these principles into South African laws only further illustrates the extent to which South African legislation seeks to regulate the harmful impact to the environment, persons and property. According to section 2(4)(a)(vii) it is explicitly required that a risk-averse and caution approach must be applied which takes into account the limits of current knowledge about the consequences of decisions and actions. This implies that transporters of DGs cannot rely on lack of scientific certainty as an excuse not to take actions when environmental harm occurs from DGs transportation.[123] Consequently, DGs transporters have an

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116 See also the s 2 principles of the NEMA. NEMA was enacted to give effect to the Constitution (Preamble of NEMA).

117 See generally s 2 principles of the NEMA. S 2(4)(a)(vii) deals with the precautionary principle, s 2(4)(a)(viii) concerns the preventive principle and S 2(4)(p) focuses on the polluter-pays principle.

118 S 2(4)(a)(ii).

119 S 2(4)(p) deals with the polluter pays-principle: It states: "The costs of remedying pollution, environmental degradation and consequent adverse health effects and of preventing, controlling or minimizing further pollution, environmental damage or adverse health effects must be paid for by those responsible for harming the environment." See also s 28(1). See in this regard Poggolini 2005 *TWA* 27. For a detailed discussion of the application of the polluter-pays principle see Oosthuizen 1998 *SAJELP* 355-361. S 28 of NEMA on duty of care principle is equally instructive.

120 S 2(4)(p). See also s 28.

121 S 2(4)(a)(viii).

122 S 2(4)(a)(iv). The incorporation of these principles as part of South African environmental law is based largely on the provision of s 232 of the Constitution, which requires the incorporation of customary international law into South African law provided they are consistent with the Constitution or an Act of parliament.

123 According to Birnie and Boyle "[r]isk is a complex concept, however entailing judgments not only about the probability and scale of harm, but about the causes of harm, and the effects of the activities, substances, or process in question, and their interaction over time. These are not easy

implied obligation to protect the public and the environment from environmental damage by conforming to the requirements of the precautionary principle.[124] In view of this, Birnie and Boyle posit that this obligation is one of diligent prevention and control and is already recognised by the international community as customary international law.[125] Indira and Uma opined that the precautionary principle "implies a current commitment to safeguard the environment against the activity that is likely to occur in future."[126] In terms of section 2(4)(a)(viii), it is explicitly provided that the negative impact on the environment and on people's environmental rights be anticipated and prevented, and that where it cannot be altogether prevented, it be minimised and remedied. The fact that TTDGs could have significant impact on the environment and on people's environmental rights, and since complete prevention is impossible, it is in the interest of DGs transporter(s) to anticipate the adverse impact DGs may have on the environment and to have emergency procedures in place such as clean-up measures amongst others.[127] Furthermore, section 2(4)(a)(ii) requires that if pollution and environmental degradation cannot be avoided, it should be minimised and remedied. The application of the above provisions in terms of TTDGs is that because pollution and environmental degradation from DGs cannot be avoided, it is rather important to remedy the impact. It is against this backdrop section 2(4)(p) enjoins that the cost of remedying pollution, environmental degradation and consequent adverse health effects must be paid by

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questions to answer with certainty, even for scientists" (Birnie and Boyle *International Law and the Environment* 115). The precautionary principle has certain ingredients of legal definition which includes (1) a serious threat against environment deemed justifiable, (2) burden of proof on the contributor to prove that the activity will not cause actual harm (see Cameron 1991 *BCICLR* 14).

124 This obligation is not only limited to DGs transporters, but also concerns the owner of the transporting vehicle or owner of the goods (see the definition of responsible person in s 30(1)(b)(i)-(iii) of the NEMA in this regard).

125 Birnie and Boyle *International Law and the Environment* 115. Sands on the other hand argue that the precautionary approach must be limited to situations where there is a possibility of "serious and irreversible damage" (Sands *Principle of International Environmental Law* 270).

126 Indira and Uma *Environmental Law* 67.

127 It must be borne in mind that complete prevention of environmental degradation or damage is impossible (Kotzé 2006 *Obiter* 131), rather environmental degradation could be minimised and remedied (see Sands *Principles of International Environmental Law* 246).

those responsible for harming the environment.[128] The polluter-pays principle integrates environmental protection and economic activities, by ensuring that the full environmental and social costs associated with pollution and environmental harm are borne by the polluter.[129] Therefore, DGs transporters must internalise all costs that are associated with possible pollution.[130] By making the polluter liable for damage he or she may be more careful and try to prevent pollution and environmental degradation.[131] The necessity of the polluter-pays principle is propounded by De Sadeleer who posits that:

> The polluter-pays principle has successfully been invoked to address distortion of competition, as a preventive instrument to establish the internalization of chronic pollution and finally to rectify the adoption of fiscal measures. It is generally accepted that the polluter-pays principle implies the setting up a system of charges by which polluters help finance public policy to protect the environment.[132]

What is discernible from the above is the fact that the polluter-pays principle fosters the protection of the environment by making the polluter assumes responsibility for environmental degradation.[133] Nevertheless, the meaning and application of the polluter-pays principle in particular cases and situations is subject to interpretation, particularly concerning nature and the extent of the cost involved as well as circumstances in which the principle is not applicable.[134] However, Gaines is of the opinion that the objective of the polluter-pays principle is to promote efficient resource use and confirms the fundamental economic nature of the principle.[135] Section 2(4)(o) states that the environment must be protected as the people's common heritage. This

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128 The section further requires those responsible for degrading the environment to take measures to prevent, control or minimise further pollution, environmental damage or adverse health effects.

129 Hunter *et al International Environmental Law and Policy* 412.

130 Kotzé 2006 *Obiter* 132. Kotzé contend that dischargers or disposers introducing substances into the environment are not users but polluters and hence liable to carry the cost to prevent such and remedy the effects of pollution. This aptly applies to DGs transportation in view of the fact that transporters or drivers of DGs tankers become dischargers or disposers when an accident occur leading to discharge of toxic substances into the environment that pollutes and degrades the environment. See further Havenga 1995 *SA Merc LJ* 188 and Hunter *et al International Environmental Law and Policy* 413.

131 Havenga 1995 *SA Mer LJ* 188. See also Murungi and Kotzé 2005 *CILSA* 47.

132 De Sadeleer *Environmental Principles* 44. See further Springer *The International Law of Pollution* 19.

133 Kotzé 2006 *Obiter* 132, Murungi and Kotzé 2005 *CILSA* 47 and Havenga 1995 *SA MER LJ* 188.

134 Brownlie *Principles of Public of International Law* 280.

135 Gaines 1991 *TILJ* 468- 469 (according to Gaines, the polluter-pays principles has its ideological roots in economics and not in law).

places an implicit obligation on DGs transporters to protect the environment, given that significant environmental damage may result from TTDGs.[136]

Section 28 provides for the duty of care.[137] It regulates the liability of persons who caused significant pollution or degradation to the environment and requires such persons to take reasonable measures to minimise and rectify pollution and the degradation of the environment. These measures include: investigate, assess and evaluate the impacts on the environment,[138] eliminate any source of pollution or degradation[139] and remedy the effects of the pollution or degradation on the environment.[140] In the context of this research, this implies where an incident by a DGs truck leads to environmental damage, the responsible person is obliged to investigate, assess and evaluate the impact on the environment, eliminate any pollution or degradation and accordingly remedy the impact of the pollution or degradation on the environment. Section 28 stresses the three-tier approach, prevention, minimisation and remediation.[141] In view of the above, it is evident that DGs transporters are under an implied obligation to take reasonable measures to prevent any environmental damage from occurring via the exercise of a duty of care when transporting DGs.[142] Accordingly, where a DGs transporter fails to prevent, minimise or remedy the impact on the environment, the DGs transporter will be liable for refund of a part of the cost incurred by the Director-General (DG) or Provincial Head of the Department of Environmental

136 See also in the regard, the provision of s 2(4)(n) which provides for the discharge of global and international responsibilities that relates to the environment at the national level. This is because international law to a great extent influences national laws.

137 S 28(1) states that: "Every person who causes, has caused or may cause significant pollution or degradation of the environment must take reasonable measures to prevent such pollution or degradation from occurring, continuing or recurring or, in so far as such harm to the environment is authorised by law or cannot reasonably be avoided or stopped, to minimise and rectify such pollution or degradation of the environment."

138 S 28(3)(a).

139 S 28(3)(e).

140 S 28(3)(f).

141 The adherence to this three-tier approach has the potential of avoiding liability of environmental damage.

142 Glazewski *Environmental Law* 148-150. However, environmental degradation can never be totally avoided or eliminated or stop from occurring (Kotzé 2006 *Obiter* 131), hence, it is expedient of DGs transporters to undertake measures aimed at reducing the adverse impacts of DGs substances on the environment in the event of an accident.

