

**The environmental regulation of uranium mines in Namibia:  
a project life cycle analysis**

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## **ABBREVIATIONS**

AERPA	Atomic Energy and Radiation Protection Act
CBO	Community based organisation(s)
CERES	Coalition for Environmentally Responsible Economies
COM	Chamber of Mines
DEA	Directorate of Environmental Affairs
DEAT	Department of Environmental Affairs and Tourism
DG	Director-General
EA	Environmental assessment(s)
EAP	Environmental assessment practitioner(s)
EIA	Environmental impact assessment(s)
EIF	Environmental Investment Fund
EIFA	Environmental Investment Fund of Namibia Act
EMA	Environmental Management Act
EMB	Environmental Management Bill
EMP	Environmental Management Plan(s)
EPL	Exclusive prospecting license
ERL	Exclusive reconnaissance license
GEMI	Global Environmental Management Initiative
GRI	Global Reporting Initiative
HIA	Heritage impact assessment(s)
I&APs	Interested and affected parties
ICED	International Conference on Engineering Design
IEM	Integrated environmental management
IIASA	International Institute for Applied Systems Analysis
ISO	International Organisation for Standardisation
IUCN	International Union for Conservation of Nature
LCA	Life cycle assessment
MET	Ministry of Environment and Tourism
MME	Ministry of Mines and Energy

MWA	Minister of Water Affairs
NGO	Non-government organisation(s)
NHA	National Heritage Act
NHC	National Heritage Council
NRPA	National Radiation Protection Authority
NSX	Namibian Stock Exchange
OECD	Organisation for Economic Cooperation and Development
PDCA	Plan do check act
PER	Potchefstroom Electronic Law Journal
PWC	Price Waterhouse Coopers
SA	South Africa
SADC	Southern Africa Development Community
SAIEA	South African Institute for Environmental Assessments
SAPL	South African Public Law
SAJELP	South African Journal of Environmental Law and Policy
SEA	Strategic environmental assessment
TBL	Triple Bottom Line
UI	Uranium Institute
UNDP	United Nations Development Programme
UNIN	United Nations Institute for Namibia
USC	Uranium Stewardship Committee
WNA	World Nuclear Association
WRMA	Water Resources Management Act

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*Soli Deo Gloria.*



## ABSTRACT

Uranium exploration and mining activities in Namibia have increased rapidly since 2003, which increase not only poses a significant impact on the country's economy, but also on its unique and pristine natural environment. The nature and extent of the environmental impacts associated with uranium mining requires a sound environmental law and policy framework that regulates uranium activities, impacts and aspects during each phase of the project life cycle of a uranium mine. It also requires of authorities to establish and enhance environmental protection and sustainability during uranium mining operations and to ensure that all environmental impacts that inevitably occur as a result of uranium mining activities are addressed in a holistic and integrated manner during each phase of the project life cycle of a uranium mine. In order to do this the country must develop and maintain an efficient and effective environmental governance regime.

Namibia's environmental law and policy framework that regulates uranium mining does not cover the entire PLC of uranium mining. It is vital that the current loops in the country's existing environmental regulatory framework be closed and that an efficient and effective environmental governance regime, as envisaged in this study, be established. This will enable the administering agents to actively promote and maintain the welfare of the people, ecosystems, essential ecological processes and the biodiversity of Namibia, as well as the utilisation of living natural resources on a sustainable basis to the benefit of all Namibians, both present and future, as pledged in the Namibian Constitution.

**Key words:** *environmental law, Namibia, environmental governance, project life cycle, uranium mining*

## UITTREKSEL

Uraan-eksplosarie en -mynbou-aktiwiteite in Namibië het sedert 2003 vinnig toegeneem, wat nie alleen 'n noemenswaardige impak op die land se ekonomie het nie, maar ook op sy unieke en eertydse natuurlike omgewing. Die aard en omvang van omgewingsimpakte wat met uraanmynbou geassosieer word vereis gesonde omgewingsraamwerk-wetgewing en -beleid wat uraanmynbou-aktiwiteite, -impakte en -aspekte tydens elke fase van die projeklewensiklus van 'n uraanmyn reguleer. Dit vereis ook van die owerhede om omgewingsbeskerming en volhoubaarheid tydens uraanmynbou-werksaamhede tot stand te bring en te verbeter en om te verseker dat alle omgewingsimpakte wat onvermydelik as gevolg van uraanmynbou-aktiwiteite plaasvind, op 'n holitiese en geïntegreerde wyse tydens elke fase van die projeklewensiklus van 'n uraanmyn aandag geniet. Ten einde dit te bewerkstellig is dit noodsaaklik dat die land 'n effektiewe en doeltreffende omgewingsbestuur-stelsel moet ontwikkel en in stand moet hou.

Namibië se omgewingsraamwerk-wetgewing en -beleid wat uraanmynbou reguleer, dek egter nie die hele projeklewensiklus van uraanmynbou nie. Dit is noodsaaklik dat die skuiwergate in die land se huidige omgewingsreguleringsraamwerk toegestop moet word en dat 'n effektiewe en doeltreffende omgewingsbestuur-stelsel, soos beoog in hierdie studie, ingestel moet word. Dit sal owerhede in staat te stel om op 'n aktiewe wyse die mense, ekosisteme, noodsaaklike ekologiese prosesse en die biodiversiteit van Namibië, asook die benutting van lewende natuurlike hulpbronne op 'n volhoubare wyse te bevorder en te onderhou, tot voordeel van alle Namibiërs, soos vasgelê in die Namibiese Grondwet.

***Sleutelwoorde:*** omgewingsreg, Namibië, omgewingsbestuur, projeklewensiklus, uraanmynbou

## 1. Introduction

### 1.1 Background

Namibia<sup>1</sup> has experienced a rapid increase in uranium<sup>2</sup> exploration activities since 2003. This increase has been driven by a boom in global commodities, increasing global liquidity, record-high uranium prices and Namibia's image as an exploration-friendly country.<sup>3</sup> It seems probable that the two uranium mines currently in operation<sup>4</sup> will be joined by several more over the coming years, all situated in the water-scarce Namib Desert. It follows that the country's uranium exploration and mining activities may in the near future have a significant impact on its economy, but also on its unique and pristine natural environment.

Based on the premise of lower carbon emissions and higher economic outputs than generally associated with the combustion of fossil fuels, nuclear energy is increasingly seen as the greener option when compared to, for instance, Namibia's existing coal-fired power stations.<sup>5</sup> However, the primary environmental impacts of nuclear power, namely uranium mining and associated radioactive effluent emissions and greenhouse gases generally do not enjoy

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<sup>1</sup> Namibia is a large and sparsely populated arid country situated on Africa's south-west coast. The country boasts an extraordinary range of habitat, a significant variety of *fauna* and *flora*, as well an enormous range and amount of minerals. Namibia's economy is heavily dependent on earnings generated from the primary sector, the major contributors to the Gross Domestic Product (GDP) being mining and energy, fishing, agriculture, tourism, and manufacture and infrastructure. IIASA 2000 <http://iiasa.ac.at/Admin/PUB/Documents/IR-00-031.pdf>.

<sup>2</sup> Uranium is a radioactive silvery-white metallic element. It can easily break down into lighter elements, making it valuable for energy generation and explosive materials in nuclear weapons. Uranium is mainly used to generate electricity by means of nuclear reactors. Although uranium itself is not very reactive, uranium minerals are always associated with more radioactive elements such as radium and radon in the ore, which should therefore be handled with care for occupational health and safety reasons. The major source of concern for uranium mining and mill tailings is the increased release of the radioactive gas radon, in particular the isotope <sup>222</sup>Rn, which has a half-life of 3.8 days. This nuclide is one of the products in a long chain beginning with <sup>238</sup>U and it is the immediate daughter of the decay of <sup>226</sup>Ra. Chemically, radon is a noble gas; therefore it readily diffuses out of solid materials containing uranium or radium. Although radon does not present a health hazard, its longer lived daughter products do. When these daughter products, formed by the decay of radon in the atmosphere, are inhaled, they may become attached to the tissues at the base of the bronchial network. Their subsequent decay can lead to lung cancer (Lamarsh and Baratta *Introduction to Nuclear Engineering* 222). Uranium enters the body by ingesting or inhaling airborne dust particles or aerosols and is absorbed from the intestine or lungs, entering the bloodstream, and is rapidly deposited in the tissues, predominantly the kidney and bone or excreted in the urine (Taylor and Taylor 1997 [http://vp.gov.ns.ca/files.shared/ng\\_Citizen\\_Action\\_to\\_Protect\\_the\\_Environment.pdf](http://vp.gov.ns.ca/files.shared/ng_Citizen_Action_to_Protect_the_Environment.pdf)).

<sup>3</sup> Smith 2007 "Uranium in Namibia" at <http://www.xemplar.ca/pdf/ILG/20Uranium%20in%20Namibia%20pdf>.

<sup>4</sup> Rio Tinto's Rössing Uranium Mine and Paladin's Langer Heinrich Mine.

<sup>5</sup> Hugo *Environmental Management* 140-141.

sufficient consideration by supporters when opting in favour of the use of nuclear energy<sup>6</sup> and, as a result, health<sup>7</sup> and environmental risks and impacts associated with (uranium) mining often come second to considerations of short-term economic benefits.<sup>8</sup> Scientific evidence generally indicates that uranium mines in the Namib Desert may pose several long-term environmental risks, including high water consumption, groundwater contamination and airborne radiation pollution, as well as increased development on or adjacent to sensitive ecosystems resulting in compound impacts on *inter alia* protected and endangered species.<sup>9</sup>

## 1.2 Legal framework<sup>10</sup>

The above said, article 95(l) of the *Constitution of the Republic of Namibia*, 1990 (Constitution) provides for environmental protection by requiring that:

[t]he State shall actively promote and maintain the welfare of the people by adopting, *inter alia*, policies aimed at the following: ...

- (l) maintenance of ecosystems, essential ecological processes and biological diversity of Namibia and utilisation of living natural resources on a sustainable basis for the benefit of all Namibians, both present and future; in particular, the Government shall provide measures against the dumping or recycling of foreign nuclear and toxic waste on Namibian territory.

Namibia's environmental clause is not contained in the constitutional list of fundamental rights and freedoms,<sup>11</sup> but instead has been included in the chapter containing the principles of state

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<sup>6</sup> Pembina Institute 2007 <http://www.climateactionnetwork.ca/e/publications/uranium-mining.pdf>. For nuclear power, a significant proportion of greenhouse gas emissions is derived from the fuel supply, including uranium mining, milling, enrichment and fuel manufacture which are critical aspects in assessing the long-term ability of nuclear power to reduce greenhouse gas emissions (Mudd and Diesendorf 2007 <http://civil.eng.monash.edu.au/about/staff/muddpersonal/2007-SustEngSci-Sust-v-Uranium-Mining.pdf>).

<sup>7</sup> See n 2. Although health risks and social implications associated with uranium mining are numerous, considerations pertaining thereto fall beyond the scope and objectives of the study, which focuses on environmental risks (so-called 'green' issues) and only refers to associated health risks and social issues (so-called 'brown' issues) occasionally. This matter is further discussed below. See also Nel and Kotzé in Strydom and King (eds) *Fuggle and Rabie's Environmental Management in SA* 2-3.

<sup>8</sup> Du Rand 2008 <http://www.issafrica.org>.

<sup>9</sup> UNIN *Namibia: Perspectives for National Reconstruction and Development* 946-949; Wells *et al* in Strydom and King (eds) *Fuggle and Rabie's Environmental Management in SA* 535-542. See also 2.2.

<sup>10</sup> The text of this study reflects the law of the Republic of Namibia as at 30 December 2011. Presentations and publications that stem from this study include Louw A "Balancing of interests in environmental law in Namibia" *Conference on the Balance of Interests: Development and Environmental Law in Africa* 8-9 December 2010 Pretoria and Louw A in Faure M and Du Plessis W (eds) "Balancing of interests in environmental law in Namibia" in *Balancing of environmental interests in environmental law in Africa* (Pretoria Law Press 2011 Forthcoming).

policy.<sup>12</sup> Although the environmental principle binds all levels of government, it does not establish an enforceable environmental right. It merely constitutes an abstract objective constitutional provision that should guide the state in its decision-making processes that may have an impact on or influence the environment.<sup>13</sup> Despite the challenges inherent to a non-enforceable environmental principle of state policy, there are various laudable developments that counter the absence of a justiciable environmental right in the Constitution, including the constitutional provisions for a national ombudsman<sup>14</sup> with an environmental mandate and a state trust.<sup>15</sup>

The constitutional recognition of environmental concerns triggered widespread legislative reform relating to the management of natural resources in Namibia as is evident when considering that mining and exploration activities are regulated by, for example, the *Minerals (Mining and Prospecting) Act* (Mining Act),<sup>16</sup> in future the *Environmental Management Act* (EMA),<sup>17</sup> the *Environmental Assessment Policy for Sustainable Development and Environmental Conservation* (EA Policy),<sup>18</sup> as well as various other sectoral-specific acts pertaining to water,<sup>19</sup> air quality,<sup>20</sup> land use,<sup>21</sup> radiation,<sup>22</sup> general biophysical impacts<sup>23</sup> and socio-economic impacts.<sup>24</sup>

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<sup>11</sup> Constitution ch 3: 'Fundamental Human Rights and Freedoms'.

<sup>12</sup> Constitution ch 11: 'Principles of State Policy'.

<sup>13</sup> Constitution art 101; Du Plessis *Fulfilment of South Africa's Constitutional Environmental Right* 252.

<sup>14</sup> Constitution ch 10 and more specifically art 91(c). The functions of the Ombudsman include investigating complaints concerning over-utilisation of non-renewable resources; degradation and destruction of ecosystems; failure to protect the beauty and character of the country; and failure to take appropriate action to call for the remediation, correction and reversal of activities related to the above through means that are fair, proper and effective. See 2.4 and 3.9.

<sup>15</sup> Constitution art 100. See 3.10.

<sup>16</sup> *Minerals (Prospecting and Mining) Act* 33 of 1992. See 3.1.

<sup>17</sup> *Environmental Management Act* 7 of 2007. See 3.2.

<sup>18</sup> *Environmental Assessment Policy for Sustainable Development and Environmental Conservation* 1995. See 3.3.

<sup>19</sup> *Water Act* 54 of 1956; *Water Resources Management Act* 24 of 2004.

<sup>20</sup> *Atmospheric Pollution Prevention Ordinance* 45 of 1965.

<sup>21</sup> *Town Planning Ordinance* 18 of 1954; *Township and Division of Land Ordinance* 11 of 1963; *Nature Conservation Ordinance* 4 of 1975; *Nature Conservation Amendment Act* 5 of 1996; relevant town planning scheme(s).

<sup>22</sup> *Atomic Energy and Radiation Protection Act* 5 of 2005; *Hazardous Substances Ordinance* 14 of 1974; *Labour Act* 6 of 1992.

<sup>23</sup> *Nature Conservation Ordinance* 4 of 1975; *Nature Conservation Amendment Act* 5 of 1996; *Soil Conservation Act* 76 of 1969; *Biosafety Act* 7 of 2006.

<sup>24</sup> *Communal Land Act* 10 of 2002; *Traditional Authorities Act* 7 of 1995; *Nature Conservation Ordinance* 4 of 1975; *Nature Conservation Amendment Act* 5 of 1996; *Regional Councils Act* 22 of 1992; *Regional Councils Amendment Act* 5 of 1996.

All laws which were in force immediately before 21 March 1990, the date of Independence, remain in force until repealed or amended or until they are declared unconstitutional.<sup>25</sup> In addition, Namibia follows a monist approach<sup>26</sup> whereby the country is automatically bound by the rules of international law<sup>27</sup> and the contents of international agreements entered into, including agreements within the African Union (AU) and the Southern Africa Development Community (SADC), automatically form part of the law of Namibia. In order to overcome the challenges inherent to a non-enforceable environmental principle of state policy and, hence, when petitioning in favour and support of an environmental right in a court of law in Namibia, a petitioning party may have to rely on article 144 in pursuance of environmental rights. Article 144 states that "[u]nless otherwise provided ... the general rules of public international law and international agreements binding upon Namibia forms part of the law of Namibia." Aggrieved parties may, subsequently and for instance, rely on article 24 of the *African Charter on Human and Peoples' Rights*, 1981 (African Charter), which is an international agreement, in pursuance of relief sought via article 144 of the Namibian Constitution, thereby establishing an enforceable and pursuable environmental right. Hence, instead of relying on article 95(l) in support of its case involving or based on an environmental or related interest, a petitioning party may rather choose to base its claim on relevant provisions as contained in international law and international agreements to which Namibia is a party. A petitioning party may thereby overcome the unenforceable nature of article 95(l).

<sup>25</sup> Constitution arts 25(1)(b) and 140(1).

<sup>26</sup> Constitution art 144. Dugard *International Law* 47; Ruppel in Ruppel and Ruppel-Schlichting (eds) *Environmental Law and Policy in Namibia* 33. In a monist approach municipal courts are obliged to apply the rules of international law directly without the need for any act of adoption by the courts or transformation by the legislature (Dugard *International Law* 47).

<sup>27</sup> Sources of international environmental law assented to by Namibia that may be relevant to uranium mining include the following: *Convention Concerning the Protection of the World Cultural and Natural Heritage*, 1972; *World Heritage Convention*, 1975; *Vienna Convention for the Protection of the Ozone Layer*, 1985; *Montreal Protocol on Substances that Deplete the Ozone Layer*, 1987; *Convention on Wetlands of International Importance, especially as Waterfowl Habitat*, 1971 (Ramsar Convention); *Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal*, 1989; *Framework Convention on Climate Change*, 1992; *Kyoto Protocol*, 1997; *Convention of Biological Diversity*, 1992; *United Nations Convention to Combat Desertification in those Countries Experiencing Serious Drought and/or Desertification, Particularly in Africa*, 1994; *Southern African Development Community (SADC) Protocol on Shared Watercourse Systems in the Southern African Region*, 1995; *SADC Protocol on Mining*, 1997; *SADC Protocol on Wildlife Conservation and Law Enforcement*, 1999; *SADC Protocol on Forestry*, 2002. Aspects pertaining to the regulation of international and regional law that may impact on the regulation of uranium mining do not fall within the ambit of this study and, hence, will not be discussed. For a detailed discussion of international law applicable in Namibia see Ruppel in Ruppel and Ruppel-Schlichting (eds) *Environmental Law and Policy in Namibia* 46-62.

The above exposé shows that Namibia's environmental protection effort is regulated by a plethora of different laws and policies. As a result, the country's regulatory regime is fragmented,<sup>28</sup> stripped from the ability to establish a concerted and integrated approach to environmental governance. This *status quo* may inhibit and negate sustainable environmental governance efforts.<sup>29</sup>

Notwithstanding the fragmented environmental governance effort created by its environmental law and policy, Namibia's environmental governance regime manages to regulate environmental impacts subsequent to uranium mining activities.<sup>30</sup> Namibia's environmental protection effort should, *idealiter*, cover the entire project life cycle<sup>31</sup> (PLC) of a development in order to achieve and maintain environmental protection and adhere to the constitutional principle of state policy<sup>32</sup> while mining uranium and performing ancillary activities. The PLC allows for a holistic approach towards environmental governance that covers the entire life of the project beforehand and allows for the distinguishing of environmental impacts or potential environmental impacts during different phases of the life cycle of the project.

In this study the PLC is understood to consist of the following phases: planning and design phase;<sup>33</sup> construction phase;<sup>34</sup> operational phase;<sup>35</sup> and remediation, rehabilitation, decommissioning and closure phase.<sup>36</sup> During all of these phases, the activities of a mine, in this case a uranium mine, inevitably affect the environment,<sup>37</sup> and must therefore be regulated

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<sup>28</sup> See 2.2.1.

<sup>29</sup> See Paterson and Kotzé *Environmental Compliance and Enforcement* 110-114, 371; Nel and Kotzé in Strydom and King (eds) *Fuggle and Rabie's Environmental Management in SA* 18; Kotzé 2006 *PER* 1-44; Bosman, Kotzé and Du Plessis 2004 *SAPL* 411-421. See also 2.2.1.

<sup>30</sup> See 2.2 and 4.

<sup>31</sup> See 2.2 and 4 and figure 2. In terms of the project life cycle, environmental governance should be present and practised from the planning and design phase through to the procurement and contractual phases; and the implementation phase, which includes sub-phases such as construction, commissioning, operations, redesign, optimisation, expansion and modification, maintenance, decommissioning, dismantling and rehabilitation (Nel and Kotzé in Strydom and King (eds) *Fuggle and Rabie's Environmental Management in SA* 14).

<sup>32</sup> See 1.

<sup>33</sup> See 2.2 and 4.1. See also figure 2.

<sup>34</sup> See 2.2 and 4.2. See also figure 2.

<sup>35</sup> See 2.2 and 4.3. See also figure 2.

<sup>36</sup> See 2.2 and 4.4. See also figure 2.

<sup>37</sup> See 2.2.

in accordance with environmental law.<sup>38</sup> Although the PLC has been created as a regulatory mechanism in the environmental management science, it cannot be separated from environmental governance on the part of a state government or from the content of a country's law and policy. It follows that, during all of these PLC phases, when applied to project development in Namibia, the activities of, for example, a uranium mine developer will have to be regulated in terms of and in accordance with the country's environmental laws and policies.<sup>39</sup> At the same time, the ability of the PLC to contribute to environmental governance by overcoming the consequences of fragmented environmental governance of uranium mining<sup>40</sup> must be investigated. It must, however, be acknowledged that, in the absence of sufficiently comprehensive environmental law and policy, a mining company could still use various environmental governance instruments, which instruments are not necessarily dependant on the force of environmental law and policy, to limit or regulate the mine's impact on the environment.<sup>41</sup>

### **1.3 Aim of study**

This study aims to determine to what extent the body of environmental law regulates uranium activities,<sup>42</sup> impacts<sup>43</sup> and aspects<sup>44</sup> during the respective phases of the PLC and to make recommendations towards the improvement and strengthening of Namibia's environmental framework law and policy. Although recognising the significant implications of mining (including uranium mining) on economic and social development, the analysis in this study takes on a

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<sup>38</sup> See 3.

<sup>39</sup> See 4.

<sup>40</sup> Fragmentation is further elaborated upon above.

<sup>41</sup> The benefits of applying a mix of regulatory and environmental management tools in order to ensure sustainability are well-documented. According to Nel and Du Plessis, environmental legislation should *ideally* provide a mix of regulatory and environmental management tools (Du Plessis and Nel "Driving compliance to and enforcement of South African legislation by means of a hybrid of "new" environmental governance instruments" 5, 36-37.) See also Nel and Wessels *PER* 13(5)48-78; Gunningham and Sinclair *Leaders and Laggards* 1-224; Barrow *Environmental Management and Development* 1-276; Barrow *Environmental Management for Sustainable Development* 1-454. See 2.4.

<sup>42</sup> See 2.2 and 4.

<sup>43</sup> ISO 14001:2004 defines 'environmental impact' as "any change to the environment, whether adverse or beneficial, wholly or partially, resulting from an organisation's environmental aspects, the latter signifying those elements of an organisations' [activities, products or services that can interact with the environment]". See 2.2.

<sup>44</sup> ISO 14001:2004 defines 'environmental aspect' as an "element of an organisation's activities or products or services that can interact with the environment". See 2.2.



'green'<sup>45</sup> perspective on the environment and environmental governance, as opposed to a 'brown'<sup>46</sup> perspective.

The study is mainly a literature survey of various environmental laws and policies as well as those administering agents applicable to or concerned with uranium mining in Namibia. The study focuses on the Namibian context and on uranium mining in particular.

The fact that this study exceeds the prescribed length may be attributed to the absence of scholarly analysis on the regulation of mining and in particular on the regulation of uranium mining in Namibia.<sup>47</sup> For purposes of legal reform, it is important that these topics be discussed and that they be discussed as comprehensively as in this study.

The study commences with a discussion on environmental governance in the country, generally. It proceeds with a brief overview of the main framework laws pertaining to uranium mining followed by a critical analysis of the environmental law and policy provisions that apply to each phase of the PLC of uranium mining. The study concludes with recommendations for addressing some weaknesses in the existing environmental law and policy framework in order to strengthen the governance of uranium mining and its impacts.

The focus, parameters and objectives of this study can be illustrated as follows:

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<sup>45</sup> This perspective only addresses the 'green' environmental agenda, such as the biotic (living) and abiotic (non-living) elements of the earth (see Nel and Kotzé in Strydom and King (eds) *Fuggle and Rabie's Environmental Management in SA* 2-3 for a more detailed discussion).

<sup>46</sup> In terms of the 'brown' perspectives on the environment, human beings are an integral and indivisible part of the earth system; therefore social issues may not be separated from the environment (see Nel and Kotzé in Strydom and King (eds) *Fuggle and Rabie's Environmental Management in SA* 3 for a more detailed discussion).

<sup>47</sup> The book of Ruppel and Ruppel-Schlichting *Environmental Law and Policy in Namibia* is the most recent authority on environmental law in Namibia. However, this publication does not investigate the extent to which the body of environmental law regulates uranium activities, impacts and aspects during the respective phases of the PLC of uranium mines in the country.

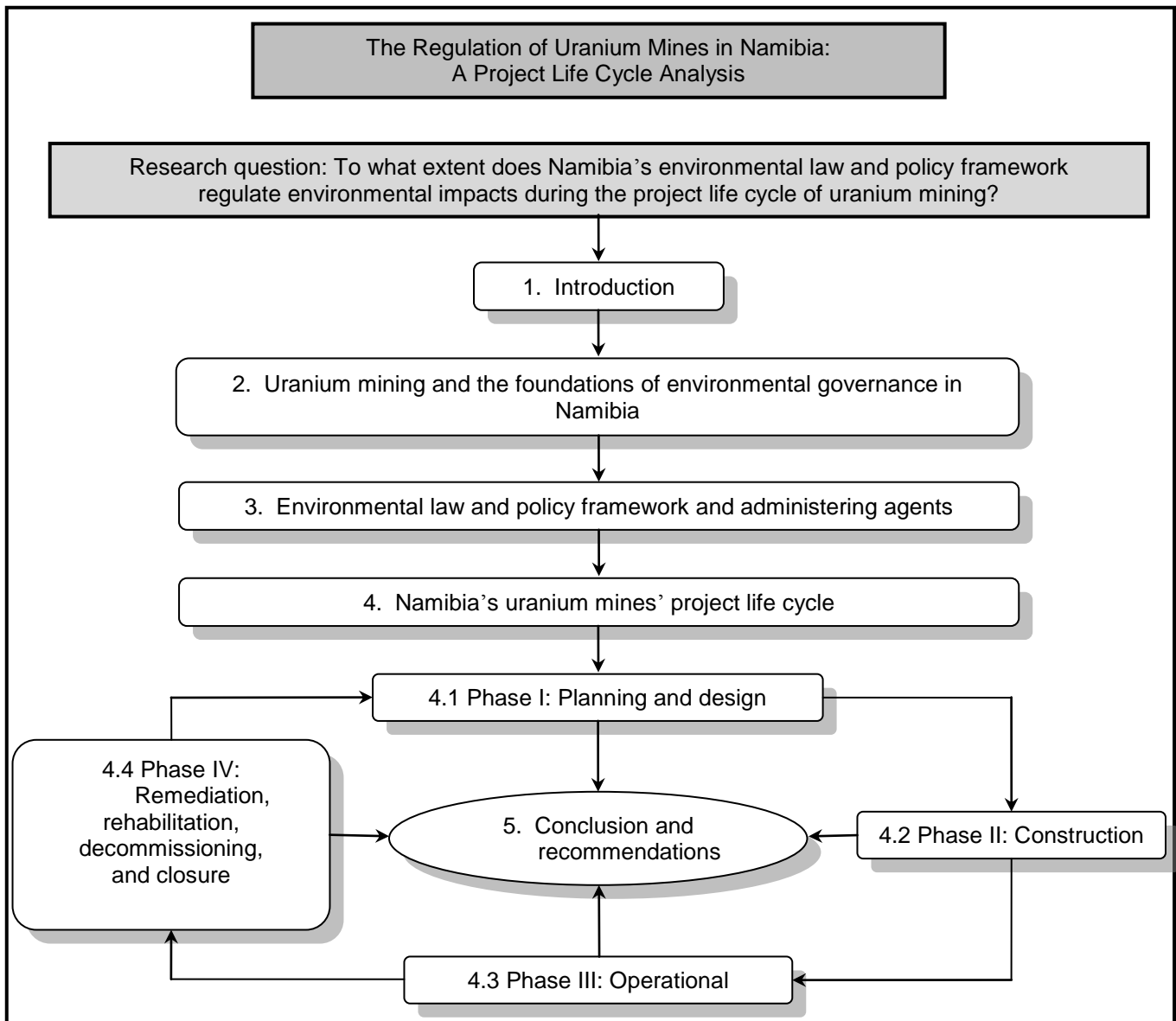


Figure 1: Conceptual research design

## 2. Uranium mining and the foundations of environmental governance in Namibia

The research question to this study necessitates clarification of the uranium mining process and its environmental impacts. It similarly calls for a discussion of the notion 'environmental governance'. In order to address the main research question it is necessary to first discuss the meaning and objectives of generic notions such as 'environmental management' and

'governance'.<sup>48</sup> The paragraph also discusses environmental impacts associated with uranium mining in Namibia during each phase of the PLC.