Affairs for remedying the situation.[143] Therefore, for a DGs transporter to escape liability the burden rest on him to assert that reasonable measures were taken to rectify, minimise or remediate the environmental degradation or pollution.[144] Failure to do same is subject to a fine of R1 million or imprisonment not exceeding 1 year or both.[145]

Section 30 provides for the control of emergency incidents that result to pollution and environmental degradation. The Act defines an incident as:

> An unexpected sudden occurrence, including a major emission, fire or explosion leading to serious danger to the public or potentially serious pollution of or detriment to the environment, whether immediate or delayed.[146]

It could be deduced from the above that any unexpected incident during the transportation of DGs, leading to a significant impact on persons, property and/or the environment constitute an emergency incident and must be dealt with immediately.[147] When such happens, the responsible person[148] is obliged to report to the DG, the South African Police Services (SAPS) and the relevant fire prevention services, the relevant provincial head of the department or municipality; and all persons whose health may be affected by the incident. The responsible person must report the following: the nature of the incident,[149] any risks posed by the incident to the public, safety and property;[150] the toxicity of substances or by-products released by the incident;[151] and any steps that

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143 See in this regard s 28(6)(b) 28(7),28(8) and 28(9).
144 Glazewski *Environmental Law* 149-151.
145 S 14 and 15 of NEMA.
146 S 30(1)(a). The NRTA Regulation defines an incident as: "An unplanned event during the transportation or storage of dangerous goods which involves leakage or spillage of dangerous goods or risk thereof."
147 See Paragraph 7.9.2 to be read together with Paragraph 7.9.3 of the Policy on the Control of Chemical Substances 2010. Online at: http://www.tshwane.gov.za/abouttshwane/council/officeofexecutivemayor/occupationalhealthandsafety/11.policyonchemicalsubstancecontrol.pdf. Date accessed 22/08/2012. See further Paragraph 7.9.5. Glazewski contend that NEMA definition of an emergence incidence is wide ranging and hence encompass such matters as toxic spills in the course of their transportation by road, air or sea (Glazewski *Environmental Law* 153).
148 A responsible person is defined in the Act as: "Any person who (i) is responsible for the incident; (ii) owns of any hazardous substance involved in the incident; or (iii) was in control of any hazardous substance involved in the incident at the time of the incident" (s 30(1)(b)).
149 S 30(3)(a).
150 S 30(3)(b).
151 S 30(3)(c).

should be taken in order to avoid or minimise the effects of the incident on public health and the environment. A failure to do so will lead to a fine of R 1 million or imprisonment of 1 year or both.[152]

4.4 Cross Border Road Transport Act 4 of 1998 (CDRTA)

This law as the name indicates[153] is aimed at the regulation of cross-border road transportation relating to people or passengers and freight or goods. The regulation of goods in this sense by extension concerns DGs. The preamble of the Act,[154] stipulates three main aims. These include: (i) the need to improve the unimpeded flow by road of freight (goods) and passengers (people) in the region (SADC); (ii) enhancement of the capacity of the public sector in support of its strategic planning, enabling and monitoring functions; and (iii) the commitment to empower the cross-border road transport industry to maximise business opportunities and to regulate themselves incrementally to improve safety, security, reliability, quality and efficiency of service.

From the above objectives, it could be deduced that the regulation of DGs and its impact is the prime objective of the Act as this would ensure safety, reliability quality, and efficiency of service.[155] Section 4(1) of the Act supports this view.[156] It provides for the establishment of a cross-border road agency (CBRA) charged with the responsibility of providing advisory, regulatory, facilitatory and law enforcement functions. Furthermore, section 27 is to the effect that, before the Regulatory Committee (RC) issues or makes a decision to any application for cross-border road transport (CBRT), it

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152 S 30(11).

153 S 1(vii) underscores the objectives of the Act.

154 The preamble is a useful directory guide of any legislation or law. It has as purpose introducing and underscoring the aim and objectives of a particular Convention, Protocol and Treaty amongst others. The Preamble of United Nations Declarations of Human Right, 1945 is a clear illustration of this point. See the Preamble of the *United Nations Declaration of Human Right*, 1945.

155 See the Preamble of the Act.

156 S 4(1) establishes a cross-border road transport agency with responsibilities in s 4(2) namely: capable of instituting, defending or opposing legal proceedings of whatever nature, of purchasing or otherwise acquiring, holding and alienating or otherwise disposing of movable or immovable property or any other real right or interest, or entering into contract or doing such other things as juristic persons may perform and do.

must ascertain that the information provided adheres to the regulation in force.[157] By inference therefore, non compliance with the provisions of the regulation does not only lead to rejection of the applicant's application but also may give rise to an offence punishable under section 40.[158] Nevertheless, the applicant must be viewed as a prospective violator of the Act, should he be granted the license.[159] However, the RC, reserves the right to exercise discretionary powers on such conditions or requirements as it deems fit if the application is granted.[160] Therefore, the onus rests with the applicant to prove that his, application is in compliance with the regulation in force.

Though a permit may be issued to an individual in accordance with sections 27 and 28(1) for CBRT, the holder of such permit may lose his permit if it is proven that the permit holder has been convicted of road transport or road traffic related offences.[161] The aggrieved applicant or person affected by the decision of the RC, has a right, however to appeal against such decision.[162] It should be noted that such appeal must be in accordance with the procedures of the Act,[163] and done within the prescribed time limit allowed for appeals in the Act.[164] It could be said that any appeal after the prescribed time is null and void, for delay defeats equity.[165]

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157 S 27(1)(a)-(f).

158 See in this regard s 40(1) (zA). Any one guilty of an offence in contravention of the provision of the Act is liable to a fine or imprisonment for a period not exceeding two years or to both.

159 S 40(1)(t).

36 S 27(2).

161 S 30(1)(a)–(d). The section reads: (1) the regulatory committee may, subject to the provision of subsection (2) and (3) where a permit holder in his or her employ has been convicted of a road transport or road traffic offence in the Republic or in a state with which an agreement as contemplated in s 2(1), has been concluded, (which in this case will concern SADC countries) take one of the following steps : (a) withdraw or suspend for such period as it may deem any permit granted by it; (b) revoke the permit subject to such conditions as may be imposed; (c) declare such permit holder either permanently or for a specified period of time unfit to apply for a permit; (d) amend the conditions and requirement applicable to the permit held by the permit holder, or determine such new conditions and requirements as the regulatory committee may deem fit.

162 S 34 (a)-(c).

163 S 17(a)-(e).

164 The time limit allowed is 60 days.

165 An equitable maxim for a complainant to act within the prescribed time allowed by law if not he or she may lose his case.

The regulation contained in the CBRTA is not only limited to freight and persons, but also extends to cabotage[166] and vehicles[167] as well. In terms of the Act, cabotage is generally prohibited.[168] However, such prohibition could be uplifted by the RC, as deemed fit provided certain conditions are met.[169] These conditions *inter alia* include: (a) the state of a foreign applicant accords a South African carrier equal treatment; or (b) it is satisfied that there is no South African carrier who can provide a similar service and where lifting the prohibition is in the best interest of the Republic.[170] The equal treatment rule echoes the provision of article 5(2) of the SPTCM which requires that in order to achieve the objective of road transport, Member States are obliged to encourage and ensure the development of harmonious road transport policy that provide for equal treatment and reciprocity. From the point of view of TTDGs, the provision of the equal treatment principle seems to imply that the regulation of DGs in SA could possibly have a cross-border effect. The provision of section 2(1) sheds more light on this. According to the section, the Minister is empowered to enter into agreement with other states as far as regulation of freights and passengers are concerned. The section reads:

> The Minister may, subject to the provision of the Constitution enter into an agreement with another state whereby arrangements are made with that state to control and regulate cross border road transport between the Republic and that other state based

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166 Cabotage as define by the Act is: "Transport undertaken on a public road by a foreign carrier with vehicle which involves (a) the on loading or offloading of freights or passengers between two points in the Republic; or (b) the on loading of freights or passengers in the Republic for conveyance to a third state which is not the state of registration of the vehicle used for such transport and where such state of registration is not traversed. S 1(iv)(a)-(b)."

167 Vehicle is define by the Act to mean: (a) in relation to cross border freight road transport, any mechanically propelled road vehicle (i) which is constructed, adapted or used for the carriage of freight, excluding a semi-trailer and trailer in the case of an articulated vehicle; and (ii) which either by itself or as part of an articulated vehicle exceeds a maximum gross mass of 3500 kilogram (kg) (b) in relation to cross border passengers road transport, any mechanically propelled road vehicle which is constructed or adapted for the conveyance of passengers or any other vehicle which is used to convey passengers; and (c) in relation to cabotage ,any mechanically propelled road vehicle and, in the case of an articulated vehicle, also a trailer and semi-trailer (s 1(xxvii)).

168 S 31(1).

169 S 31(2).

170 See s 31(1)(a) and (b) for the provision of equal treatment and what is meant by equal treatment according to the Act.

> on reciprocity, similar treatment and non discrimination and where appropriate extraterritorial jurisdiction.[171]

The essence of the above provisions lies in the fact that it further emphasises the regulation of DGs by national laws. The equal treatment principle is to the effect that, the Republic would accord similar or the same treatment to a carrier of any state that equally accords the same treatment to a South African carrier. However, where this is not the case there would not be any reciprocity of treatments for DGs carriers. Section 3(1)(a) and (b) read together illuminates this by stating:

> The Minister, in the absence of an agreement between the Republic and another state for equal treatment is required by 30 days' notice in the *Gazette* prohibit the regulatory committee from considering any application by a carrier of that state that relates to granting, renewal, transfer, or amendment of any permit aimed at undertaking cross border road transport to or from any place or area or between places or areas specified in the notice.[172]

Where an application for cabotge is granted, truck-tractors and trailers and semi-trailers used in combination for purposes of such transport are expected to be registered in the same country that granted their application (which in this case is normally the Republic).[173] The relevance of registering truck-tractors, and trailers and semi-trailers used for transporting DGs in the country that granted their application, is to enable and ensure that these vehicles comply with the regulation in force when transporting DGs. These concerns *inter alia* packaging, labelling and classification. In this regard, where goods reasonably suspected to be conveyed to the contrary of the Act, such goods and the vehicle are impounded[174] and are dealt with in pursuant to the provision of the *Criminal Procedure Act* (CPA).[175] Equally important is the fact that existing cabotage permits elapse or expire six months after the entering into force of this Act.[176] However, the permit holder could only renew the permit within the meaning of section 34,[177] failure

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171 S 2(1).
142 S 3(1)(a) and (b).
173 S 31(3).
174 S 38(5). See also S 38(1) (i) and (j).
175 15 of 1977.
176 S 31(4).
177 S 34(a)-(c).

of which makes; the holder of permit; guilty of engaging in unauthorised transport and such a person would be liable for prosecution.[178]

Where a court convicts a person for unauthorised road transport, the court may declare the vehicle used and the freight conveyed on it without authority, or the convicted person's right in such vehicle or freight to be forfeited to the state.[179] There is, however, an exception to this rule. The Act provides that, where it is proved that any person other than the person convicted could not reasonably be expected to have known or had no reason to suspect, that the vehicle was or would be used for unauthorised CBRT, and that he could not have prevented such use, or that the person knowing that the person intended to use the vehicle for unauthorised transport could not reasonably prevent such use,[180] the right to forfeiture will not be loss to the state, because the interest of that other is at stake as he acted ignorantly. According to section 43, all offences are channelled to the magistrate court that has jurisdiction to hear and decide cases contemplated in the Act.