## **2.1 Uranium mining: the PLC**

Each of the different phases of the PLC<sup>49</sup> is distinct in nature. The differentiation is made based on, *inter alia*, each phase's objectives, the activities associated with each phase as well as such activities' subsequent environmental impacts, along the timeline of a development. As a result, it is not only beneficial, but also vital to recognise the differences between the various PLC phases, as well as the environmental consequences that may be attributed to each phase in order to plan, structure and execute concrete environmental governance efforts accordingly.

When planning and designing<sup>50</sup> a uranium mine facility, environmental impacts and aspects<sup>51</sup> need to be identified and evaluated in order to determine the environmental risks associated with prospecting,<sup>52</sup> reconnaissance and mining, taking into consideration the various site-specific characteristics of the proposed development.<sup>53</sup> The major environmental impacts associated with uranium mining results from the mining method used, the nature of the mineral itself, and the mine residue deposits. It is vital that the significance of environmental impacts be predicted correctly in order to address them early in the planning phase. The major environmental impacts at hand include reconnaissance, prospecting and mining; abstraction of water; excavating; blasting; resource extraction; processing, storage and disposal of radioactive products; use, handling, temporary storage, treatment and final disposal of waste; and modification of or changes to existing facilities.<sup>54</sup> It is important to control water and air

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<sup>48</sup> See 2.1.

<sup>49</sup> Nel and Kotzé in Strydom and King (eds) *Fuggle and Rabie's Environmental Management in SA* 14.

<sup>50</sup> See 4.1. Phase I: Planning and design phase.

<sup>51</sup> See 1.

<sup>52</sup> It is important to note that exploration crews searching for uranium will be exposed to radiation from uranium and its associated radioactive decay products in the drill core and cuttings (see Radiation Protection Guidelines for Uranium Exploration <http://www.labour.gov.sk.ca/safety>). See 4.1.

<sup>53</sup> Uranium processing requires vast water resources and, seeing that Namibia's uranium deposits are located in the Namib Desert, access to water is one of the biggest challenges facing uranium mining activities.

<sup>54</sup> The impacts associated with mine infrastructure, such as the construction of reduction works, offices and mine housing, are not discussed, since they are generally well documented and do not differ significantly from the construction of any other built environment. See 4.1.

pollution associated with mining, to manage hazardous<sup>55</sup> and other waste subsequent to extraction of the ore, and to rehabilitate surface areas during and after exploration and mining has ceased.<sup>56</sup> *Idealiter*, in designing any installation, planning for future site decommissioning, remediation, closure and land re-use should form an integral and necessary part of the original project development, seeking to maximise the use of remedial actions concurrent with production.<sup>57</sup>

Namibia's uranium deposits are located relatively close to the earth's surface. Subsequently, the country's uranium mining plants generally consist of an open pit and adjacent mill together with a leach plant.<sup>58</sup> Open-cast mining<sup>59</sup> entails digging massive pits into the surface of the earth, clearing and extracting everything located within its vicinity resulting in substantial volumes of barren rock and overburden waste.<sup>60</sup> A significant amount of rock must be moved and crushed to obtain the uranium.<sup>61</sup> Once the ore is removed from the ground it is crushed

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<sup>55</sup> Uranium mines produce different types of hazardous wastes, including explosives (eg old detonators); flammable liquids and solids (oil, solvents, sulphur dust); oxidising (eg sulphuric acid); toxic and infectious substances (eg medical wastes from the mine clinics); radioactive materials (mining and process plant wastes, depleted radioactive sources); corrosive substances such as caustic soda, sodium bicarbonate; and miscellaneous dangerous substances such as fluorescent tubes, tyres, vehicle batteries. Much of this waste is recycled back via the suppliers or through specialist waste recycling companies. The large volumes of low-grade radioactive mining waste such as low grade ore, depleted tailings and heap leach residues are disposed of on licensed sites at the mines. At present there are two hazardous landfills in Namibia, at Kupferberg near Windhoek and at Walvis Bay. The City of Windhoek is reluctant to accept hazardous waste generated in other parts of the country and hazardous waste is only accepted by prior arrangement. The Walvis Bay waste disposal site is the nearest hazardous landfill for the waste which emanates from uranium mines and related industries in the central Namib. The site is owned and managed by the Water, Waste and Environmental Management Department of the Walvis Bay Municipality. The site comprises hazardous and non-hazardous sections. (MME *Strategic Environmental Assessment for the Central Namib Uranium Rush* 97.)

<sup>56</sup> See Wells *et al* in Strydom and King (eds) *Environmental Management in South Africa* 535-542.

<sup>57</sup> This is in line with Principle 11 (Decommissioning and site closure) of the WNA Policy document on Sustaining Global Best Practices in Uranium Mining and Processing (available at <http://www.world-nuclear.org/WorkArea/linkit.aspx?LinkIdentification=id&ItemID=16982>). The most important aspect of the planning process is to set and agree on the overall objective for rehabilitation (Strydom and King (eds) *Environmental Management in South Africa* 518).

<sup>58</sup> See 4.2. Phase 2: Construction phase.

<sup>59</sup> See 4.3. Phase III: Operational phase.

<sup>60</sup> Solid waste products from milling operations are tailings which comprise most of the original ore and contain most of the radioactivity. When radium undergoes natural radioactive decay, one of the products is radon gas. Measures must be taken to minimise the emission of radon gas because radon and its decay products (daughters) are radioactive and because the tailings (waste) are now at the surface, presenting an occupational health and safety risk. See n 2. The material in the tailings dam is often kept covered by water to reduce surface radioactivity and radon emissions (WNA 2008 <http://www.world-nuclear.org/info/inf25.html>).

<sup>61</sup> Open-cast mining necessarily allows more dust and particles to escape into the local atmosphere, although being outdoors may reduce the exposure of radon gas to workers. There are various health hazards and

and milled into a fine powder and the uranium is leached out either with an acid<sup>62</sup> or an alkali.<sup>63</sup> The leachate follows a number of processes, including precipitation, solvent extraction and ion exchange, to produce so-called yellowcake (concentrated uranium oxide (U<sub>3</sub>O<sub>8</sub>)).<sup>64</sup> A number of chemical processes are then followed to purify the uranium and after it is dried and heated, it is packed into steel drums as a concentrate.<sup>65</sup>

Uranium mining activities require and use great volumes of water and thus have a grave impact on water resources. Furthermore, when considering that the uranium mines and ore deposits are situated in the water scarce Namib Desert it is evident that efficient and effective water management is vital for environmental protection efforts with regard to the country's uranium mining industry. Currently the water used during mining and related activities are extracted from underground water sources via boreholes or transported by means of pipelines. A desalination plant was recently erected at the coast near Wlotskabaken, providing one of the uranium mines<sup>66</sup> with desalinated sea water.

Complete disruption of the surface occurs, which affects the soil, surface water and near-surface groundwater, as well as *fauna* and *flora* and, as a result, open-cast mines are

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impacts to workers and the general public to be considered, including radiation hazards from radon gas, radium, thorium and non-radioactive contamination from dust and heavy metals such as arsenic, lead and nickel (Stephens and Ahern 2001 [http://www.natural-resources.org/minerals/CD/docs/mmsd/topics/worker\\_community\\_health.pdf](http://www.natural-resources.org/minerals/CD/docs/mmsd/topics/worker_community_health.pdf)). See n 2.

<sup>62</sup> Rio Tinto's Rössing Uranium Mine uses sulphuric acid as a leaching agent. See [www.rossing.com](http://www.rossing.com).

<sup>63</sup> Paladin's Langer Heinrich Mine uses alkaline extraction. See in general [www.paladinresources.com.au](http://www.paladinresources.com.au); and Smith 2007 <http://www.xemplar.ca/pdf/ILG/20Uranium%20in%20Namibia%20pdf>.

<sup>64</sup> Smith 2007 <http://www.xemplar.ca/pdf/ILG/20Uranium%20in%20Namibia%20pdf>. See also Lamarsh and Baratta *Introduction to Nuclear Engineering* (2001) 185-186. At Rössing Uranium, the ore body is loosened from the surrounding waste rock by blasting and the rock is loaded into haul trucks using electric shovels. The uranium-bearing ore is delivered to the primary crushers where the ore is processed further in three consecutive crushing stages. Rod mills reduce the ore to a fine sand to which sulphuric acid is added as a leaching agent that dissolves the uranium from the rock. Solid material is transferred to the tailings dam for disposal while the uranium solution moves to the first recovery stage, the continuous ion exchange process whereby resin beads absorb uranium from the solution. After the uranium is stripped from the beads, the solution is pumped to a solvent extraction plant for further concentration. Thereafter gaseous ammonia is added to the solution, causing a precipitate of ammonium diuranate to form. Uranium oxide (U<sub>3</sub>O<sub>8</sub>) is finally produced from drying and roasting the ammonium diuranate at temperatures exceeding 600°C. The end product is safely and securely packed into steel drums and shipped to customers worldwide. (Smith 2007 <http://www.xemplar.ca/pdf/ILG/20Uranium%20in%20Namibia%20pdf>. See also [www.rossing.com](http://www.rossing.com).)

<sup>65</sup> Smith 2007 <http://www.xemplar.ca/pdf/ILG/20Uranium%20in%20Namibia%20pdf>.

<sup>66</sup> Areva's Trekkopje Uranium Mine.

notoriously difficult to rehabilitate.<sup>67</sup> Furthermore, environmental problems associated with mining uranium continue after mining operations have ceased.

When decommissioning a plant, remedial measures must be taken to prevent ecological degradation of the environment, to restore,<sup>68</sup> remunerate,<sup>69</sup> rehabilitate<sup>70</sup> and/or stabilise<sup>71</sup> associated dangerous environmental consequences and to manage all current and future impacts in an attempt to return the area to sustainable land use.<sup>72</sup> Naturally, this final stage of the PLC holds vast implications for the environment and, subsequently, it is vital that a regulatory regime adequately provides for environmental protection, remediation and rehabilitation when decommissioning and closing a uranium mine facility.

It is necessary for authorities to achieve and enhance environmental protection and sustainability during uranium mining operations and to ensure that all environmental impacts that inevitably occur as a result of such operations are addressed in a holistic and integrated manner during each phase of the PLC.<sup>73</sup> One way of doing this is through environmental governance.

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<sup>67</sup> See 4.4. Phase IV: Remediation, rehabilitation, decommissioning and closure phase.

<sup>68</sup> For purposes of this study, restoration means restoring the land in question to its original state.

<sup>69</sup> For purposes of this study, remuneration is indicative of a new, agreed upon sustainable state reached at closure.

<sup>70</sup> For purposes of this study, rehabilitation suggests some engineering investment aimed at enhancing/establishing environmental protection.

<sup>71</sup> For the purpose of this study, stabilisation refers to interim measures aimed at maintaining the current state.

<sup>72</sup> On completion of the mining operation, tailings are covered permanently with enough clay and soil in order to reduce radiation levels to those naturally occurring in the region as well as enough rock to resist erosion. A vegetation cover is subsequently established (Wels, Shaw and Royle [undated] <http://www.robertsongeoconsultants.com>). Disposal of such tailings is either by placement underground, the preferred but more costly method, or by covering the tailings with no less than three metres of earth and then planting vegetation to prevent erosion (Lamarsh and Baratta *Introduction to Nuclear Engineering* 222).

<sup>73</sup> Environmental governance should therefore be present and practised from the planning and design phase through to the procurement and contractual phases; and the implementation phase, which includes sub-phases such as construction, commissioning, operations, redesign, optimisation, expansion and modification, maintenance, decommissioning, dismantling and rehabilitation. It is important to ensure that the reality of the fragmented current environmental governance regime in Namibia does not frustrate the closure of the PLC loop (Nel and Kotzé in Strydom and King (eds) *Fuggie and Rabie's Environmental Management in SA* 14). See figure 2.

## 2.2 Environmental governance (in the uranium mining context)

### 2.2.1 Environmental governance

Kotzé<sup>74</sup> defines environmental governance as follows:

A management process executed by institutions and individuals in the public and private sector to holistically regulate human activities and the effects of human activities in the total environmental (including all environmental media, and biological, chemical, aesthetic and socio-economic processes and conditions) at international, regional, national and local levels; by means of formal and informal institutions, processes and mechanisms embedded in and mandated by law, so as to promote the present and future interests human beings hold in the environment.

The concept 'environmental governance' is sometimes confused with environmental management as these concepts are related, but cannot necessarily be regarded as synonyms.<sup>75</sup> Nel and Kotzé<sup>76</sup> distinguish between and describe these concepts as follows:

- environmental governance as "the notion of being governed by others"; and
- environmental management as management "of own activities, products and services as well as management and protection of global common goods and ecological services".

Environmental governance is linked to the concept of 'governing'<sup>77</sup> that includes, for example, environmental compliance and enforcement as a strategy for addressing unsustainable

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<sup>74</sup> Kotzé in Paterson and Kotzé (eds) *Environmental Compliance and Enforcement* 107.

<sup>75</sup> Although a concise and generic definition of environmental management remains elusive (Nel and Kotzé in Strydom and King (eds) *Fuggie and Rabie's Environmental Management in SA* 17-29), environmental management is, for purposes of this study, regarded as the management of people's behaviour within their environment, the primary objective thereof being the regulation of the effects of human activities, products and services on the environment. Hence, environmental management is not the management of the environment *per se*, but managing people's activities (including the manufacturing of products, the rendering of services and the operation of facilities) that have and may have significant impacts on the environment. It accordingly seeks to balance human demands on the earth's natural resource base with the environment's ability to meet those demands on a sustainable basis. See in this regard Nel and Du Plessis "Unpacking integrated environmental management – a step closer to effective co-operative governance?" 2004 *SAPL* 181-190; Nel and Kotzé in Strydom and King (eds) *Fuggie and Rabie's Environmental Management in SA* 17-29.

<sup>76</sup> Nel and Kotzé in Strydom and King (eds) *Fuggie and Rabie's Environmental Management in SA* 17.

<sup>77</sup> For purposes of this study only one concept will be used, namely environmental governance.

development patterns that threaten environmental protection.<sup>78</sup> Namibia's environmental compliance and enforcement regime comprises various dimensions ranging from sources of law; divisions of law; the structure, powers and function of government; the court system; to the key public and private institutions that play an integrated role in compliance and enforcement.<sup>79</sup> The authorities responsible for environmental governance in relation to uranium mining in Namibia include, for example, the Ministries of Environment and Tourism (MET), Mines and Energy (MME) and Water Affairs (MWA). The Chamber of Mines (COM)<sup>80</sup> also plays a significant role in the country's uranium mining industry and, hence, it also plays a significant role in environmental governance during the PLC of uranium mines in the country.<sup>81</sup>

As mentioned however,<sup>82</sup> Namibia's environmental governance regime is fundamentally fragmented.<sup>83</sup> The country's uranium mining industry is regulated by a plethora of different national and international legislative measures. Furthermore, different government ministries are responsible for different aspects of environmental regulation. Many have argued that a fragmented legislative and institutional regime does not facilitate an integrated approach towards environmental governance and may ultimately inhibit and negate sustainable governance efforts.<sup>84</sup> Some of the primary disadvantages associated with a fragmented environmental governance regime include duplication and overlap of the governance effort; costly delays in decision-making; inefficient arrangements between organs of state that control similar activities or proposals; significant gaps in control arrangements; conflicting conditions in authorisations; inadequate sequencing; and ineffective and unsustainable governance efforts.<sup>85</sup> The country's fragmented environmental governance effort does not address the

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<sup>78</sup> Environmental compliance and enforcement are generally considered to facilitate the rule of law, good environmental governance and, ultimately, it facilitates a move towards sustainable ecological development (Du Plessis in Paterson and Kotzé (eds) *Environmental Compliance and Enforcement* 11.) See in general Müller in Strydom and King (eds) *Fuggle and Rabie's Environmental Management in SA* 68-82; Du Plessis in Paterson and Kotzé (eds) *Environmental Compliance and Enforcement* 11-40.

<sup>79</sup> Du Plessis in Paterson and Kotzé (eds) *Environmental Compliance and Enforcement* 11.

<sup>80</sup> See 3.11.

<sup>81</sup> See 4.1-4.4.

<sup>82</sup> See 1.2.

<sup>83</sup> Fragmentation will not be discussed in detail in this study.

<sup>84</sup> Kotzé *A Legal Framework* 23-26; Kotzé *PER* 2006 1-44; Bosman, Kotzé and Du Plessis *SAPL* 2004 411-421; Paterson and Kotzé *Environmental Compliance and Enforcement* 110-114; Nel and Kotzé in Strydom and King (eds) *Fuggle and Rabie's Environmental Management in SA* 18.

<sup>85</sup> Kotzé *A Legal Framework* 66.



entire PLC of uranium mines and, as a result of such non-regulation, it may be deduced that significant environmental consequences may occur.

Environmental governance should therefore be present and practised from the planning and design phase through to the procurement and contractual phases; and the implementation phase, which includes sub-phases such as construction, commissioning, operations, redesign, optimisation, expansion and modification, maintenance, decommissioning, dismantling and rehabilitation.<sup>86</sup> It is important to ensure that the reality of the fragmented current environmental governance regime in Namibia does not frustrate the closure of the PLC loop.<sup>87</sup>

In order to facilitate environmental governance during the entire PLC of a uranium mining development, environmental governance instruments<sup>88</sup> should be implemented, adopted and used in order to enhance and achieve environmental protection. Before investigating environmental governance and the components thereof in relation to the uranium mining context in particular, it is necessary to first investigate the different environmental governance tools and the integration thereof into the PLC of a uranium mine.

### **2.3 Integration of environmental governance tools into the PLC**

Du Plessis and Nel<sup>89</sup> argue that the environmental governance effort should be strengthened by making use of planning,<sup>90</sup> doing,<sup>91</sup> checking<sup>92</sup> and acting<sup>93</sup> (PDCA) tools.<sup>94</sup> These tools

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<sup>86</sup> Nel and Kotzé in Strydom and King (eds) *Fuggle and Rabie's Environmental Management in SA* 14.

<sup>87</sup> Nel and Kotzé in Strydom and King (eds) *Fuggle and Rabie's Environmental Management in SA* 14. See figure 2.

<sup>88</sup> Environmental governance instruments refer to methods, techniques and tools aimed at facilitating the environmental governance effort in order to establish and enhance environmental protection. See 2.3.

<sup>89</sup> The environmental management fraternity uses the Deming Management Model which holds that management should, as a minimum, include the identification or planning of issues, doing or implementation of the planning outcomes and checking or verifying the implemented arrangements that are topped by review and improvement of all phases of the management cycle. The Deming Cycle therefore uses planning, doing, checking and acting cycles to strive for continual improvement. See Du Plessis and Nel "Driving compliance to and enforcement of South African legislation by means of a hybrid of "new" environmental governance instruments" 6-32; Nel and Kotzé in Strydom and King (eds) *Fuggle and Rabie's Environmental Management in SA* 7.

<sup>90</sup> Planning requires an understanding of the gaps between the expectations the public has for businesses and the roles businesses set for themselves. Accordingly, corporations should set priorities and develop plans to close such gaps.

<sup>91</sup> Doing involves implementing changes and collecting data in order to determine whether the identified gaps are closing.

should be adopted, implemented and used during the different phases of the entire PLC, as well as during interfaces with supporting and outsourced processes that may occur during the PLC. Du Plessis and Nel<sup>95</sup> are in favour of including alternative<sup>96</sup> as well as 'new' environmental governance tools to the environmental protection effort in order to achieve sustainability on a project, for example a uranium mine facility. The authors proceed to add two elements to the traditional PDCA model, namely: norms and standards,<sup>97</sup> which are indicative of acceptable environmental performance;<sup>98</sup> as well as a duty of reporting<sup>99</sup> in order to ensure sound environmental governance practice.<sup>100</sup>

Generally, Namibia's environmental governance efforts tend to rely extensively on command and control tools,<sup>101</sup> that is, instruments and strategies aimed at driving compliance and enforcement. However, there is growing recognition (at global level) that this is in fact an unsatisfactory approach as it inhibits innovation; entails high costs, inflexibility and diminishing

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<sup>92</sup> Checking involves observing the effects of changes by continuously analysing data and pinpointing problems.

<sup>93</sup> Acting supposes examining the results obtained and redesigning the system accordingly (by, for instance, changing standard; training and capacity-building; incorporating greener technologies and 'greening' supply chains.)

<sup>94</sup> See also Nel and Kotzé in Strydom and King (eds) *Fuggle and Rabie's Environmental Management in SA* 16.

<sup>95</sup> Du Plessis and Nel "Driving compliance to and enforcement of South African legislation by means of a hybrid of "new" environmental governance instruments" 1-37.

<sup>96</sup> Besides compliance and enforcement, environmental management performance may be largely driven by self-regulatory strategies as a result of international market demand which strongly motivates the adoption and use of 'new' alternative tools and, subsequently, the authors propose all instruments dealing with agreements to be changed to 'relationship-based tools' in order to provide for all 'new' instruments. Relationship-based tools include formal and informal (voluntary) agreements; voluntary submission to self-registration; arrangements for conflict resolution; and empowerment of civil society so serve as watchdogs (Du Plessis and Nel "Driving compliance to and enforcement of South African legislation by means of a hybrid of "new" environmental governance instruments" 3, 25). See 2.4, 4.5.11 and 5.

<sup>97</sup> Norms and standards include legislation; national standards; Responsible Care ®; Coalition for Environmentally Responsible Economies (CERES); Global Environmental Management Initiative (GEMI); Global Compact; Global Reporting Initiative (GRI) requirements; Triple Bottom Line (TBL) reporting; ISO 14001; and ISO 9001 (Du Plessis and Nel "Driving compliance to and enforcement of South African legislation by means of a hybrid of "new" environmental governance instruments" 6-32).

<sup>98</sup> See 2.4, 4.5.2 and 5.

<sup>99</sup> Reporting tools include environmental reporting; social reporting; TBL reporting; environmental communication; social communication; statutory reporting; and public participation (Du Plessis and Nel "Driving compliance to and enforcement of South African legislation by means of a hybrid of "new" environmental governance instruments" 6-32).

<sup>100</sup> See 2.4, 4.5.5 and 5.

<sup>101</sup> Command and control tools include audits; authorisations; permits; licences; commissions of enquiry; directives; environmental law; environmental restoration orders; environmental standards; inspections; interdicts; liability reforms; model bylaws; orders; penalties; prosecutions; and requests for information (Nel and Du Plessis 2001 *SAJELP* 15-16). See 2.4, 4.5.7 and 5.

returns; and provides only a part of the policy solution, particularly in a rapidly changing, increasingly complex and interdependent world.<sup>102</sup> Alternatives to 'traditional' command and control tools include market-based tools,<sup>103</sup> agreement-based tools<sup>104</sup> and civil-based tools,<sup>105</sup> which may be used to complement and support classical command and control tools in an attempt to improve the overall environmental governance effort.<sup>106</sup> Greater focus on the use of fiscal, agreement and civil-based environmental governance instruments, as opposed to command and control regulation only, has the potential to harness market forces in the governance or use of environmental resources, and it may assist in developing greater awareness of the true cost of extracting resources and associated pollution. Incentive-based measures may prove to be a viable option for improving the country's current environmental compliance and enforcement effort in that they are, in theory at least, more economically efficient; flexible; facilitate and promote innovation; encourage voluntary action; overcome inherent market failures; potentially raise revenue for environmental governance; and relieve the regulatory burden imposed on the government.<sup>107</sup> Even on economic grounds alone, there is substantial scope for greater protection of environmental resources. Generally, alternative environmental governance tools may facilitate flexible responses and identify new mechanisms by improving information flow and promoting awareness of new technical and management practices. When viewed as a broader package of policy instruments, alternative environmental governance tools may ultimately contribute to an overall improvement in Namibia's environmental governance regime.<sup>108</sup>

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<sup>102</sup> Gunningham and Sinclair *Leaders and Laggards* 1.

<sup>103</sup> Market-based tools include demand-side management; depository return schemes; deposit refund scheme; differential indirect taxes; emission charges; green purchasing; incentives and rewards; a national environmental fund/account; pricing policies; process charges/taxes; product charges/taxes; resources charges/taxes; security deposits; subsidies; tax concessions; tradable/marketable permits; trade restrictions; two tier tariffs; and user fees (Nel and Du Plessis 2001 *SAJELP* 15-16). See 2.4, 4.5.8 and 5.

<sup>104</sup> Agreement-based tools include covenants; cooperative agreements; environmental management systems/controlled self-regulation; and international environmental agreements (Nel and Du Plessis 2001 *SAJELP* 15-16). See 2.4, 4.5.10 and 5.

<sup>105</sup> Civil-based tools include access to information; beneficial cost awards; eco-labelling; protection of whistle-blowers; protection of workers; public awareness; public participation; and public waste and public pollution inventories (Nel and Du Plessis 2001 *SAJELP* 15-16). See 2.4, 4.5.9 and 5.

<sup>106</sup> Nel and Wessels *PER* 13(5) 48.

<sup>107</sup> Paterson 2009 *SAJELP*. Also see DEAT *Environmental Resources Economics Discussion Document Three: The Proposed Method for the Introduction of Economic Instruments as Tools for Environmental Management in South Africa* 1996; National Treasury *A Framework for Considering Market-Based Instruments to Support Environmental Fiscal Reform in South Africa* 2006.

<sup>108</sup> However, in spite of its numerous (potential) contributions to environmental protection, it is difficult to assess the effectiveness and efficiency of alternative instruments due to the uncertainty with which environmental

In order to achieve an effective and efficient environmental protection effort with regard to uranium mining in Namibia, the country's environmental governance regime should, during each phase of the PLC, provide for a mix of environmental governance tools.<sup>109</sup> In any event, environmental law should remain the primary environmental governance tool used by authorities to establish environmental protection at uranium mine facilities in Namibia.<sup>110</sup> This submission is based on the premise that a rule-based system is easier to administer in developing countries of which the administrative structures suffer from limited governance capacities and that usually have low-capacity administrative and legal systems.<sup>111</sup> According to Faure, Goodwin and Weber,<sup>112</sup> a rule-based system may create better outcomes in systems where the judiciary may either not be fully functioning or be entirely independent because clear rules reduce the risk of bribery and unwarranted influence in the application of law. As a result and taking into consideration that Namibia is generally believed to have an independent judiciary,<sup>113</sup> environmental law should remain the primary environmental governance instrument in the country's environmental governance effort.

Figure 2 provides a conceptual view of the PLC and the integration of environmental governance tools:

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changes can be attributed exclusively to alternative environmental governance tools (Jiménez 2006 *Journal for Cleaner Production* 620.)

<sup>109</sup> Nel and Kotzé in Strydom and King (eds) *Fuggie and Rabie's Environmental Management in SA* 16. See 2.4 and 5.

<sup>110</sup> Nel and Wessels *PER* 13(5)54-59. See 5.2.3.

<sup>111</sup> Faure, Goodwin and Weber *Virginia Law Journal of International Law* 110-111.

<sup>112</sup> Faure, Goodwin and Weber *Virginia Law Journal of International Law* 111.

<sup>113</sup> Horn and Bösl (eds) *The Independence of the Judiciary* 1-325.