In addition, the Act makes provision for a road transport inspectorate,[181] who is charged with the responsibility of enforcing the Act. Put differently, the National Road Inspector (NRI) ensures that the provisions of the Act are strictly adhered to by DGs transporters.[182] Equally important is the fact that, the NRI, duty is to help mitigate and or avoid the harmful impacts that may result from the transportation of DGs.[183]

From a transportation point of view, the permit holder has a duty of ensuring at all times that the vehicle being used for transport is safe and operated in a safe manner.[184] In

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178 S 1(xxvi), jointly read with s 40(1)(a)-(c). S 1 defines unauthorised transport as: "Transport with a vehicle on a public road without an applicable permit or in conflict with the permit conditions, s 1 (xiii), which upon conviction is liable to a fine or imprisonment for a period not exceeding two years or both. Unfortunately, the Act does not state the applicable fine.

179 S 41(1).

180 S 41(1)(a) and (b).

181 S 37(1)-(3).

182 S 40(m). A failure to comply with the demand made by the national road inspector is an offence punishable under the Act. See also s 38(1)(b) and (c).

183 See in this regard s 38 (1)(e). See further s 38(1)(i),(j),(h), 38(1)(a) and 38(a)-(c).

184 S 47(3)(f) see generally, the provision of s 47(1), (2), (3)(a)-(f), (4) and (5)(a)-(d).

addition to this, the Act places further obligations concerning consignment notes, on the permit holder to ensure the effective regulation of TTDGs.[185] A permit holder is enjoined to return the completed consignment notes either by hand or registered post to the Chief Executive Officer (CEO), not later than twenty-one (21) days after the end of each month.[186] It could be deduced that this is required to ascertain the kind of goods that was transported and if the vehicle used the required road for transporting the particular DGs.

4.5 National Road Traffic Act 93 of 1996 and National Road Traffic Regulation of 2000

4.5.1 The National Road Traffic Act 93 of 1996 (NRTA)

Within the South African context, the regulation of DGs on road is done by the NRTA.[187] The NRTA is fundamentally different from the CBRTA in that while the former is concerned with the regulation of traffic, the latter seeks to regulate and facilitate law enforcement in respect of CBRT by the public and the private sectors. Despite this difference, the provisions of the NRTA are relevant to take into account when transporting DGs in terms of the CBRTA. Against this backdrop, section 48(f) of the NRTA explicitly requires the driver of a motor vehicle to ensure that when DGs are conveyed the requirements for its conveyance under the Act and any other act or law must be complied with.[188] The Act provides that "no person shall operate on a public road any vehicle in or on which DGs are transported."[189] However, there is a proviso to

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185 S 49(1).

186 S 49(1). Such may be a plausible route to traffic cocaine, heroin, and marijuana amongst others. Therefore, by returning the consignment list, thorough search is conducted on the driver and passengers alike. This helps in curbing the trafficking drugs and other narcotics into the Republic and the SADC region as a whole.

187 The NRTA regulates road traffic and other transport related activities to include transportation of goods. This arguably applies to DGs since it is an activity undertaking on road which constitute a mode of transport.

188 S 48(f)(i) and (ii).

189 S 54. It states that: "No person except as prescribed, offer for transportation in a vehicle, or accept transportation in, on or by a vehicle any prescribed DGs." The obligation not to transport DGs is placed on the person who requests another to transport DGs and as well as the person who finally

this. The proviso states that: "…except as prescribed, offer for transportation in a vehicle …"[190]

The above proviso seems to support DGs transportation, to its regulation. However, it could reasonably be justified that; the exception, in the proviso; also seeks to promote, ensure and encourage the regulation of TTDGs and hence offers no contradiction in the section. Accordingly, a vehicle that does not meet with the provision of the Act, is acting in contravention of the law in force.[191] In addition, section 55 makes provision for the appointment of DGs inspectors charged with the responsibility of ensuring that DGs must be transported in accordance with the laws of the Republic, as well as the regulation of the Act.[192] Although section 89 provides for damage that results from the transportation of DGs; it is argued that such offences and penalties in section 89 do not relate to DGs offences. This could be because the Act is maily concerned with the activities of everyday traffic of citizens and as such fails to take proper recognise the environmental and complementary dimensions of incidents that involve DGs transportation. Another defect of the Act is that it does not provide for clean-up measures and emergency measures like NEMA does in situations where an incident

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transports the DGs. Therefore in terms of the Act the transportation of DGs must only take place in accordance with SANS standards that relates to DGs transportation. See further GN 398 in GG 30144 of 2007 for a detailed list of standards issued in terms of s 16(3) of *the Standard Act* 29 of 1993. See further s 275 of the *National Road Traffic Act Regulation* 2000 published in GN R255 in GG 20963 of 17 March 2000.The section stipulates that: "No person shall operate on a public road any vehicle in or on which DGs is transported, unless such DGs is transported in accordance with this chapter : provided that (a) DGs are required under this chapter to be transported in a vehicle in respect of which standards specification SABS 1398 "*Road Tank Vehicles for Petroleum-based Flammable Liquids*" or SABS 1518 "*Transportation of DGs-design-requirement for road tanker*s" applies-(i) may be transported in such a vehicle; and (ii) shall be so transported in accordance with the said appropriate standards specification if the vehicle in which the said DGs is being transported was registered for the first time on and after 1 October 2001 and (b) vehicles carrying DGs in respect of which a placard is required to be fitted, with the appropriate placards prescribed in code of practice SABS 0231-1 "*Transportation of DGs-emergency information systems", Part 1: "Emergency information systems for road transportation."*

190 S 54.

191 S 89(1)-(4)(a)-(c), (5)(a) and (b) and (6).

192 S 75(1)(h) which authorises the Minister to make regulations which include the regulation in terms of the classification of DGs, the powers and duties of traffic officers *vis-à-vis* the transportation of DGs, the conditions for the transportation of DGs, the manner in which DGs may be transported and DGs which may not be transported under any circumstance. See further s 283 of the NRTA Regulation 2000 which discusses detail the powers of the DGs inspector.

may lead to potentially devastating impacts to human health, property, and the environment.

4.5.2 The National Road Traffic Regulation 2000

In terms of Chapter VIII of *the National Road Traffic Act Regulation* of 2000 (hereinafter the Regulation), section 277(1) clearly elaborates the duties of the operator, driver, and consignee and or consignor of DGs.[193] Section 280(5) of the Regulation provides that:

> An operator[194] shall ensure that a driver undergo training theoretically and practically at an approved training body for the specific class of DGs that he or she shall be responsible for and practical training by an accredited body for the specific type of vehicle he or she shall drive.[195]

The essence of training of the driver is to better equip him or her with knowledge of the instructions contained in the tremcard.[196] In addition, drivers of DGs trucks must amongst others ensure before proceeding *en route* that the vehicle is in good condition, all documents are kept in the vehicle,[197] instructions regarding the route to be taken is kept on the vehicle, the vehicle is equipped with warning signs or devices as well as the correct type and number of fire extinguishers.[198] The driver is further required to take action in the event of an accident.[199].

The consignor is required to ensure that DGs to be transported are compatible with the prescription contained in Annex D of the code of practice SABS 232-1 "*Transportation of Dangerous Goods Emergency Information System." Part 1 "Emergency System for*

193 S 277(1) of the NRTA Regulation. See further subsections (2) and (3).
194 Operator as defined by the NRTA Regulation means the owner of DGs that is being transported.
195 S 280(2).
196 A tremcard as defined by the NRTA Regulation means: "The transport emergence card listing the hazards and emergency information for a material being transported for use by the driver during an accident, or by the emergency services, if required".
197 The required documents include: Tremcards, DGs declaration, professional driver licence, material safety data sheet and a document containing a clear indication of the route to be followed by the vehicle, planned in accordance with the Code of Practice SABS 0231 *Transportation of Dangerous Goods- Operational Requirements for Road Vehicles* (s 281(1), (2)(a) and (b)).
198 S 280(1)(d) of the Regulation.
199 S 28(1)(e) of the Regulation. This echoes the provision of s 30(1)(b)(i)-(iii) of NEMA regarding a responsible person (fn 139 above).

Road Transportation".[200] The compatibility requirement states that since multiload transport is the transportation of two or more types of DGs, the goods should be compatible. A case in point is petrol or fuel wherein kerosene, diesel and petrol can be transported together. It follows that when goods are incompatible they may not be transported in terms of the Regulation, for they are in contravention of the Code of Practice 232-1.

Section 273A of the NRTA Regulation, makes provision for the incorporation of standards and other measures[201] to be published by the Minister in the *Gazette*. This further emphasises the regulation of DGs in terms of the national regulatory instruments. Again, pursuant to the NRTA Regulation, all vehicles registered in the Republic, no matter where they are, and also those not registered in the Republic, whenever they are in the Republic, shall ensure effective compliance to this Regulations.[202] Nevertheless, section 274(2) provides an exception to this general application of the NRTA Regulation. It holds that, the NRTA Regulation shall not apply to DGs transported in quantities that do not exceed the exempt quantities.[203] The Regulation equally ensures the application of other national legislation as far as DGs transportation by road is concerned. However, in the case of conflict with this legislation, the latter legislation shall take precedence.[204] Such legislation include: the *Explosive Act* (EA),[205] the *Nuclear Energy Act* (NEA),[206] the *Mines and Works Act* (MWA),[207] the

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200 S 278 of the Act.