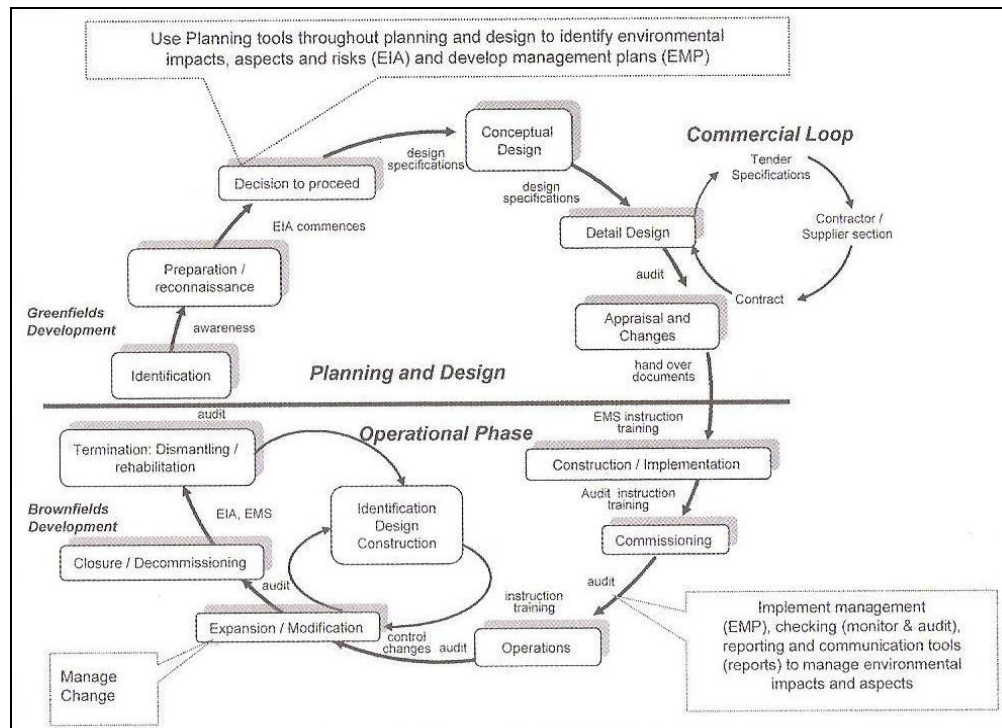


Figure 2: The project life cycle analysis and environmental governance tools<sup>114</sup>

Apart from environmental governance, the notion exists of 'co-operative environmental governance'. Co-operative environmental governance places emphasis on co-operation in order to address, *inter alia*, organisational behaviour by government officials and others that contribute to fragmentation of the environmental governance effort.<sup>115</sup> Kotzé<sup>116</sup> defines co-operative environmental governance as:

The integration of the different phases of government and line functionaries at international, intra-regional and intra-governmental level; co-operation between individual government officials in sphere/line functionary; co-operation between government officials in different spheres/line functionaries; integration of policy, regulation methods and tools, service provision and scrutiny; and co-operation with industry and the public in order to achieve the principle of sustainability.

Based on the aforementioned definition, co-operative environmental governance in Namibia's uranium mining industry will require the following:

<sup>114</sup> Nel and Kotzé in Strydom and King (eds) *Fuggle and Rabie's Environmental Management in SA* 15.

<sup>115</sup> Kotzé *A Legal Framework* 50.

<sup>116</sup> Kotzé *A Legal Framework* 56.

- integration of governance structures at international, intra-regional and national level;
- co-operation within the MET, the MME and the MWA;
- co-operation between the MET, the MME and the MWA;
- integration of environmental law and policy and environmental governance tools; and
- co-operation between the uranium mining industry and the people of Namibia.

The following may be identified as components and/or characteristics of Namibia's ideal environmental governance regime with regard to uranium mining:

- a collection of legislative, executive and administrative functions, processes and instruments aimed at or contributing to environmental protection;<sup>117</sup>
- a management process executed by institutions and individuals in the public and private sector;
- holistic regulation of activities, products, services and facilities in relation to uranium mines, as well as the effects of such activities, products, services and facilities on the environment;
- regulation at international, regional, sub-regional, national and local levels;
- regulation by and between the various ministries involved (the MET, MME and MWA);
- regulation by means of different governance tools (command and control tools,<sup>118</sup> market-based tools,<sup>119</sup> civil-based tools,<sup>120</sup> agreement-based tools<sup>121</sup> and relationship-based tools);<sup>122</sup>
- regulation in accordance with the management cycle (planning,<sup>123</sup> norms and standards,<sup>124</sup> doing,<sup>125</sup> checking<sup>126</sup>, reporting<sup>127</sup> and acting);<sup>128</sup> and

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<sup>117</sup> See 1.2 and 3.

<sup>118</sup> See also 4.5.7 and 5.

<sup>119</sup> See also 4.5.8 and 5.

<sup>120</sup> See also 4.5.9 and 5.

<sup>121</sup> See also 4.5.10 and 5.

<sup>122</sup> See also 4.5.11 and 5.

<sup>123</sup> See also 4.5.1 and 5.

<sup>124</sup> See also 4.5.2 and 5.

<sup>125</sup> See also 4.5.3 and 5.

<sup>126</sup> See also 4.5.4 and 5.

<sup>127</sup> See also 4.5.5 and 5.

<sup>128</sup> See also 4.5.6 and 5.

- regulation during each of the different phases of the PLC of a development (planning and design phase,<sup>129</sup> construction phase,<sup>130</sup> operational phase,<sup>131</sup> and the decommissioning, rehabilitation and closure phase).<sup>132</sup>

From the abovementioned and for purposes of this study, environmental governance with regards to Namibia's uranium mining industry may be defined as:

The management of uranium mines' activities, products, services and facilities and the effects thereof by and between institutions and individuals in the public and private sector at international, regional, sub-regional, national and local level as provided for in the collection of legislative, executive and administrative functions, processes and instruments aimed at or contributing to environmental protection by means of different governance tools as applicable during each phase of the project life cycle of uranium mining in Namibia.

It is vital that authorities achieve and enhance environmental governance in order to establish environmental protection and sustainability during uranium mining operations and to ensure that all environmental impacts that inevitably occur as a result of uranium mining activities are addressed in a holistic and integrated manner during each phase of the PLC.<sup>133</sup> In other words, co-operative environmental governance should be pursued in order to counter fragmentation of the regulatory regime.

## ***2.4 Preliminary observations***

Due to the nature and extent of the environmental impacts associated with uranium mining, it is necessary for authorities to establish environmental protection, to pursue sustainability during uranium mining operations and to ensure that all environmental impacts that inevitably occur as a result of uranium mining activities are addressed in a holistic and integrated manner during each phase of the PLC. As was argued above, one way of doing this is by way of environmental governance.

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<sup>129</sup> See 4.1 and 5.

<sup>130</sup> See 4.2 and 5.

<sup>131</sup> See 4.3 and 5.

<sup>132</sup> See 4.4 and 5.

<sup>133</sup> See 2.2 and 5.

Namibia's fragmented environmental governance does not facilitate an integrated approach towards environmental governance and may ultimately inhibit and negate sustainable governance efforts. Furthermore, the country's fragmented environmental governance effort does not address the entire PLC of uranium mines and, as a result of such non-regulation, it may be deduced that significant environmental consequences may occur. The differences between the various PLC phases, as well as the environmental consequences that may be attributed to each phase must also be recognised in order to plan, structure and execute concrete environmental governance efforts. The implementation, adoption and use of environmental governance tools coupled with sound environmental law and policy may ultimately enhance Namibia's environmental governance effort in the uranium mining context.

In order to overcome the disadvantages inherent to a fragmented governance effort and also to facilitate environmental governance during the entire PLC of a uranium mining development, a series of environmental governance tools should be implemented, adopted and used. Seeing that environmental law is enforceable in a court of law and, hence non-compliance constitutes legal liability on the part of, for instance, a uranium mine, environmental law should remain the primary environmental governance tool used by authorities to achieve environmental protection at uranium mine facilities in Namibia.

For purposes of this study, and based on Kotzé's<sup>134</sup> definition of environmental governance, environmental governance with regards to Namibia's uranium mining industry may be defined as:

The management of uranium mines' activities, products, services and facilities and the effects thereof by and between institutions and individuals in the public and private sector at international, regional, sub-regional, national and local level as provided for in the collection of legislative, executive and administrative functions, processes and instruments aimed at or contributing to environmental protection by means of different governance tools as applicable during each phase of the project life cycle of uranium mining in Namibia.

The environmental protection effort with regard to uranium mining requires co-operative environmental governance to exist within and between the administering authorities. The

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<sup>134</sup> Kotzé *A Legal Framework* 56. See 2.3.



country's uranium mining industry requires the integration of governance structures at international, intra-regional and national level; co-operation within and between the MET, the MME and the MWA; integration of environmental law and policy and environmental governance tools; and co-operation between the uranium mining industry and members of the public.

The study now proceeds to analyse the country's framework environmental law and policy as well as administering agents that regulate uranium mining in Namibia. By determining the extent to which Namibia's law and environmental policy framework regulates environmental impacts during the PLC of mining uranium, it is aimed at identifying strengths and weaknesses inherent to the country's existing environmental governance effort.<sup>135</sup>

### **3. Environmental law and policy framework and administering agents**

The life cycle of uranium mines (as was discussed above)<sup>136</sup> is regulated, *inter alia*, by Namibian law and policies, such as EA Policy, Mining Act, and *Water Act* (Water Act),<sup>137</sup> and in future the EMA, *Water Resources Management Act*<sup>138</sup> (WRMA) and *Atomic Energy and Radiation Protection Act* (AERPA).<sup>139</sup> These instruments form the suite of environmental statutes and policy that regulate uranium mining in Namibia and, together with the authorities responsible for their administration and execution, establish the environmental regulatory regime applicable to uranium mining in the country. The applicable environmental framework statutes, policies and authorities or bodies responsible for administering them, are subsequently discussed in varying degrees of detail, depending on the applicability thereof to the scope and aim of the study. It should be noted that plenty other environmental laws and policies in Namibia apply to uranium mining generally.<sup>140</sup> Some of these as well as details of

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<sup>135</sup> Due to the absence/lack of case law or scholarly analyses of the issue at hand, the author makes use of South African and other sources. However, the principles related to environmental management are universal and it is argued that the lessons learned in South Africa and elsewhere can be readily applied in Namibia in order to learn from best (and worst) practice.

<sup>136</sup> See 2.2.

<sup>137</sup> *Water Act* 54 of 1956.

<sup>138</sup> *Water Resources Management Act* 24 of 2004.

<sup>139</sup> *Atomic Energy and Radiation Protection Act* 5 of 2005.

<sup>140</sup> Ruppel in Ruppel and Ruppel-Schlichting (eds) *Environmental Law and Policy in Namibia* 79-106.

the relevant provisions pertaining to uranium mining will, however, only be attended to in the discussion of the PLC in paragraph 4.

Before examining the environmental law and policy framework, as well the authorities responsible for administering them, it merits to discuss the practical implementation of Namibia's environmental law and policy.<sup>141</sup>

As will be illustrated below,<sup>142</sup> the MET follows a rather sector-based approach towards environmental governance. In the event that an act requires an environmental authorisation to be obtained in order for a company or person to, for instance, perform a certain activity, produce a product, deliver a service and/or establish a facility where such activity, product, service or facility may impact or affect the environment, such environmental authorisation must be obtained from the MET (more specifically, the DEA). When a mining company, which has been awarded a mineral licence, for example, applies for a reconnaissance licence, prospecting licence or mining licence, the Mining Act requires of such applicants to obtain environmental authorisation in the form of an environmental clearance certificate from the MET.<sup>143</sup> In order to obtain an environmental clearance certificate, the mining company is required to enter into an environmental contract with the Government of Namibia, duly represented by the MME and MET. The parties to the environmental contract are therefore threefold, namely the relevant mining company, the MME and the MET.

Although assented to in 2008 already, the EMA is not yet in force.<sup>144</sup> In the meantime, the MET's/DEA's cause, namely environmental protection, is supported by other departments or ministries since the MET does not have an act of its own in terms of and in accordance to which environmental governance must be regulated and practised. EMA aims, amongst others, to address this lacuna in Namibia's environmental regime.

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<sup>141</sup> I wish to thank Ms Saima Hangula, a member of the DEA, for her insightful comments in this regard during a meeting held at the MET on 25 March 2010.

<sup>142</sup> See 4.1.1.

<sup>143</sup> See 4.1.1.

<sup>144</sup> See 3.2.

Currently, environmental governance is in general facilitated by means of the EA Policy.<sup>145</sup> However, policy documents are non-binding and merely serve as guidelines and non-compliance therewith cannot afford a person<sup>146</sup> (environmental) liability. In order to overcome this non-binding nature of the EA Policy and to afford Namibia's environmental governance effort with some teeth, the MET aims to, in due course, enact the Environmental Assessment Regulations (EA Regulations).<sup>147</sup> The coming into force of the EMA is pending the finalisation and subsequent enactment of the Draft EA Regulations. There are no guarantees, nor any indications as to when such regulations will be enacted. Subsequently, the environmental consequences imposed by uranium mining are currently mainly regulated by the Mining Act.

### **3.1 Mining Act**

The Mining Act<sup>148</sup> contains comprehensive provisions with regard to entitlements in relation to the country's minerals, as well as a number of provisions aimed at the protection of the environment.<sup>149</sup> The Act prohibits anyone from carrying any reconnaissance, prospecting or mining operations in Namibia except under and in accordance with the respective required licences,<sup>150</sup> as well as applicable regulations.<sup>151</sup> The Act is applicable to all uranium mine facilities in Namibia.<sup>152</sup> In terms of the Act, all rights in relation to minerals vest in the State.<sup>153</sup>

The Mining Act provides for a Mining Commissioner, assisted by other officers designated for such purpose, to exercise or perform the powers, duties and functions conferred or imposed upon him/her under the provisions of this Act and such other functions as may be imposed

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<sup>145</sup> See 3.3.

<sup>146</sup> 'Person' can generally be regarded to include both natural and juristic persons who must, where applicable, conform to applicable law and policy. Also see art 5 of the Namibian Constitution in this regard.

<sup>147</sup> See 3.4.

<sup>148</sup> See also Ruppel in Ruppel and Ruppel-Schlichting (eds) *Environmental Law and Policy in Namibia* 91; Koep and Van den Berg in Ruppel and Ruppel-Schlichting (eds) *Environmental Law and Policy in Namibia* 153-155.

<sup>149</sup> The Mining Act provides for the reconnaissance, prospecting and mining activities in Namibia, as well as for the disposal of and exercise over minerals in the country and other related matters (Mining Act Long title).

<sup>150</sup> Mining Act s 3(1). See 4.1.1.

<sup>151</sup> *Regulations for the health, safety and welfare of persons employed or otherwise present in or at mines* (Mine Safety Regulations). See 4.1 – 4.4.

<sup>152</sup> See 4.1 – 4.4.

<sup>153</sup> Mining Act s 2.

upon him/her by the Minister.<sup>154</sup> The Mining Commissioner and designated officers may also make such investigations and enquiries as may be necessary to determine whether the provisions of this Act or any term and condition, direction or order determined, given or made under the Mining Act is being complied with during reconnaissance, prospecting or mining operations.<sup>155</sup> These powers, duties and functions of the Mining Commissioner and designated officers may call for environmental compliance; hence environmental governance activities such as environmental inspections and monitoring by the Mining Commissioner may assist in improving and developing environmental governance during uranium mining activities.<sup>156</sup>

Section 130 confers a duty of care upon all holders of licences to prevent the pollution of the environment or other damages or losses caused.<sup>157</sup> Although the Act confers a right of access to information on the public sector,<sup>158</sup> such right is not conferred upon the civil society. This constitutes a genuine lacuna in the country's environmental regime as access to environment-relevant information in the domain of uranium mining may be particularly important since the nature and extent of uranium mining and related activities may pose significant health and environmental risks and dangers to civil society.<sup>159</sup> If civil society was to be granted the right of access to environment-relevant information (including information in relation to uranium mining), the community would be equipped to question and challenge uranium mining practices, and thereby assist in improving and developing environmental protection efforts.

As mentioned above, the environmental consequences of uranium mining, as they occur during the different phases of the PLC,<sup>160</sup> are currently regulated mainly by the Mining Act. Therefore the Mining Act plays a very important role in the current environmental regulatory framework responsible for regulating environmental impacts during the PLC of the country's uranium mines. Evidently the country's environmental protection effort will enjoy enhanced significance once the EMA and corresponding regulations are in force.

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<sup>154</sup> Mining Act s 4.

<sup>155</sup> Mining Act s 5(1).

<sup>156</sup> See 4.5.4.

<sup>157</sup> Mining Act s 130(1). See 4.1.

<sup>158</sup> Mining Act s 129.

<sup>159</sup> See 1. See also n 2.

<sup>160</sup> See 2.2 and 4.

### 3.2 EMA

Although not yet in force, environmental protection in Namibia has been legally reinforced with the enactment of the EMA.<sup>161</sup> This Act serves as framework within which impact assessment law is regulated, for example, and also provides for a set of environmental management principles and environmental protection measures,<sup>162</sup> some of which will be discussed briefly below.

The environmental management principles<sup>163</sup> listed in section 3 of the EMA guide the implementation of the Act, as well as all other laws<sup>164</sup> applicable when the protection of the environment is concerned.<sup>165</sup> They further serve as general framework within which environmental plans must be formulated and guide organs of state when required to make a decision concerned with protecting the environment.<sup>166</sup> When it comes to uranium mining in Namibia, the environmental principles may, for instance, typically require environmental considerations to be taken into account when decisions are made in relation to the issuance or non-issuance of an environmental clearance certificate and the location of uranium mining facilities. Environmental principles may further require steps to be taken by the relevant mining companies during operations to establish measures aimed at environmental conservation.

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<sup>161</sup> However, the provisions of the EMA have not yet been subject to jurisprudence; therefore the significance of the Act and the provisions that may contribute to environmental protection contained therein cannot be applauded, nor condemned. See also Ruppel in Ruppel and Ruppel-Schlichting (eds) *Environmental Law and Policy in Namibia* 84-87.

<sup>162</sup> EMA s 3. See also Ruppel in Ruppel and Ruppel-Schlichting (eds) *Environmental Law and Policy in Namibia* 42-45.

<sup>163</sup> These principles of environmental management include *inter alia* sustainable development (ss 3(2)(a) and (f)); equitable access to environmental resources (s 3(2)(d)); polluter pays principle (s 3(2)(j)); precautionary principle (s 3(2)(k)); and preventative principle (s 3(2)(l)). The principles also require the country's waste to be managed (ss 3(2)(h) and (i)); and that Namibia's cultural and national heritage to be protected and respected (s 3(2)(g)).

<sup>164</sup> These 'other laws' may include the Mining Act (see 3.1) which does not contain a list of principles or objectives governing the interpretation thereof. Hence, notwithstanding the omission of guiding principles or objectives aimed at environmental protection in the Mining Act, the environmental management principles as contained in the EMA may assist authorities in developing and maintaining environmental governance within the uranium mining context.

<sup>165</sup> EMA ss 3(1)(a).

<sup>166</sup> EMA ss 3(1)(b)-(c).

Part IV of the Act provides for the establishment,<sup>167</sup> functioning<sup>168</sup> and matters relating to the Sustainable Development Advisory Council (SDAC). The functions of the SDAC include the promotion of cooperation and coordination between organs of state, non-governmental organisations (NGO), community-based organisations (CBO),<sup>169</sup> the private sector and funding agencies on environmental issues relating to sustainable development and also have an advisory role towards the Minister.<sup>170</sup> The SDAC has the potential to play an important role in the promotion of cooperative governance within and between organs of state.

Part V of the Act provides for the appointment and functions of the Environmental Commissioner<sup>171</sup> and environmental officers,<sup>172</sup> as well as related matters. According to Du Plessis,<sup>173</sup> the Environmental Commissioner should serve as the central authority in terms of, specifically, measures pertaining to impact assessments. The Environmental Commissioner is charged with a range of functions,<sup>174</sup> while environmental officers serve as environmental inspectors.<sup>175</sup> Also and possibly in recognition of the country's lack of available experience and expertise, the Act allows for any person who is not in the full-time employment of the state as an environmental officer, to be appointed in any particular case and/or to assist an environmental officer.<sup>176</sup> In the context of the uranium mining sector in Namibia, it can hence be deduced that, once appointed and in operation, the Environmental Commissioner, together with his/her environmental officers and other authorities<sup>177</sup> may pose significant implications,

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<sup>167</sup> EMA s 6.

<sup>168</sup> EMA s 7.

<sup>169</sup> EMA s 7(a).

<sup>170</sup> EMA s 7(b).

<sup>171</sup> EMA ss 16-17.

<sup>172</sup> EMA s 18.

<sup>173</sup> Du Plessis *Fulfilment of South Africa's Constitutional Environmental Right* 269.

<sup>174</sup> The Environmental commissioner's functions include *inter alia* advising organs of state on the preparation of environmental plans; receiving and recording applications for environmental clearance certificates; determining whether a listed activity requires an assessment and, if required, determining the scope, procedure and methods for such assessment and, once conducted, reviewing the assessment report; issuing environmental clearance certificates; maintaining a register of environmental clearance certificates issued and environmental plans approved; conducting inspections for monitoring and compliance; and performing any duty or function, or exercising any power of an environmental officer or as assigned or prescribed by the Minister of Environmental Affairs and Tourism (EMA ss 17(2)(a)-(j) and 16(2)).

<sup>175</sup> See EMA s 19.

<sup>176</sup> EMA s 18(2).

<sup>177</sup> Part IV of the EMA provides for the Sustainable Development Advisory Council (Advisory Council) tasked with promoting cooperation and coordination between organs of state, non-governmental organisations (NGO), community-based organisations (CBO), the private sector, and funding agencies on environmental issues relating to sustainable development (s 7(a)); and to advise the Minister of Environmental Affairs and

including economic consequences and legal accountability to the uranium mining industry and, subsequently, they may contribute significantly to enhanced environmental protection efforts during the PLC of uranium mines.

It is important to note that the predecessor of the EMA, namely the *Environmental Management Bill* of 1998<sup>178</sup> (EMB), in some instances appears to be more conducive to the execution of environmental governance, also in relation to uranium mining, than the final EMA.<sup>179</sup> Whereas the EMB contained an environmental right which was accompanied by an explicit environmental duty on the part of both government and society,<sup>180</sup> the EMA does not include an environmental right and its objectives appear to be subject to more scoping than is the case with the objectives in the EMB. One of the main shortcomings of the EMA when compared to the EMB is the statutory right of access to information. As mentioned,<sup>181</sup> access to environment-relevant information in the domain of uranium mining may be particularly important (also in Namibia) due to the nature and extent of uranium mining and related activities that may pose significant health and environmental risks and dangers.<sup>182</sup> The EMB provided for access to information on the part of both civil society and the public sector,<sup>183</sup> while the EMA only grants access to prescribed environmental information to organs of state.<sup>184</sup> This omission of a right of access to information on the part of civil society may ultimately counter the ability of the EMA to facilitate collection and dissemination of

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Tourism on the development of a policy and strategy for the management and protection and use of the environment, on the conservation of the country's biodiversity and the use of components of the environment, as well as access to its genetic resources in a sustainable manner, on appropriate methods of monitoring compliance with the listed environmental management principles, and on the need for and initiation or amendment of applicable legislation (s 7(b)). Subsequently, the Advisory Council consists of four persons representing the interests of the state, and four persons representing the interests of organisations, associations or institutions concerned with environmental matters (s 8(1)), all of which must have the necessary knowledge of or experience in matters relating to the functions of the Council (s 8(3)). The Environmental commissioner is an *ex officio* member and may not vote at the meetings of the Council (s 8(2)). Nevertheless, the requirements with regard to the constitution of the Advisory Council may ultimately facilitate the promotion of coordination and cooperation between the various parties, thereby facilitating the sustainable management of the environment and the use of natural resources as envisaged by the Act.

<sup>178</sup> *Environmental Management Bill* 1998.

<sup>179</sup> Du Plessis *Fulfilment of South Africa's Constitutional Environmental Right* 266-267. For a full discussion, see Du Plessis *Fulfilment of South Africa's Constitutional Environmental Right* 266-272.

<sup>180</sup> EMB s 2.

<sup>181</sup> See 3.1.

<sup>182</sup> See 1 and 2.2. See also n 2.

<sup>183</sup> EMB ss 4(1) and (2).

<sup>184</sup> EMA s 47.

environmental information,<sup>185</sup> the transparent regulation of uranium mining and control of the risks and impacts of and associated therewith and, subsequently, it may also counter efficient and effective environmental governance.

It is clear from the above-mentioned that, although a significant step forward, the EMA lacks certain provisions such as a justiciable right of access to information by civil society. The EMA also shows a general lack in providing for or facilitating the adoption, implementation and use of environmental governance tools. In the event that such environmental governance tools were, in fact, provided for in the compliance and enforcement regime, it may have enhanced the country's environmental governance effort in general, and the environmental governance effort in relation to its uranium mining industry in particular due to the advantages and strengths associated with the use of a hybrid of environmental governance tools.<sup>186</sup> Nevertheless, once in force, the EMA may contribute significantly to environmental protection during the different phases of the PLC of uranium mining in the country.<sup>187</sup> In the meantime, uranium mining companies are directed by the EA Policy with regard to environmental practice during mining and related activities.

### **3.3 EA Policy**

Namibia's EA Policy,<sup>188</sup> which is aimed at promoting sustainable development and economic growth while protecting the environment,<sup>189</sup> urges ministries, the private sector, NGOs and prospective investors and donors to comply with the Policy for all future development projects, programmes and policies. However, and as mentioned,<sup>190</sup> policy documents only serve as guidelines for programmes and projects as they are not legally binding and, due to this fact, do not provide for legal accountability in the event of non-compliance.

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<sup>185</sup> Du Plessis *Fulfilment of South Africa's Constitutional Environmental Right* 270.

<sup>186</sup> See 2.3 and 5.2.3.

<sup>187</sup> See 4.

<sup>188</sup> See also Ruppel in Ruppel and Ruppel-Schlichting (eds) *Environmental Law and Policy in Namibia* 98-99.

<sup>189</sup> The EA Policy recognises Namibia's dependence on natural resources and the vulnerability of certain biophysical components to environmental degradation (EA Policy Preamble). It further acknowledges that Namibia is an arid country and that the scarcity of water and the country's limited human and animal carrying capacity need to be taken into account prior to policy formulation and during all stages of planning (EA Policy Preamble).

<sup>190</sup> See 3.2.



The Policy regards environmental assessments (EA) as key tools, amongst others, to further the implementation of sound environmental policy.<sup>191</sup> The EA Policy provides for an Environmental Commissioner, to be established and appointed in terms of the EMA, who shall be responsible for administering the EA process<sup>192</sup> and who is required to report to an Environmental Board.<sup>193</sup> The Environmental Board is to be constituted in terms of the EMA and shall consist of senior representatives from various ministries and other organisations as appropriate and shall be responsible for initial screening and reviews to ensure that the EAs are of "consistently high standard".<sup>194</sup> However, the EMA is not yet enacted and, subsequently, none of these positions has been established.

The outcomes of an EA as provided for in the Policy consists of various components, namely a management plan, a monitoring programme, an environmental agreement and an audit proposal,<sup>195</sup> all aimed at actively contributing to effective environmental governance. This means that a typical uranium mining facility, when still in the early development stages, will have to obtain an environmental clearance certificate and, in order to do so, it must conduct an EA in terms of which the mining company is required to compose and lodge a management plan, a monitoring programme, an environmental agreement and an audit proposal.<sup>196</sup>

Although non-compliance with the EA Policy *per se* does not pose legal accountability, it remains a vital instrument in the current environmental regulatory framework that regulates uranium mines in Namibia in as far as it aims to achieve environmental protection alongside the development of, for instance, a uranium mine. The EA Policy will, however, be replaced by the EMA and the EA Regulations once these are in force.

### **3.4 EA Regulations**

Although only in draft format, it is necessary to discuss certain aspects of the draft EA Regulations as these are a sound indication of the direction in which environmental

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<sup>191</sup> EA Policy Preamble. See also 2.3.

<sup>192</sup> EA Policy par 6.1.

<sup>193</sup> EA Policy par 6.2.

<sup>194</sup> EA Policy par 6.2.

<sup>195</sup> See 4.

<sup>196</sup> See 4.1.

governance in Namibia is heading and may pose significant implications for the uranium mining industry.

The EA Regulations apply to those activities listed<sup>197</sup> which require an EA.<sup>198</sup> When applying for an EA, the proponent must designate an environmental assessment practitioner (EAP)<sup>199</sup> to manage the assessment process; provide him/her with access to relevant information; and ensure that the EA procedures, as specified in the EMA, the EA Regulations and applicable guidelines are followed.<sup>200</sup>

The EA Regulations also provide that, where an application in respect of any activity requiring an EA must also be made in terms of other law and that other law requires information to be submitted or processes to be carried out that are substantially similar to information or processes required in terms of the EA Regulations, the Minister must take steps to enter into a written agreement with the authority responsible for administering such law in respect of the coordination of the law and these regulations in order to avoid duplication in the submission of

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<sup>197</sup> Draft EA Regulations reg 2(c). See 4.1.

<sup>198</sup> Draft EA Regulations reg 22. These listed activities include, amongst others, reconnaissance, prospecting, mining or retention operations as provided for in the Mining Act in respect of such permissions, rights, licences and renewals (reg 2.9), as well as similar rights granted in terms of previous mineral or mining law (reg 2.10); the construction (which is defined in reg 1 as "the building, erection or modification of a facility, structure or infrastructure that is necessary for the undertaking of an activity, but excludes any modification, alteration or upgrading of such facility, structure or infrastructure that does not result in a change to the nature of the activity being undertaken or an increase in the production, storage or transportation capacity of that facility, structure or infrastructure") of facilities or infrastructure and associated structures or infrastructure for, amongst others, the nuclear reaction, including the production, enrichment, processing, reprocessing storage or disposal of nuclear fuels, radioactive products and waste, the manufacturing, storage, handling or processing of hazardous substances, and waste sites (reg 2.1(d)-(f)); the abstraction of ground or surface water for industrial or commercial purposes (reg 2.12); a scheduled process referred to in the *Atmospheric Pollution Prevention Ordinance* 11 of 1976 (reg 2.5); any process or activity which requires a permit or licence in terms of a law governing the generation or release of emissions, pollution, effluent or waste (reg 2.17), as well as the modification of or changes to existing facilities for such processes or activities (reg 2.18); phased activities where any one phase of the activity may be below a threshold as specified, but where a combination of the phases, including modifications or extensions, is to exceed a specific threshold (reg 2.25); and the decommissioning of existing facilities or infrastructure as specified (reg 2.28). From the list it is clear that existing, as well as future uranium mining companies would have to conduct EAs prior to developing uranium mine facilities or modifications or extensions to developed uranium mine facilities.