201 Other SABS worthy to note include: SABS 0228 *the Identification and Classification of Dangerous Goods Substances and Goods*," SABS 0229 "*the Packaging of Dangerous Goods for Rail and Road Transportation in South Africa*," SABS 0230 "*the Transportation of Dangerous Goods-inspection requirement for road vehicles*", SABS 0231 "*Transportation of Dangerous Goods –operational requirement for road vehicles*," SABS 0232-3 "*Transportation of Dangerous Goods- emergency information system*" Part 3: "*Emergency Action Codes*" and SABS 0233 "*Intermediate Bulk Containers for Dangerous Substances."*

202 S 274(1).

203 S 274(2) Exempt quantities are defined in the Act as: "Those quantities that are exempt in accordance with Code of Practice" SABS 0232-1 "*Transportation of Dangerous Goods-Emergency Information Systems.*"

204 S 274 A.

205 26 of 1956.

206 131 of 1993.

207 27 of 1956.

Occupational Health and Safety Act (OHSA),[208] the *Hazardous Substances Act* (HSA),[209] the *Fire Brigade Services Act* (FBSA),[210] and the *Fertilizer Farm Feed, Agricultural Remedies and Stock Remedies Act* (FFFARSRA).[211]

Furthermore, DGs must be classified before transportation. Where there is doubt as to the appropriate classification of DGs, such goods shall be classified by an approved classification authority according to the Code of Practice SABS 0228 "*The Identification and Classification of Dangerous Substances and Goods*."[212] Therefore, in terms of the Code of Practice, DGs is a must be classified as this has the potential of ensuring the safe transportation of the DGs. Where goods are wrongly classified, the harm may be serious in the event of an accident. Classification determines the route to be taken by all DGs. Again, according to the Regulation, the consignor of DGs transportation is enjoined to present the goods to be transported and ensure that they are packed in a manner that is approved by a test station and a classification authority. Such goods must be marked in a manner pursuant to the Code of Practice SABS 0233 "*Intermediate Bulk Containers for Dangerous Substances*" and Code of Practice SABS 0229 *"Packaging of Dangerous Goods for Road and Rail Transportation in South Africa*".[213] It is evident from the above Codes of Practice that packaging is an important requirement for DGs transportation[214] especially concerning air and rail transport.[215] Improper packaging could lead to unsafe transportation goods and consequently to accidents.

208 85 of 1993.
209 15 of 1973.
210 99 of 1987.
211 23 of 1947.
212 S 279(1).
213 S 279(2).
214 See to this effect the 2nd International Conference on Transport of Dangerous Goods and the Environment. Theme: *Producer Responsibility: A Value Chain Approach to Protect People and the Environment. Do You Use or Transport Chemical or Dangerous Goods? Safe Packaging is the key*. Durban, 7-9 March 2011, online at: http// www.rpmasa.org.za. Last accessed 10 August 2011.
215 Two major problems faced by the cargo airline are that DGs are often not declared and that 99% of the packaging in which such undeclared DGs are transported is not reliable to adequately contain the substances. The following cargo planes have suffered damage with the probable cause identified: ValuJet transporting chemical oxygen generators; Pan American B-707 with onboard nitric acid fire; American Airlines DC-10 with chemical oxygen generators; Fed-EX DC 10 with flammable liquid in a lab machine, Continental Airlines B-27 with safety matches; DC -8 Freighter in Dallas with carbon dioxide fumes and American Airlines DC-9 with hydrogen peroxide.

The effects of that are enormous in the aviation industry and include; risk to the safety of the passengers and the crew, risk of explosion smoke and fire, risk of incapacitation of crew due to toxic inhalation, exposure to ionising radiation, exposure to contaminated substances or liquid and risks to radiation contamination to the aircraft. It therefore could be argued that most accidents of DGs transportation have been as a result of wrong packaging. It could be deduced that non compliance with the provision of sections 279(1) and (2) amounts to violation of the regulation in force and is punishable accordingly.[216]

The strict adherence to packaging is a requirement aimed at avoiding and or minimising the numerous accidents that result from DGs transportation. Such accidents have a profound impact on not only the goods, but also human lives, properties and the environment. Therefore, for DGs to be safely transported they have to be well packed in accordance with SABS standards of "*Packaging of Dangerous Goods for Road and Rail Transportation in South Africa*". A major interesting feature of the Regulation is the provision of DGs inspectorate and inspectors with clearly spelt out duties. Their functions are considered below.

4.5.2.1 Functions of the dangerous goods inspectorate and dangerous goods inspector in relation to dangerous goods transportation

The DGs inspectorate is charged with the responsibility of evaluating the consignor, consignee and operator so as to determine if they comply with the provisions of the Act.[217] The inspectorate is also expected to investigate the procedures that were followed by a person or group of persons *vis-a-vis* the conditions for transporting DGs.[218] The investigation conducted by the inspectorate is to ascertain whether or not a person or group violated one of the conditions for transporting DGs. Where this is the

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216 S 19 of *the Aviation Act* of 1962 that punishes upon conviction criminal charges a fine or imprisonment for a period not exceeding ten years or both.
217 S 283(1)(a).
218 S 283(1)(b).

case, the inspectorate reports the violator and he or she is prosecuted.[219] By virtue of the provision of section 283(d), the inspectorate is under the responsibility to advise the Minister on matters concerning DGs transportation. According to paragraph (f) the inspectorate keeps abreast with international developments that deal with DGs transportation. Therefore, the DGs inspectorate advises on the new trends and the necessity for the Minister to promulgate decisions in the *Gazette* regarding DGs transportation that makes national legislation to be compatible with international standards. The provision of section 283(2) empowers a DGs inspector to enter into any premise, building or vehicle in which any substance suspected to be transported may be found.[220] This implies that a DGs inspector is not to be obstructed in the exercise of his duties. Such obstruction could be taken to mean the consignee; consignor or operator is hiding something and therefore is guilty as charged for violating the regulation in force.[221] However, notwithstanding this position a DGs inspector is under obligation not

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219 S 283(v).

220 The section states: "A DGs inspector employed by the DGs inspectorate may enter any motor vehicle on or in which any substance suspected to be dangerous goods is or is suspected to be transported, or enter any premise on or in which any other operation or activity relating to such transport with or in connection with any such substance is or is suspected to be carried out." See to a similar effect the provision of 283A. It states: (1) a traffic officer may enter any motor vehicle on or in which any substance suspected to be DGs is or suspected to be transported, or enter any premises on or in which any other operation or activity relating to such transport with or in connection with any such substance is or is suspected to be carried out, and may, subject to the provisions of the act (a) demand from the driver, operator or any person in charge of the vehicle or premises to produce any document prescribed under these regulations; (b) demand any information regarding any substance or packaging receptacles unit loads bulk containers bulk transportation equipment or other objects from any person in whose possession or charge it is or from the operator or person in charge of the vehicle or premises; (c) determine the quantity or volume of any DGs;(d) examine or make copies of or take extracts from any books statement or document found in or on the vehicle or premises and which refers or is suspected to refer to the substance packaging receptacle unit loads bulk containers bulk transportation equipment or other objects,(2) notwithstanding the provisions of this regulation, a traffic officer or an approved authority shall not open DGs packages or unload or decant DGs unless (a) the operator was duly notified (b) such unloading decanting or opening of packages is authorised by the local authority concerned (c) a qualified person supervises the unloading decanting or opening of packages and (d) the DGs inspectorate is notified. It should be noted here that though the provisions seem the same, they differ in that s 283A has an added emphasis in sub-section 2(d) which s 283 does not have. Again, both deal with different authorities. While s 283 concerns DGs inspector, s 283A on the other hand concern a traffic officer.

221 S 283(2).

to open, unload or decant a DGs package.[222] This can only be permitted where the operator was duly notified[223] and if such opening, unloading or decanting is authorised by the local authority concerned[224] and that a qualified person supervised the opening, unloading or decanting of the packages.[225] Section 283 further empowers the DGs inspector to detain any vehicle suspected of non-compliance to the provisions of this Act.[226]

According to section 283(5), if the DGs inspector finds after an investigation that an operator has contravened or committed an offence under this regulation, the inspector is required to request the Member of Executive Council (MEC) to act in accordance with section 50 of the Act. This calls on the MEC to institute the applicable sanctions on defaulters. It could be deduced from the above that the application of sanctions to defaulters or those who do not comply with the regulations under this Act is based largely on the DGs inspector enforcing the provisions. If the inspector does not report to the MEC instances of non-compliance or violation of the regulations to the MEC violators will run scot-free. It must be borne in mind that under the Act, DGs are not to be transported in excess of the exempt quantity.[227] This implies that where DGs are transported in excess of the exempt quantity such DGs are considered as not complying with the regulations under the Act.