<sup>199</sup> An EAP must have knowledge of and experience in conducting EAs; perform his/her work in an objective manner, even if this results in views and findings not favourable to the applicant; comply with the provisions of the EMA, the EA Regulations and other applicable laws; and disclose to the applicant and the competent authority all material information in his/her possession that has or may have the potential of influencing any decision to be taken with respect to the EA application (Draft EA Regulations regs 21(a)-(d)).

<sup>200</sup> Draft EA Regulations regs 20(a)-(c).

such information or the carrying out of such processes.<sup>201</sup> Given the vast and intricate nature of uranium mining and the environmental impacts associated therewith,<sup>202</sup> the latter EA provision may contribute significantly to establish and enhance co-operative environmental governance<sup>203</sup> and streamlined environmental governance within the domain of the country's uranium mining industry.

As mentioned,<sup>204</sup> significant volumes of water are used during uranium mining and, subsequently, water resources are impacted on. Given the location of Namibia's uranium deposits, that being the water-scarce Namib Desert, it is also necessary to discuss the legislative provisions pertaining to water management.

### **3.5 Water Act**

Unfortunately for Namibia's environmental governance effort, the Water Act<sup>205</sup> is seriously outdated when viewed in the light of environmental protection efforts. This is evident when considering that the Act entered into force during 1956 when environmental considerations certainly did not enjoy as much weight as it currently does. It is further evident from the lack of provision being made for environmental considerations in the preamble of the Act.

The Act divides water into two classes, namely public water<sup>206</sup> and private water.<sup>207</sup> In terms of the Water Act, whenever an owner of land obtains, by artificial means on his own land, a supply of water not derived from a public stream, such water shall be deemed to be public water.<sup>208</sup> There is no right of property in public water and the control and use thereof is

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<sup>201</sup> Draft EA Regulations reg 19.

<sup>202</sup> See 2.1.

<sup>203</sup> See 2.3.

<sup>204</sup> See 2.1.

<sup>205</sup> See also Ruppel in Ruppel and Ruppel-Schlichting (eds) *Environmental Law and Policy in Namibia* 88, 98; Bethune and Ruppel in Ruppel and Ruppel-Schlichting (eds) *Environmental Law and Policy in Namibia* 135-136.

<sup>206</sup> Public water generally consists of any water flowing or found in or derived from the bed of a public stream, whether or not visible. The use of public water is regulated largely by the Act (Vos *South African Water Law* 8, 12. See in general Vos *South African Water Law* 12-19, 27-39).

<sup>207</sup> Private water is private property, much the same as other private property, and its use regulated almost exclusively by the common law (Vos *South African Water Law* 8. See in general Vos *South African Water Law* 8-11).

<sup>208</sup> Water Act s 6(2).

regulated in the Water Act.<sup>209</sup> The Act further provides that the sole and exclusive use and enjoyment of private water belongs to the owner of the land on which such water is found.<sup>210</sup> The Act therefore gives preferential abstraction rights to the landowners on whose land such water is found.<sup>211</sup>

The owner is prohibited, however, from selling, giving or otherwise disposing of the water beyond the boundaries without a permit from the Minister of Water Affairs.<sup>212</sup> Any person who contravenes these provisions shall be guilty of an offence.<sup>213</sup> The Act also allows an owner of land to abstract or obtain any subterranean water<sup>214</sup> thereunder, or derived therefrom, for the owner's own use for any purpose on such land.<sup>215</sup> Furthermore, any person entitled to the use of the water of a public stream may, subject to the provisions of the Water Act, acquire the right to divert such water at such point on the course of that stream as may be reasonably necessary to enable him to exercise his right to use the said water.<sup>216</sup>

According to Bethune and Ruppel,<sup>217</sup> the current private-public water dichotomy may be unconstitutional when viewed in light of the state trust<sup>218</sup> as contained in article 100 of the Constitution. The current constitutional dispensation regards all water as a common resource, therefore public. There is, however, no jurisprudence on this matter. It may be expected that the WRMA, which recognises and confirms the vesting of ownership of water resources in Namibia below and above the surface of the land in the hands of the state that holds such water resources in trust for all people, may improve commitments by government to ensuring that water resources are managed and used to the benefit of all people and in furtherance of environmental needs and ecosystems functioning.

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<sup>209</sup> Water Act s 6(1).

<sup>210</sup> Water Act s 5(1).

<sup>211</sup> Bethune and Ruppel in Ruppel and Ruppel-Schlichting (eds) *Environmental Law and Policy in Namibia* 136.

<sup>212</sup> Water Act s 5(2).

<sup>213</sup> Water Act s 5(4).

<sup>214</sup> Section 27 of the Act defines 'subterranean water' as "water which exist naturally underground ... and which is contained in an area declared to be a subterranean water control area ..." See Vos *South African Water Law* 20-26 with regards to the distinction between subterranean water and underground water.

<sup>215</sup> Water Act s 30(1).

<sup>216</sup> Water Act s 140(1)(a).

<sup>217</sup> Bethune and Ruppel in Ruppel and Ruppel-Schlichting (eds) *Environmental Law and Policy in Namibia* 136.

<sup>218</sup> See 1.2 and 3.10.

Section 21 of the Act requires a person using water in any form or when using water for industrial purposes to purify or treat it or any effluent produced from its use in accordance with the requirements of the Minister.<sup>219</sup> Once the water has been purified in accordance with the applicable standards, the water user, that being the uranium mining company, is required to discharge it in a manner and subject to the further requirements the Minister may establish<sup>220</sup> and, furthermore, that the water must be returned to the source from which it was obtained be it a public stream or the sea, or to such other place as the Minister may indicate.<sup>221</sup>

In terms of section 23 of the Water Act, any person who wilfully or negligently does any act which could pollute any public or private water, including underground water, or sea water in such a way as to render it less fit for the purposes for which it can ordinarily be used by other persons, or for the propagation of fish or other aquatic life or for recreational or other legitimate purposes, shall be guilty of an offence.<sup>222</sup>

The Water Act also provides for various offences and penalties,<sup>223</sup> as well as for the establishment of a water court,<sup>224</sup> which court has a wide range of jurisdiction powers and authority.<sup>225</sup> Although the establishment and functioning of a water court holds vast potential

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<sup>219</sup> Water Act s 21(1)(a).

<sup>220</sup> Water Act s 21(2).

<sup>221</sup> Water Act ss 21(2) and (3).

<sup>222</sup> Water Act s 23(1)(a).

<sup>223</sup> Water Act s 170.

<sup>224</sup> Water Act s 34(1)(g).

<sup>225</sup> Water Act s 40. A water court has the power to make orders and awards, including orders for the payment of money (s 40(a)); to investigate, define and record the rights to the use of public water for any particular stream and to the due recognition of all rights to the public water in question which have been defined and any apportionment which has been made by order of a competent court or by arbitration or agreement or in any other lawful manner, to apportion such public water for any of the purposes recognised by the Act (s 40(b)); to enquire into and, in its own discretion determine any existing, future or contingent right or obligation in respect of the use of public water or any right or servitude by means of which public water or subterranean water is being used or disposed of, notwithstanding that no person can claim any relief consequential upon such determination (s 40(c)); to investigate, determine and record whether any particular stream is a public or a private stream (s 40(d)); to investigate, define and record the normal flow of a public stream at any point along the course of such stream (s 40(e)); to determine and fix the place or places, either upon land riparian to a public stream or upon any land higher up the course of such public stream, at which an owner of such land shall be entitled to divert water from such public stream, and to determine, if required, the nature and extent of the right to use at such public place or places, due regard being had to the rights of any other owners (s 40(f)); to investigate any application for the removal or alteration of any dam, weir (a low dam built across a river to raise the water level, divert the water, or control its flow) or other obstruction in the course of a public stream and to make orders and awards thereon (s 40(g)); to grant permission for the use of public water (s 40(h)); to give such directions for the erection, maintenance, control and supervision of devices for the proper measurement and division of the normal flow of any public stream and as to payment of the costs

for environmental governance and environmental protection efforts, such water courts have not been established in Namibia. Water management in Namibia in general and with regard to uranium mining in particular may be enhanced significantly once the WRMA enters into force.

### 3.6 WRMA

The WRMA<sup>226</sup> provides for the management, development, protection, conservation and use of water resources in a manner that is consistent with and conducive to the fundamental principles contained in the Act.<sup>227</sup> Some of the principles of water resource management are applicable to the environmental regulation of uranium mining facilities as water is extensively used during uranium mining operations.<sup>228</sup> These principles may establish and enhance environmental protection as it provides for, amongst others, the harmonisation of human needs with environmental ecosystems and the species that depend upon them while recognising that those ecosystems must be protected to the maximum extent;<sup>229</sup> integrated planning and management of surface and underground water resources in ways which incorporate the planning process, as well as economic, environmental and social dimensions so as to promote sustainable development;<sup>230</sup> the preventative and polluter pays principle;<sup>231</sup> as well environmental awareness and training,<sup>232</sup> in order to establish openness and transparency by making water resources information available and accessible to the public.<sup>233</sup> Furthermore, provision is made for regional diversity and decentralisation to the lowest possible level of government consistent with the available capacity at such levels,<sup>234</sup> thereby acknowledging that, although it may be advisable for local authorities to take charge of water resources

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thereof as may be necessary to give effect to its orders or awards (s 40(i)); and generally to do any act or thing which may under this Act or any other law be done by a water court (s 40(j)).

<sup>226</sup> See also Ruppel in Ruppel and Ruppel-Schlichting (eds) *Environmental Law and Policy in Namibia* 88, 98; Bethune and Ruppel in Ruppel and Ruppel-Schlichting (eds) *Environmental Law and Policy in Namibia* 136-140.

<sup>227</sup> WRMA s 2.

<sup>228</sup> See 2.2.

<sup>229</sup> WRMA s 3(d).

<sup>230</sup> WRMA ss 3(e) and (g).

<sup>231</sup> WRMA s 3(l).

<sup>232</sup> WRMA ss 3(i) and (j)

<sup>233</sup> WRMA s 3(f).

<sup>234</sup> WRMA s 3(n).

management, the appropriateness and desirability of such decentralisation may depend on the availability and level of capacity at grassroots level.<sup>235</sup>

For reasons set out above and as will be elaborated upon further,<sup>236</sup> the WRMA is a comprehensive piece of legislation. Once enforced, environmental governance in general and with regard to its uranium mining industry in particular may enjoy enhanced levels of efficiency and hence benefit greatly from the relevant provisions as contained in the Act.

Apart from the impact of uranium mining activities on water resources, uranium mining is also associated with radiation and other hazardous substances that may be attributed to and associated with the chemical composition of uranium.<sup>237</sup>

### 3.7 AERPA

Besides the EMA and the WRMA, the AERPA has similarly been enacted, but is not yet in force. Hence, uranium mines are currently bound to the *Hazardous Substance Ordinance*<sup>238</sup> (Hazardous Substances Ordinance) as well as relevant provisions of international law.<sup>239</sup>

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<sup>235</sup> Du Plessis *Fulfilment of South Africa's Constitutional Environmental Right* 275. As the agency responsible for administering the Act, the Water Resources Management Agency is responsible for *inter alia* the integrated management of the country's water resources; technical analysis of applications for licences to abstract and use water and permits to discharge effluent or to construct an effluent treatment facility or disposal site; the collection, analysis and sharing of data concerning the conservation and management of water resources; and the monitoring and review of water usage by all water users and effluent discharged in order to assess legal compliance (WRMA s 7(2)(a)-(d)). The Namibia Water Corporation (Pty) Ltd (NamWater) (see in general [www.namwater.com.na](http://www.namwater.com.na)) is a commercial entity of which the sole shareholder is the Namibian Government and is responsible for supplying water in bulk to industries, municipalities and the Directorate of Rural Water Supply in the Ministry of Agriculture, Water Affairs and Forestry (the latter supplies water to rural communities). Anyone who is not satisfied with any decision of the Minister or any water management institution (see ss 8, 12-15, 16-22, 54) made under this Act with regard to a water related matter, a water resource, any licence or permit issued under this Act and an aquifer, may appeal to the Water Tribunal, as established in terms of the Act (WRMA s 118(1)), against such a decision (WRMA s 120(1)). The Act also provides for arbitration (WRMA s 122) and mediation (WRMA s 123).

<sup>236</sup> See 4.1 – 4.4.

<sup>237</sup> See n 2.

<sup>238</sup> *Hazardous Substance Ordinance* 14 of 1974. AERPA s 44 and Schedule 1.

<sup>239</sup> See 1.2. The relevant sources of international law include the *Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal*, 1989 and the *Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade*, 1998. As mentioned, detailed discussion of the international law does not fall within the ambit of this study, which focuses on the legal position as envisaged by the legislature.

The AERPA amends certain provisions of the Hazardous Substance Ordinance and aims to minimise the exposure of persons and the environment in Namibia to the effects of harmful radiation;<sup>240</sup> to ensure that adequate control is exercised over the possession, production, processing, sale, export and import of radiation sources<sup>241</sup> and nuclear material;<sup>242</sup> and to create the necessary mechanisms to facilitate compliance with the country's obligations under international agreements relating to nuclear energy, nuclear weapons and protection against the harmful effects of radiation.<sup>243</sup> The AERPA is of direct relevance to the regulation of uranium mining in as far as it prohibits the possession, operation or use, storage or keeping, disposal,<sup>244</sup> dumping, abandonment, import or export of any radiation source or nuclear material without a licence.<sup>245</sup>

In an attempt to realise its objectives, the AERPA provides for the establishment of a number of administering agents.<sup>246</sup> At face value, the Act is of great importance for environmental regulation of uranium mining in as far as it aims to regulate the exposure of persons and the environment to the effects of harmful radiation that result from such mining, and also to ensure that adequate control is exercised over radiation sources and nuclear material. Since the

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<sup>240</sup> 'Radiation' is defined in s 1 as "electromagnetic radiation or high energy particles that react with matter by forming ion pairs; and non-ionising radiation in so far as the application of this Act has been prescribed for such radiation". See also 2.1.

<sup>241</sup> 'Radiation source' is defined in s 1 of the Act as "any device, radioactive material or any other material that emits radiation".