4.6 Hazardous Substance Act of 15 1973 (HSA)

Accepting that hazardous wastes or substance means DGs by extension[228] this statute seeks to regulate the transportation of hazardous substances due to their dangerous

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222 S 283(4).
223 S 283(4)(a).
224 S 283(4)(b).
225 S 283(4)(c).
226 S 283(1)(b).
227 Exempt quantity as define by the Act is those quantities in accordance with Code of Practice SABS 0232-1 *Transportation of Dangerous Goods- Emergency Information Systems*. See in this regard s 283B.
228 See section 1.2.3 above where it is argued that for the purpose of this research the definition of hazardous waste offer by the Bamako Convention is a useful and plausible definition for DGs since hazardous wastes by extension means DGs.

nature.[229] In this regard the purpose of this Act is to "provide for the regulation of substances which may cause injury or ill health to or death of human beings by reason of their toxic, corrosive, irritant, strongly sensitizing or flammable nature". It is for this reason that section 2(1)(a) empowers the Minister subject to the provision of subsection (2) and (3) to declare by notice in the *Gazette* any substance or mixture of substances which in the course of customary or reasonable handling or use to be either a Group I or II hazardous substance. This implies that where a substance is categorised as a Group I, II, III, or IV substances the specific group of substance has specific rules guiding its usage and sale amongst others.[230] In terms of section 4(4) it must be noted that a licence may not be granted if the DG[231] is not satisfied *inter alia* that: the applicant is a suitable person or company,[232] that the applicant will be able to exercise the required sufficient control over the activity that is authorised by the licence,[233] and that issuance of the licence is to be in the public interest.[234] This implies that because spill of hazardous substances in the event of the accident may lead to significant environmental degradation, it is required of the transporter or owner of the transported hazardous substance to adhere to the requirements of the precautionary and the preventive principles as stated in the NEMA. Therefore, an application for the transportation of a hazardous substance may be rejected if it is not proved by the transported company,

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229 The Act classifies hazardous substances into four groups. According to the Act group I, II, and III means a substance, mixture of substances, products or materials declared in terms of s 2(1) to be group I, II or III hazardous substance respectively. Group four hazardous substance means fabricated radio-isotopes contemplated in the definition of "nuclear-hazard material" in s 1 of the said Act (a) have an activity concentration of more than 100 becquerels per grams or (b) have an activity concentration of 100 becquerel or less per gram and which the Minister has by notice in the gazette declared to be group IV hazardous substance. Pursuant to SABS 0228 *Classification of Dangerous Goods*, DGs are classified into nine (09) classes, namely: class 1- explosive, class2-gases, class3-flammable liquid, class4-instantenouslycombustible solids, class5-oxidising substances, class6- toxic substances, class7- radioactive materials, class8-corrosive substances and class 9- miscellaneous dangerous goods. These nine classes arguably aligned with by the HSA which in turn has regrouped them into four (04) groups.

230 S 3(1).

231 The Director General here refers to the Director General of National Health and Population Development.

232 S 4(4)(a).

233 S 4(4)(c).

234 S 4(4)(e).

owner, or driver of the transported hazardous substance that due diligence will be exercised over the transported hazardous substance.[235] Furthermore, regarding Group IV hazardous substances, section 3A(1) expressly states that hazardous substances may not be imported or exported or conveyed without a written authority been obtained in terms of section 3A(2). Flowing from the above is the view that the condition of a written authorisation must be complied to when transporting hazardous substances. Failure to obtain such authorisation is subject to an offence punishable by a fine or imprisonment not exceeding 10 years or both.[236]

From a transportation point of view, the transportation of hazardous substances must be in line with the NRTA and SANS standards. According to section 48 of the NRTA, it is explicitly stated that where DGs are conveyed, the requirement for its conveyance under the Act and any other law must be complied with.[237] Moreover, the driver of the truck, consignor and consignee has specific mandatory duties under section 277 of the NRTA Regulations. It is explicitly required of drivers of a truck vehicle, the consignor and consignee to comply with the requirements as determined in the standard specifications and codes of practice with respect to the transportation of DGs in or on a vehicle on a public road. This *inter alia* includes reporting of emergency incidents. These duties aligns with the obligation of a responsible person enshrined under section 30(1)(b)(i)-(iii) of the NEMA,[238] should an accident occur that leads to the spill of hazardous substance on the ground that degrade and contaminate the environment. In this light the driver, consignor or consignee is under the obligation to report emergency incidents of hazardous substances transported for urgent emergency action.[239] In terms

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235 This is particularly why an important document for the transportation of DGs is material safety data sheets. This sheet covers obligations and serves as proof if emergency response measures are undertaken in the course of an accident leading to the spill of hazardous and toxic substances.

236 S 19(1)(a).

237 S 48(f)(i) and (ii).

238 See also s 20(a)-(c) of the NWA.

239 Emergency action according to the NRTA Regulation means: "A system designed to enable emergency crews arriving on the scene of an incident to determine, from coded placarding on the vehicle, or failing that, from the tremcard or dangerous goods declaration, the identity of the cargo carried, the nature of the hazard presented and the emergency action to be taken to neutralize the danger, and is as prescribed in Code of Practice SABS 0232-1 *Transportation of Dangerous Goods-*

of the SANS standards, vehicles transporting hazardous substances must be equipped with certain signs (symbols) to indicate the type of DGs being transported, namely placarding, warning diamonds and designated space amongst others.[240] Furthermore, for hazardous substances to be transported they must be well packed and compatible.[241] The requirement for packaging is to avoid the adverse impact incorrect packaging of hazardous substance may have. Improper packaging has the likely potential of causing a truck to overturn and hence spilling the substance on the ground, leading to significant environmental and bodily damage.[242] An important feature of the Act is the provision it makes for inspectors.[243] Pursuant to section 8(1) the DG is empowered to appoint any person as an inspector for Group I and II hazardous substance or Group III and IV hazardous substance. The inspector so designated under section 8 has the duty *inter alia* to: inspect any Group III or IV hazardous substances.[244] The inspection of these groups of substances is to ascertain whether their transportation comply with the provisions of this Act and SABS standards. Furthermore, in view of the fact that hazardous substances are transported from the warehouse, the warehousing of hazardous substances becomes a major important feature worthy of consideration when transporting these substances. DGs are required to be stored with

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Emergency Information System, Part 1: Emergency information system for road transportation and Code of Practice SABS 0232-3 *Transportation of Dangerous Goods Emergency Information System, Part 3: Emergency action codes*."

240 SABS 0228 *The Identification and Classification of Dangerous Goods for Transport*. See also SABS 1518 *Transportation of Dangerous Goods- Design Requirements for Road Tankers* and SABS 0231 *Transportation of Dangerous Goods- Operational Requirements for Road Vehicles.*

241 See in this regard Paragraph 7.6.2 of the Policy on the Control of Chemical Substances 2010. Online at: http://www.tshwane.gov.za.abouttshwane/council/officeofexecutivemayor/occupationalhealthand safety/11.policy on chemical substance control. Date accessed 22/08/2012. It is explicitly provided by the policy that a vehicle involved in the transportation of hazardous chemical substances must be well identified, classified and packed in accordance with SABS 0228 and 0229.

242 Crane 2005 *TWA* 32.

243 S 8. The powers of an inspector are clearly spelt out in s 9 and ranged from right of entry into any premise, to seizure and placing of embargos.

244 S 9(1)(b).

the provisions of SABS 0263; this has the potential of regulating the environmental impact that may result from spillage of stored DGs.[245]

4.7 Explosives Act 15 of 2003 (EA)

The *Explosives Act* 15 of 2003 has as purpose the control of explosives and to provide for matters connected therewith. According to the Act an explosive is a substance or a mixture of substances, in a solid or liquid state that has the potential of producing an explosion.[246] It follows from this that because explosive substances are dangerous to human health, property and the environment it is important to ensure their safe transportation. In this regard, the Act expressly requires persons not to transport explosives unless such a person has a licence, permit, or authorisation, authorising him or her.[247] However, it must be borne in mind that there are areas where this Act does not apply.[248] The importation or exportation of explosive substances necessitates the use of one of the four modes of transport. As a result of the impacts associated with

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245 See in this regard Paragraph 7.2.9 of the Policy on the Control of Chemical Substances 2010. Online at: http://www.tshwane.gov.za.abouttshwane/council/officeofexecutivemayor/occupationalhealthand safety/11.policy on chemical substance control. Date accessed 22/08/2012.

246 S 1 of the Act. According to the section explosion equally means: "A pyrotechnic substance in a solid or liquid state, or a mixture of such substances designed to produce an effect by heat, light sound gas or smoke or a combination of these, as a result of non detonative self sustaining exothermic chemical reaction, including pyrotechnic substances which do not evolve gases s 1(b); any article or device containing one or more substances contemplated in paragraph (a), s 1(c); any plastic explosive s 1(c) or any other substance or article which the minister may from time to time by notice in the Gazette declare to be an explosive," (s 1(e)).

247 S 2(1).

248 S 2(2). To be read jointly with s 26. Such areas forming exception to the rule, include: the importation, exportation, storage, use or transportation of any explosives by the South African National Defence Force (SANDF) or the South African National Police Force (SANPF), while performing official duties and acting in accordance with lawful instruction (s 2(2)(a)), importation, exportation, storage, use, manufacture, or transportation of any by a defence or police of any country or nay multinational or international defence which the Minister has exempted by notice in the Gazette after consultation with the Minister of Defence and Foreign Affairs (s 2(2)(b)), loading or reloading of ammunition as contemplated by s 39 of the *Firearms Control Act* 60 of 2000 (FCA) and transfer, storage, transportation manufacture, destruction, distribution, or any other use of explosives in so far as those activities relates to occupational health or occupational safety are governed by either the *Mine Health and Safety Act* 29 of 1996 (MHSA) and the *Occupational Health and Safety Act* 85 of 1993 (OHSA).

explosive substances, the Act prohibits the importation or exportation of explosives.[249] The storage, use and removal of explosives substances require some degree of movement (transport). Hence, to transport explosive substances, the concerned person must comply with the provision of the NRTA and SABS standards. Section 48 of the NRTA; explicitly states that where DGs are conveyed, the requirement for its conveyance under the act and any other law must be complied with.[250] As a result of the inherent devastating impacts that may result from the transportation of explosives to human health, property and the environment, the Act explicitly prohibits the transportation of explosives under certain conditions to any place in or outside the Republic.[251] Although the Act provides strict guidelines for the use, storage[252] or transport[253] of explosives; the concerned person must have an authorisation to do so.[254] This authorisation is a licence, without which the person will be considered of violating the provision of the Act.

Vehicles involved in the transportation of inherently dangerous substances (explosives) must be equipped with certain signs (symbols). These *inter alia* include placarding, warning diamonds and designated colours and shapes to indicate the type of substance being transported. In addition, explosive substances must be well packed before transportation.[255] This corroborates the provision of section 18 of the Act which explicitly spells out the requirement of packaging. Section 18 requires that explosive substances must be clearly identified with legible and visible identification marks and packed in such packaging material as required before ultimate transportation.[256] Moreover, different

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249 S 17. However, this is problematic because the importation or exportation is permissible if the concern holds valid permit(s) s17(a) and (b).
250 S 48 (f)(i) and(ii).
251 S 11(1).
252 S 10(1).
253 S 10(2).
254 See also SABS 0263 *Warehousing of Dangerous Good-enclosed Areas and Covered and Uncovered Outdoor Storage Yards*.
255 See in this regard SANS 10229-2 *Transport of Dangerous Good -packaging and Large Packaging for Road and Rail Transport. See further* SABS 0229 *Packaging of Dangerous Goods.*
256 S 18(1)(a). See also SABS rules on packaging and transportation of DGs.

packaging material may be further requested if there is compelling reason to do so.[257] To store something implies packaging hence it could be deduced that to safely store explosives, they must comply with the requirement of SABS 0229 Packaging of Dangerous Goods.[258] Therefore, the condition for packaging of explosive substances must be complied with to safely store explosive substances prior to and during transportation.[259] Failure to do so will be a contravention of the law and may lead to prosecution. Linked to the requirement of packaging is the issue of classification. SABS 0228 requires that for DGs to be safely transported they must be well classified.[260] This classification determines the route a particular DGs transporting vehicle must take.

5 Conclusion and recommendations

5.1 Assessment and Recommendation in terms of Regional and Sub-Regional Frameworks

The regional and sub-regional regulatory frameworks examined above clearly provide for environmental regulation. This demonstrates the fact that when transporting DGs across-borders environmental considerations should be paramount. Hence, it seems safe to say that from a trans-boundary context there is sufficient legal certainty and harmonisation of laws for the regulation of the environment and human health in general as far as the TTDGs.[261] The Bamako Convention for example expressly bans the import of hazardous waste into Africa,[262] due to the inherently devastating impact this has on

257 S 18(1)(b).

258 See also SABS 0263 *Warehousing of Dangerous Goods-Enclosed Storage Areas and Covered and Uncovered Outdoor Storage Yards*.

259 S 18(2).

260 See SABS 0228 *Classification of Dangerous Goods.*

261 The requirement to harmonise and enforce rules and regulations relating to environmental protection and transport is an important provision that runs across the regional and sub-regional frameworks. See in this regard arts XIII (1), 61(1)(C) and 5(4)(h) of the ACCNNR, AEC and the SPTCM respectively.

262 Art 4(1). This provision of the Bamako Convention is a plausible focus of the South African legal regimes, though regulation rather than ban is employed in the latter context. Furthermore the categories of hazardous waste that the Bamako Convention seeks to ban align with the 9 categories of DGs regulated by the SABS 0228, *The Identification and Classification of Dangerous Goods.* Under the Bamako Convention hazardous wastes are classified into two groups namely, Annex I and

the environment and human health in general. Moreover, the Bamako Convention obliges member parties to form an Intra-African co-operation for hazardous wastes management and control with the aim of improving and achieving environmentally sound management.[263] In addition, the AEC, ACCNNR and the SPTCM also contain specific provisions relating to the protection of environmental and human health.[264] However, a noticeable flaw of these regulatory instruments is that some do not have provisions dealing with transport. The ACCNNR for example contain no specific provision relating to transport. In this regard, it is recommended that the ACCNNR be amended to include transport provisions. The regulation of transport activities and notably DGs transportation has the potential of seriously reducing the harmful impact transport activities may have on the environment. Hence, it is recommended these treaties be amended to also provide for transport regulation. Furthermore, it is also important for SA to ratify the ACCNNR and the Bamako Convention as an active member of the AU. This could spur measures aimed at regulating the environmental

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Annex II groups. With respect to the first group, Annex I, the following are deemed to be hazardous waste under the Convention: [o] all wastes that contain or contaminated by radionuclides, the concentration or properties of which result from human activities, [YI] Clinical wastes from medical care in hospitals medical centers and clinics, [Y2] Wastes from the production and preparation of pharmaceutical products, [Y3] Wastes pharmaceutical, drugs and medicines, [Y4] Wastes from the production formation and use of biocides and phytopharmaceuticals, [Y5] Wastes from the manufacture, formation and use of wood preserving chemicals, [Y6] Wastes from the production formation and use of organic solvents, [Y7] Wastes from heat treatment and tempering operations containing cyanides, [Y8] Wastes mineral oils unfit for their originality intended for use, [Y9] Wastes oil/water, hydrocarbons/water mixtures, emulsions, [Y10] Wastes substances and articles containing or contaminated with polychlorinated biphenyls among others. While in the annex II groups the following are considered hazardous wastes under the Convention: [H1] Explosives, [H3] Flammable liquid, [H4.1] Flammable solid, [H4.2] Substances or wastes liable to spontaneous combustion, [H4.3] Substances or wastes which in contact with water emit flammable gasses, [H5.2] Oxidizing, [H5.2] Organic peroxides [H6.1] Poisonous (acute), [H6.2] Infectious substances, [H8] corrosives, [H10] Liberation of toxic gasses in contact with air and water, [H11] Toxics delay or chronic, [H12] Ecotoxic, [H13] capable by any means after disposal of yielding another material like for instance laechate, which possess any of the characteristic listed above. It must be borne in mind that Annex II group of hazardous wastes marry the nine classifications of DGs by the SABS 0228 *Classification of Dangerous Goods.*

263 See art 10(1)) of the Convention.

264 See in this regard, art 58(1) of the AEC, art III (1)-(3) read with art XIII (1) of the ACCNNR and art arts 2(3), 6(1) and 4(1) of the SPTCM.

impacts of TTDGs in SA given that international and regional law to a great extent influences national law and the fact that SA is bound by international law.

5.2 Assessment and Recommendation in terms of the South African Framework

The South African legal framework provides protective measures against environmental degradation and human health as a whole. The Constitution explicitly guarantees the right to an environment that is not harmful to human health and well-being.[265] This dual constitutional imperative is strongly echoed in the NRTA, CBRTA HSA, EA, and the NEMA. Furthermore, customary international law principles (such as the polluter-pays, preventive and precautionary principles) form part of the South African law[266] (without express enactment requirement) and these principles are accordingly enforced in SA.[267] Therefore, it is reasonable to say that the South African legal framework governing TTDGs to a considerable extent provides for the regulation of environmental aspects.[268] However, the fact that a multiplicity of laws regulate DGs in SA seem to make enforcement of regulation difficult and as such demonstrate the fact there is no legal uniformity in the laws governing TTDGs. Section 275 of the NRTA Regulations for example, explicitly requires that road tankers designed for the transportation of DGs must comply with SABS rules applicable in the year of manufacture.[269] This raises serious concerns. The fact that no SABS rule existed before August 2001 invariably implies that road tankers built prior to this date, despite their deficiencies in the transportation of DGs is deemed legal.[270] Most of these tankers still exist today and are

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265 S 24(1)(a).
266 S 232 of the Constitution. See also Kotzé 2002 *SAYIL* 175.
267 The NEMA incorporates these principles in s 2.
268 This is perhaps because the s 24(1)(b) mandates the state to ensure the realisation of the constitutional environmental rights via reasonable legislative and other measures. Hence, the legislation canvassed above being the reasonable legislative and other measures referred to in the Constitution have to an extent ensured and guaranteed a safe and healthy environment that is not harmful to both present and future generations.
269 SANS 10231 *Operational Requirement for Road that Transport Dangerous Goods* clearly states in paragraph 6.2.1.1 that DGs vehicles must comply with the relevant standard or law ruling at the time of their construction. See further Rossouw 2011 *Occupational Risk* 8.
270 Tony 2011 *TWA* 25. See further Rossouw 2011 *Occupational Risk* 8.

used for transporting DGs.[271] This is contrary to the provision of section 47(3)(f) of the CBRTA which requires that vehicles being used for transport are not dangerous or unsafe or operated in a manner that is unsafe.[272] This only brings to light the inherent difficulty and confused state of affairs associated with the enforcement of DGs regulation in SA. In view of the above, it is recommended that there is an urgent need for the adoption of legislation that would cater for the regulation of DGs in SA. It is also recommended that, since no SABS rule existed before 2001, road tankers built prior to August 2001 be refurbished as these do not comply with SABS 1518 *Transportation of Dangerous Goods-Design Requirements for Road Tankers*.[273] In addition, the fact that a SABS standard only becomes law when mentioned in a Gazette or an act is another worrisome issue as this further highlights the difficulty with the enforcement of regulation. This has let the transport industry to self-regulate by adopting a Code of Practice.[274] Therefore, it is evident that there is a need to develop a guideline document by the Department of Environmental Affairs (DEA) that will address issues like clean-up measures of environmental degradation and pollution, and an emergency reporting amongst others. Moreover, it is an explicit requirement to properly pack DGs in accordance with SABS 0229 *Packaging of Dangerous Goods for Road and Rail Transport*, for safe transportation. Linked to this requirement of packaging is the need for DGs transporters to properly mark DGs with visibly display signs, United Nations (UN) numbers and applicable diamonds in terms of SANS 10233 before transportation.[275] However, most marking and assessments of DGs packaging including intermediate bulk container (IBC) fall short of properly displaying the transporting name,

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271 Tony 2011 *TWA* 25.

272 See also s 47(1), 47(2) 47(3)(a)-(f) and 47(5)(a)-(b).

273 SABS 1518 requires that road tankers used for the transportation of DGs be well designed and non-defective. Hence, given that road tankers built before August 2001 and which many continued to exist and used for the transportation of DGs today be refurbished as they are unsafe for DGs transportation. Moreover, the law should not be retroactive.

274 Tony 2011 *TWA* 25.

275 See SANS 10233 *Intermediate Bulk Containers for Dangerous Substances Transported by Road Vehicle.*

UN numbers and applicable diamond signs.[276] Hence, it is strongly recommended that both drivers and transporters of DGs alike adhere strictly to SABS 0229 and SANS 10233 in order to safely transport DGs. The display of a transporting name, UN numbers and applicable diamond signs clearly demonstrate which type of DGs is being transported; which route is to be taken and anticipated emergency measures to be put in place should an accident occur.

Furthermore, the NRTA, which should have come to the aid of the transport industry in terms of regulations of how DGs could be transported, is rather preoccupied with everyday regulation of traffic and consequently fails to take cognisance of issues relating to DGs transportation- an activity that is exclusively within its jurisdiction. In this regard, it is suggested that the NRTA be revised to only cater for transport activities (DGs transportation in this regard) and not focus on the everyday regulation of traffic, for the transportation of DGs falls exclusively within the jurisdiction of the Act.

In addition, the enactment of NEMA spurred a positive move in the development of environmental law in SA.[277] It is evident from the above analysis that NEMA arguably contains provisions against environmental degradation. However, the fine for environmental degradation (also applicable to DGs transporters) is too small compared to the harm to the environment.[278] It is recommended that, the fine be raised. Also, NEMA requires a responsible person to take reasonable measures to rectify the harm to the environment in the event of a toxic spill but does not state if it is compulsory to put insurance in place to ensure that immediate funds are available for clean-up measures in the event of environmental damage resulting from TTDGs. It is therefore suggested that, DGs transporting companies provide government with financial security for environmental damage resulting from DGs transportation and that the Act must be

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276 "Safe Transportation of Dangerous Goods: Safety and Innovation". 2010 *TWA* 33. Online at: http://thor.sabinet.co.za.nwulib.nwu.ac.za/WebZ/images/ejour/sh_twa/sh_twa_v8_n1_a15.pdf?sessionid=01-60164-1109249729&format=F. Last accessed: 01/09/2012.

277 NEMA was enactment to give effect to the s 24 constitutional environmental right (see the Preamble in this regard).S 2(1) states that the principles set out in this section apply throughout the Republic to the actions of all organs of states that may significantly affect the environment.

278 S 15 provides for a fine of R1 million or one year imprisonment or both.

amended to provide for compulsory environmental insurance. The necessity of this is explained by the fact that the requirement of environmental insurance is supported by the polluter-pays and the preventive principles.

Accordingly, it is evident that a single environmental liability regime is urgently needed within the corpus of South African environmental law. Oosthuizen[279] contends in this regard that, an environmental liability law in SA (South African environmental law) premised on the polluter-pays principle can provide and contribute significantly to an important justification for the harmonisation of national liability law. The adoption of the national liability law will act as a vehicle for sound legal basis in establishing liability for environmental protection, pollution or damage in contrast to the already existing established liability enshrined in section 2(4)(p) of NEMA.[280] However, the polluter-pays principle is a new concept that is being developed and SA, being a developing country is faced with a number of challenges in relation to environmental protection. This suggests the reason for the ineffective implementation of the principle in the South African context. In view of the above, it is suggested that the legislature should define the nature and extent of the principle within the South African context so as to provide for absolute liability for environmental harm. The successful definition of this principle will considerably foster the regulation of environmental harm resulting not only from TTDGs but also from other economic activities.[281] Therefore, the proper definition and implementation of the principle is important for SA with its vast natural resources. The need to protect is coupled with serious developmental challenges.[282]

The CBRTA contains some relevant transport provisions and by implication provisions relating to TTDGs. However, the Act does not state the manner in which DGs should be

279 Oosthuizen 1998 *SAJELP* 360.
280 Oosthuizen 1998 *SAJELP* 360.
281 However, the High Court decision in *Bareki and Another v Gencor LTD and Others* 2006 (1) SA 432 (T) opined that s 28 of NEMA already provide absolute liability for environmental regulation.
282 The polluter-pays principle is based on the fact that societal pursuits of economic development are always met with environmental pollution and degradation and as such there is a great need to match economic development with environmental protection.

transported[283] like the NRTA Regulation does. Rather provisions are only made to *inter alia* holding a required licence[284] and returning of consignment notes[285]. In this regard, it is suggested that the Act be amended to include provisions on how DGs could be transported like the NRTA Regulation does via SABS standards. Furthermore, the Act does not impose an obligation on drivers of DGs vehicles in terms of actions to be taken *en route* in case of a hazardous substance spill that could have a damaging impact on the environment. It is suggested that an inclusion of a liability measure in the Act in terms of a fine and obligation to rectify environmental damage resulting from a spill of hazardous and other toxic substances is necessary as this may effectively regulate the environmental impact of TTDGs and as such give effect to the section 24 constitutional environmental rights.[286] The equal treatment principle in section 2(1) of the Act is open to a wide category of interpretation. The section does not say how this benefits SA and those countries with whom the principle operates. It could only be inferred that the regulation of DGs in SA could possibly have a cross-border effect. It is suggested that the principle should be revised so that its nature, extent, benefits and application could be defined, though section 3(1)(a) and (b) seem to define the extent of the principle by enjoining the Minister to refuse an application from a carrier of a state that does not accord reciprocal treatment to a South African carrier.[287]

Conclusion

The effective regulation of the environmental impact of DG transportation relies on whether the particular legal regime (South African legal framework) takes into

283 This could be in the form of road signs of the transported DGs.
284 Ss 27 and 28(1).
285 S 49(1).
286 The constitutional environmental right contained in s 24 of the Constitution is not only limited to environmental protection but also concerns the promotion of sustainable development (s 24(1)(b)(iii)). Therefore, the implementation of a liability regime (like the polluter pays principle) in the CBRTA has the potential to effectively balance the three pillars of sustainable development (economic, social and environmental aspects) as far as TTDGs is concerned, given that society in its pursuit of economic development (transportation of DGs) are always prone to environmental pollution and degradation as well as social harm.
287 S 2(1) of the CBRTA. See further s 3(1)(a) and (b).

consideration certain environmental aspects.[288] This becomes particularly important when involved in trans-border transportation of DGs. The regulation of environmental impacts in all spheres of activities in SA constitutes an important feature of the South African environmental law.[289] Although, the above analysis demonstrates that at present there is no existing single piece of legislation that regulates DGs transportation in SA, it arguably elucidates the extent to which the South African legal framework provides an adequate regulatory framework of DGs transportation from an environmental perspective. It also highlights the fact that from a cross-border perspective there is sufficient legal certainty and harmonisation of laws for environmental protection in relation to TTDGs. Although, the legal regimes canvassed above have some loopholes, these loopholes are not insurmountable. Hence, it is strongly hoped that with the effective implementation of the recommendations stated above, one could out rightly assert that the South African legal framework provides adequate regulatory measures of environmental aspects against TTDGs.

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288 In the case of Director: *Mineral Development Gauteng Region and Sasol Mining (Pty) Ltd v Save the Vaal Environment and Others* 1999 (2) SA 709 SCA (C) 719, the Court of Appeal reiterated this aspect of recognition and consideration of environmental right in the South African Constitution- and by necessity South African environmental law. The court stated: "Our Constitution, by including environmental rights as fundamental justiciable human rights, by necessary implication requires that environmental consideration be accorded appropriate recognition and respect in the administrative process in our country (at 719, Par 20)."See further Cowen 1989 *THRHR* 52.

289 See in this regard Du Bois and Glazewski 2B1-100. The Constitution being the superior law in the country sets the ball rolling for environmental protection. Cowen observes in this regard that "By including an environmental right in the Constitution, the Constitution laid the foundation stone for the development of "distinctive principles of South African environmental law" (Cowen 1989 *THRHR* 52).

BIBLIOGRAPHY

Books

B

Birnie and Boyle *International Law and the Environment*

Birnie PW and Boyle AE *International Law and the Environment* 2nd ed (Oxford University Press 2002)

Brownlie *Principles of Public of International Law*

Brownlie I *Principles of Public of International Law* 6th ed (Oxford University Press 1998)

C

Currie and De Waal *Bill of Rights*

Currie I and De Waal J *The Bill of Rights Handbook* 5th ed (Juta and Company 2006)

D

De Sadeleer *Environmental Principles*

De Sadeleer N *Environmental Principles: From Political Slogans to Legal Rules* (Oxford University Press 2002)

Du Bois and Glazewski "The Environment and the Bill of Rights"

Du Bois F.G and Glazewski J "The Environment and the Bill of Rights" in *Bill of Rights Compendium* (LexisNexis, Durban 2004) 2B-1-2B-100

Du Plessis "Cross-Border Gas Pipeline"

Du Plessis W "Cross-Border Gas Pipeline and Sustainable Development in Southern Africa" in Benidickson J, Boer B, Herman BA and Morrow K (eds) *Environmental Law and Sustainability after Rio* (Cheltenham, Edward Elgar Publishing 2011) 279-297

Hunter *et al International Environmental Law and Policy*

Hunter D, Salzman J and Zaelke D *International Environmental Law and Policy* 4th ed (West Group, University Casebook Series 2007)

G

Glazewski *Environmental Law*

Glazewski J *Environmental Law in South Africa* 2nd ed (LexisNexis Butterworths Durban 2005)

Indira and Uma Devi *Environmental Law*

Indira Priya Darsini G and Uma Devi K *Environmental Law and Sustainable Development* (Regal Publications New Delhi 2010)

K

Kummer *International Management of Hazardous Waste*

Kummer K *International Management of Hazardous Waste: The Basel Convention and Related Legal Rules* (Clarendon Press Oxford 1995)

M

Morrison and Muffet "Hazardous Waste"

Morrison FL and Muffet M "Hazardous Waste" in Morrison FL and Wolfrum R (eds) *International, Regional and National Environmental Law* (Kluwer International, The Hague 2000) 437-453

O

Olivier *et al Social Security*

Olivier MP, Smit N and Kalula ER (eds) *Social Security: A Legal Analysis* 1st ed (LexisNexis Butterworths Durban 2003)

Sands *Principles of International Environmental Law*

Sands P *Principles of International Environmental Law* 2nd ed (Cambridge University Press 2003)

S

Springer *The International Law of Pollution*

Springer L Allen *The International Law of Pollution: Protecting the Global Environment in a World of Sovereign State* (Quorum Books University of Michigan 1983)

V

Van der Linde and Feris *Compendium.*

Van der Linde M and Feris L (eds) Compendium *of South African Environmental Legislation* 2nd ed (Pretoria University L aw Press 2010)

Conferences

Frank F "The SADC trade protocol: Outstanding Issues on Rules of Origin" (Paper presented for the second SADC Roundtable on Rules of Origin held in Gaborone, Botswana 24-26 October 2001)

Kaboyakgosi G "Air and Road Transport in Botswana" (Paper presented at the Botswana Institute for Development Policy Analysis April 2003 SATRN Working Paper No.5)

Lecture Papers

Bocchino C "Understanding the Law and Policy Challenges in a Trans-boundary Protected Area Context" (Lecture presented at North-West University Potchefstroom Campus during Summer School held from 21-31March 2011)

Meyer D "Logistics, Warehousing and Distribution" (Lecture presented at Midrand, March 2005)

Dissertations

Terblanche F *A Legal Framework for the Trans-boundary Movement of Hazardous Wastes in South Africa and Lesotho* (LLM Dissertation North-West University Potchefstroom Campus 2007)

Journal Articles

C

Cowen D V "Towards Distinctive Principles of South African Environmental Law: Some Jurisprudential Perspective and a Role for Legislation" 1989 *Journal of Contemporary Roman-Dutch Law* 3-31

E

Eddie C "Changes to Moving Dangerous Goods" 2005 (*Transport World Africa*) 32

G

Gaines SE "The Polluter-Pays Principles: From Economic Equity to Environmental Ethos" 1991 *Texas International Law Journal* 463-480

H

Havenga P "A Few Step Closer Towards Establishing the Polluter Pays Principle" 1997 *South African Mercantile Law Journal* 89-95

Cameron J “The Precautionary Principle: A fundamental Principle of Law and Policy for the Protection of the Global Environment” 1991 *Boston College International and Comparative Law Review* 1-27

K

Kotzé LJ “A Legal Analysis of the Proposed Waste Discharge System in Terms of the South African Environmental and Water Law Framework” 2006 *Obiter* 128-145

Kotzé LJ “The Interpretation of Claims for Pure Economic Loss under Section 1(6)(c) of the Hazardous and Noxious Substances Convention” 2002 *South African Yearbook of International Law* 171-191

Kummer K “The International Regulation of Trans-boundary Traffic in Hazardous Waste; the Basel Convention” 1992 *International and Comparative Law Quarterly* 530-562

M

Malcolm B “Dangerous Goods in Air Transport: Learning from Aviation History” 2005 *Transport World Africa* 46

Murungi JEN and Kotzé LJ “Environmental Liability under the Terminal Operators Conventions: A South African perspective” 2005 *Comparative and International Law Journal of South Africa* 47-74

N

Naldi G “The Regulation of Transnational Trade in Hazardous Waste- the African Response” 2000 *South African Journal of Environmental Law and Policy* 213-236

O

Oosthuizen F “The Polluter Pay Principle: Just a Buzz Word of Environmental Policy?” 1998 *South African Journal of Environmental Law and Policy* 355-361

P

Poggolini D “Know Your Dangerous Goods Transporter” 2005 *Transport World Africa* 27

R

Rossouw A “Regulating Dangerous Goods Transportation: legislation and compliance” 2011 *Occupational Risk Management* 6-12

S

Soltau F “The National Environmental Management Act and Liability for Environmental Damage” 1999 *South African Journal of Environmental Law and Policy* 33-41

Stokes C “How to Report Environmental Incidents” 2008 *Occupational Risk Management* 15

Stone T “Really Who is Driving?” 2011 *Transport World Africa* 24-25

V

Van der Linde M “African Response to Environmental Protection” 2002 *Comparative and International Law Journal of South Africa* 99-113.

Conventions

The African Convention for the Conservation of Nature and Natural Resources of 2002

The Bamako Convention on the Ban of Import into Africa and the Control of Trans-boundary Movement and Management of Hazardous Wastes within Africa of 1991

The Treaty Establishing the African Economic Community of 1991

The Southern African Development Community Protocol on Transport Communication and Meteorology of 2002

The United Nations Recommendations on the Transport of Dangerous Goods: Model Regulation 12th ed

The United Nations Declaration of Human Rights 1945

Legislation

The Constitution of the Republic of South Africa, 1996

Cross Border Road Transport Act 4 of 1998

Compensation for Occupational Injuries and Diseases Act 130 of 1993

Criminal Procedure Act 51 of 1977

Explosive Act 15 of 2003

Firearm Control Act 60 of 2000

Fertilizers Farm Feed, Agricultural Remedies and Stock Remedies Act 23 of 1947

Hazardous Substances Act 15 of 1973

Mine Health and Safety Act 29 of 1996

National Environmental Management Act 107 of 1998

National Road Traffic Act 93 of 1998

National Road Traffic Regulation of 2000

National Water Act 36 of 1998

Nuclear Energy Act 131 of 1993

Occupational Health and Safety Act 85 of 1993

Other Jurisdictions

The Constitution of the Republic of Malawi 1994

The Constitution of the People's Republic of Mozambique 1990

The Constitution of the Republic of Namibia 1990

Government Publications

SABS Transportation of Dangerous Goods: design requirement for road tankers (SABS 1518)

SABS Transportation of Dangerous Goods - operational requirement for road vehicles (SABS 0231)

SABS *Transportation of Dangerous Goods - packaging and large packaging for road and rail transport-part 1: packaging* (SANS10229-1:2005)

SABS *Transportation of Dangerous Goods - inspection requirement for road vehicles* (SABS 0230)

SABS *Transportation of Dangerous Goods Emergency Information System Part 3: Emergency Action Code* (SABS 0232-3)

SABS *Transportation of Dangerous Goods Emergency Information System Part 1: emergency information system for road transportation* (SABS 0231-1)

SABS *Road Tanker Vehicle for Petroleum Based Flammable Liquids* (SABS 1398)

SABS *Identification and Classification of Dangerous Goods Substances and Goods* (SABS 0228)

SABS *Packaging of Dangerous Goods for Road and Rail Transportation in South Africa* (SABS 0229)

SANS *Transportation of Dangerous Goods - Packaging and Large Packaging for Road and Rail Transport* (*Part* 2) (SANS 10229-2:2007)

SANS *Intermediate Bulk Containers for Dangerous Substances Transported by Road Vehicle* (SANS 10233)

SANS *Tremcard* (SANS10231)

SANS *The Classification and Labelling of Dangerous Goods and Preparation for Sale and Handling* (SANS 0265)

GN 225 of 2000, published 17 March 2000

GN 398 of 2007, published 10 August 2007

Cases

Bareki and Another v Gencor Ltd and Others 2006 (1) SA 432 (T)

Beukes v Knights Deep Ltd 1917 TPD 683-694

Director: Mineral Development Gauteng Region and Sasol Mining (Pty) Ltd v Save the Vaal Environment and Others 1999 (2) SA 709 SCA (C)

Innes v Johannesburg Municipality 1911 (TPD) 12

Johannesburg City Council v Marine and Trade Insurance Co 1970 1 SA (W) 181

Internet Sources

http://www.medical-dictionary.thefreedictionary.com/dangerous+goods. Last accessed 15/11/2011.

http://www.businessdictionary.com/definition/dangerous-goods.htm. Last accessed 15/11/2011.

http://www.oxforddictionaries.com/definition/dangerous. Last accessed 15/11/2011.

http://www.sadc.int/English/history/index.php. Last accessed 09/09/2011.

http://www.tips.org.za/files/695.pdf. Last accessed 09/09/2011.

http://www.upan1.un.org/intradoc/gropus/public/document/cafrad/unpan004840.pdf. Last accessed 02/5/2012.

http://www.orusovo.com/namcon/. Last accessed 02/5/2012.

http://www.confinder.richmond.edu/admin/docs/constitution_ (in_force_21_01_05...) pdf. Last accessed 02/5/2012.

http://www.rpmasa.org.za. Last accessed 10/08/2011.

http://www.tshwane.gov.za.abouttshwane/council/officeofexecutivemayor/occupationalhealthandsafety/11.policyonchemicalsubstancecontrol. Last accessed 22/05/2012.

www.africaunion.org/root/au/documents/treaties/lists/african%20convention%20nature%20&%20resources.pdf. Last accessed 06/08/2012.

www.africaunion.org/root/au/documents/treaty/list/treaty%20establishing520the%20african%20economic%20community.pdf. Last accessed 06/08/2012.

www.hktdc.com/info/mi/a/mp/en/1x006513/1/market-profile/s. Last accessed 21/06/2012.

http://thor.sabinet.co.za.nwulib.nwu.ac.za/WebZ/images/ejour/sh_twa/sh_twa_v8_n1_a15.pdf?sessionid=01-60164-1109249729&format=F. Last accessed 01/09/2012.