<sup>242</sup> 'Nuclear material' is defined in s 1 of the Act as "... uranium enriched in isotope uranium-235, or uranium containing the mixture of isotopes as occurring in the nature other than in the form of ore or ore residue ..."

<sup>243</sup> AERPA s 2.

<sup>244</sup> Disposal, in relation to radioactive waste, includes its removal; deposit; destruction; discharge, whether into water, air, a sewer or drain; or its burial (AERPA s 1).

<sup>245</sup> AERPA ss 16(1) and (2).

<sup>246</sup> These administering agents include the Atomic Energy Board, established in terms of s 3(1), which acts as the national advisory board, responsible for advising the Minister, organs of state and licence holders on various matters as prescribed by the Act (s 8). The statutory requirements for the composition of the Board allow for the nomination of persons from different ministries responsible for *inter alia* health, labour, mines and energy, and environmental affairs (s 4). Since the members of this Board are composed of different ministries, all of whose activities are influenced by and subject to the provisions of this Act, it may assist in facilitating cooperative governance between the different ministries and line functionaries, and in enhancing the country's environmental enforcement regime in general, as well as the environmental protection effort pertaining to its uranium mining industry in particular. The Act also provides for an independent National Radiation Protection Authority (NRPA) (s 33(1)) that consists of a Director-General (DG) and radiation protection officers (ss 33(2), 34(3), 35(2) and 36). The members of the NRPA are responsible for informing the Board about the extent of radiation exposure in the country; inspecting radiation sources or nuclear material in order to assess radiation safety conditions and other requirements imposed by or under the Act; taking the necessary action to enforce any provision of the Act and any duty imposed under it; and to establish and maintain a register of radioactive materials imported into or produced in Namibia (s 33(3)).



AERPA is not yet in force, any possible benefits it may have for environmental governance during uranium mining are pending.

Despite this slow movement of the Legislature in finalising regulatory requirements and the Executive in enacting and enforcing them, as well as the consequences it has for environmental protection, a valuable part of Namibia's existing environmental law framework is the *Environmental Investment Fund of Namibia Act* (EIFA).<sup>247</sup>

### **3.8 EIFA**

In support of sustainable environmental and natural resources,<sup>248</sup> the EIFA was enacted thereby establishing<sup>249</sup> the Environmental Investment Fund (EIF), managed and administered by the EIF Board,<sup>250</sup> to procure money for the maintenance of an endowment fund that generates income in perpetuity to allocate such income to activities and projects aimed at sustainable development, amongst others.<sup>251</sup>

The EIF consists of moneys appropriated by Parliament; collected in respect of levies imposed under the Act; donated or accrued to the Fund; and interest and other income derived from investments.<sup>252</sup> Money may be allocated by the EIF Board for purposes of, for instance, improved conservation, protection and management of natural resources, biodiversity and ecosystems; environmental training and education; producing, monitoring, using and disseminating environmental information in order to broaden the knowledge base of Namibia's environmental resources; and developing and implementing environmental policies and strategies.<sup>253</sup>

Apart from the environmental law and policy framework that establishes the ambit within which the country's environmental regulation with regard to uranium mining should take place,

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<sup>247</sup> *Environmental Investment Fund of Namibia Act* 13 of 2001.

<sup>248</sup> EIFA Long title.

<sup>249</sup> EIFA s 2(1).

<sup>250</sup> EIFA ss 5-11.

<sup>251</sup> EIFA s 4.

<sup>252</sup> EIFA s 3.

<sup>253</sup> EIFA s 25.

various administering authorities worth discussing exist, including the Ombudsman and the COM, as well as the state trust.

### **3.9 Ombudsman**

The Constitution makes provision for a national Ombudsman<sup>254</sup> and outlines a number of environmental duties on the part of the Ombudsman.<sup>255</sup> Although the findings or decisions of the Ombudsman are not enforceable by him/herself, he/she is allowed to take appropriate action to call for or take appropriate steps to call for or require the remedying, correction and reversal of matters.<sup>256</sup> The Ombudsman, as a regulatory body, may contribute significantly to environmental protection efforts in general, as well as environmental protection efforts in relation to uranium mining activities in the country. However, the Ombudsman has not yet been confronted with situations requiring environmental protection *per se*; subsequently, his/her efforts in this regard cannot yet be applauded, nor condemned.

### **3.10 The state trust**

In terms of article 100 of the Namibian Constitution, the land, water and natural resources below and above the surface of the land and in the continental shelf and within the territorial water and the exclusive economic zone of Namibia belong to the state if not otherwise lawfully owned. To this extent the Namibian Constitution establishes sovereign state ownership of natural resources that are not under the control of others and, when considering the geographical outline of the country, as well as its scant population, vast areas of land may indeed fall under state ownership.<sup>257</sup> Subsequently the state should take environmental or environment-related responsibility for these areas as this constitutionally entrenched sovereign state ownership of natural resources may be used by civil society at large to call for positive action on the part of the state to contribute to environmental protection. In the absence of

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<sup>254</sup> Constitution ch 10. See 1.2.

<sup>255</sup> Constitution art 91(c). These functions include investigating complaints concerning over-utilisation of non-renewable resources; degradation and destruction of ecosystems; failure to protect the beauty and character of the country; and failure to take appropriate action to call for the remediation, correction and reversal of activities related to the above through means that are fair, proper and effective. See also 1.2.

<sup>256</sup> *Ombudsman Act* 7 of 1990 art 5(1).

<sup>257</sup> Du Plessis *Fulfilment of South Africa's Constitutional Environmental Right* 258.

jurisprudence<sup>258</sup> or scholarly analysis on this provision, it is not certain whether and/or to what extent the Namibian courts will give effect to this public trust doctrine.

Apart from the various regulatory bodies established by or on account of government initiative, Namibia's mining sector (private sector) also undertook significant steps towards establishing and enhancing environmental protection efforts by means of the COM.

### **3.11 COM**

The COM represents the interests of all the major mining and exploration companies active in the country and also holds vast potential for environmental protection with regard to uranium mining in the country.<sup>259</sup> The COM aims to efficiently promote, encourage, protect and foster responsible exploration and mining in Namibia, to the benefit of the country and all stakeholders.<sup>260</sup>

The Constitution of the COM contains a Code of Conduct and Ethics for its members and all members of the COM automatically, upon accepting membership of the COM, become subject to the Code of Conduct and Ethics as a condition of membership. Furthermore, all members of the COM must respect and pursue, in all phases of mining operations, the COM's

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<sup>258</sup> Environment and related case law in Namibia are mostly of a criminal nature. See Ruppel in Ruppel and Ruppel-Schlichting (eds) *Environmental Law and Policy in Namibia* 82.

<sup>259</sup> The COM has as its objectives *inter alia* to promote, advance and protect Namibia's mining industry; to promote the interests of its members; and to consider all questions (which may include environmental questions) connected to the mining industry and to promote public interest therein (COM Constitution ss 4.1-4.3). The COM also aims to enhance training, which may include environmental training, as it aims to promote and provide facilities for the training of persons employed in the mining industry (COM Constitution s 4.15); to encourage the study of matters relating to mines and mining (COM Constitution s 4.17); and to provide for the delivery and holding of lectures, exhibitions, public meetings, classes and conferences calculated directly or indirectly to advance the cause of the mining industry (COM Constitution s 4.18). Furthermore, the COM also aims to negotiate with Government on members' behalf and to promote, support or oppose any legislative or other measure affecting the interests of members and/or the mining industry (COM Constitution s 4.21); and to communicate and exchange information pertaining to mining matters with government departments, other Chambers of Mines and other organisations (COM Constitution s 4.20). Such 'other organisations' may, for example, include civil-based organisations (CBO) and NGOs, thereby enabling and enhancing the society's involvement in environmental protection. The Code also makes specific provision for environmental impact assessment and management in that it requires members to continuously and responsibly monitor the environmental impacts of their operations (Code of Conduct and Ethics s 7.1); and to actively support and where required participate in the development and enforcement of environmental legislation to ensure effective management of mining activities and related operations on the environment (Code of Conduct and Ethics s 7.3).

<sup>260</sup> The Chamber of Mines of Namibia *Constitution* iii Mission Statement. See in general [www.chamberofmines.org.na](http://www.chamberofmines.org.na).

Environmental Code of Conduct.<sup>261</sup> This typically means that a uranium mining facility that is or that would want to be a member of the COM is required to have various environmental regulatory measures in place, which measures may ultimately contribute to environmental protection during, for instance, uranium mining activities. The COM's Code of Practice also expressly provides for sustainability reporting<sup>262</sup> which may contribute to environmental protection efforts of mining facilities through accountability practices.

In 2007, the COM established the Uranium Stewardship Committee (USC), recognising the need to care for and manage uranium in an integrated programme of action aimed at ensuring

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<sup>261</sup> Code of Conduct and Ethics s 6. With regard to employment and human resource development, members are expected to, as far as is practicable, provide on-the-job training to its employees in various aspects of *inter alia* mining, mineral processing, mine safety, occupational health and environmental protection (Code of Conduct and Ethics s 3.1). In respect of the health and safety of its employees, members are required to comply with health and safety regulations (*Regulations for the health, safety and welfare of persons employed or otherwise present in or at mines* (Mine Safety Regulations. See 4.1-4.4) and best practices (Code of Conduct and Ethics s 8.1) and must adhere to a vigorous health and safety programme which includes environmental risk management (Code of Conduct and Ethics s 8.2.7) and monitoring and reporting (Code of Conduct and Ethics s 8.2.6).

<sup>262</sup> The COM's Code of Practice provides for sustainability reporting as manifested in King II. However, it is important to note that King III has since been published. King III poses significant steps towards enhanced sustainability reporting; hence it is important that the COM requires sustainability reporting as envisaged by King III. Unlike King II, which applied to listed companies, financial institutions and public sector enterprises and merely encouraged all other companies to consider the application of King II insofar as the principles are concerned, King III applies to all entities regardless of the manner or form of corporation or establishment. All entities should apply both the principles in the Code and the best practice recommendations in the Report. 'Substantive' application of the Code and Report does not achieve compliance. Each principle is of equal importance and together forms a holistic approach to governance. King III follows an 'apply or explain' approach. Where entities applied the Code and best practice recommendations in the Report, a positive statement to this effect should be made to the stakeholders. In situations where the board of directors decide not to apply a specific principle and/or recommendation, this should be explained to the entity's stakeholders. King III requires the statutory financial information and sustainability information to be integrated into an 'integrated report' which should be prepared annually. Integrated reporting cannot be a matter of collating sustainability information and reporting at the end of the financial year. Sustainability reporting should be integrated with other aspects of the business process and managed throughout the year. The integrated report must contain sufficient information to record how the company has positively and negatively affected the economic life of the community in which it operated during the year under review. The report should also contain predictions on how the board believes it can enhance the positive aspects and negate the negative aspects that affect the economic life of the community in which it operates in the future. King III also requires the establishment of a formal process with regard to the assurance of sustainability reporting. The audit committee should consider and recommend to the board the need to engage as external assurance provider over the accuracy and completeness of sustainability reporting to stakeholders. The responsibility of the audit committee may be extended beyond financial reporting to include sustainability reporting. Audit committees may need additional expertise in discharging their responsibilities. Furthermore, King III recognises that alternative dispute resolution (ADR) has become an important element of good governance. This is in line with the *Companies Act* 71 of 2008 which offers parties the option of resolving disputes through ADR. King III favours mediation or conciliation and, failing that, arbitration. Benefits of ADR include reaching conclusions faster, the ability to conduct ADR privately, and the opportunity for creative or novel solutions (PWC 2009 <http://www.iodsa.co.za>).

that all processes, goods and services are managed throughout the life cycle in a socially and environment-responsible manner.<sup>263</sup> In response thereto, the USC aims to ensure proactive cooperation and collaboration between exploration and mining companies based on the realisation that the cumulative socio-economic and biophysical impacts of mining and future mining closure cannot be successful if adopted by only one mining company, and that the unsustainable practices of one company's action can impact negatively on the entire industry.<sup>264</sup> The USC also initiated the development of a strategic environmental assessment (SEA) in the Erongo Region in order to better understand the vulnerabilities and opportunities to which the region might be exposed as a result of the multiple uranium mines that have developed in a relatively short period of time.<sup>265</sup> Furthermore, the USC aims to establish multi-stakeholder fora to develop guidelines for health, environment, radiation, safety and community issues; and on building partnerships throughout the life cycle of nuclear materials to ensure the sustainability of their production, use and disposal.<sup>266</sup> When viewed against its objectives, this institution could hold vast potential for environmental protection in Namibia's uranium mining industry.<sup>267</sup>

In 2009, consultations between the Namibia Stock Exchange (NSX) and the COM resulted in the NSX making it mandatory for proof of Chamber membership as a condition for listing or dual listing on the NSX.<sup>268</sup> This condition, together with the benefits associated with Chamber membership with regard to environmental governance, may certainly be viewed as a victory towards improved environmental regulation and protection in the mining sector of Namibia.

Also in 2009, the COM established the Uranium Institute (UI) to serve as Namibia's leading source of advocacy, training and research on uranium-related issues, such as questions surrounding nuclear energy pertaining to health, environmental and radiation safety, waste, cost and non-proliferation.<sup>269</sup> Although still a new organisation, the UI aims to focus on

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<sup>263</sup> The Chamber of Mines of Namibia *Annual Review 2007/2008* 59. See in general [www.namibiauraniuminstitute.com](http://www.namibiauraniuminstitute.com).

<sup>264</sup> The Chamber of Mines of Namibia *Annual Review 2007/2008* 59.

<sup>265</sup> The Chamber of Mines of Namibia *Annual Review 2007/2008* 61. MME *Strategic Environmental Assessment for the Central Namib Uranium Rush*.

<sup>266</sup> The Chamber of Mines of Namibia *Annual Review 2007/2008* 59.

<sup>267</sup> The Chamber of Mines of Namibia *Annual Review 2007/2008* 61.

<sup>268</sup> The Chamber of Mines of Namibia *Annual Review 2007/2008* 6.

<sup>269</sup> The Chamber of Mines of Namibia 2009 *Newsletter* 13.

improving the quality of occupational healthcare, environmental management and radiation safety, by attempts to bridge the gaps between policy, practice and research.<sup>270</sup> Within the scope of this study, the establishment of the UI is a particularly promising development in as far as research and training are concerned, given the significant gap that exists regarding research and training with regard to uranium mining, together with the fact that numerous uranium mines are set to commence mining activities in the near future.

As is evident from the abovementioned, particularly the establishment of the USC and the UI, Namibia's mining sector is taking significant steps towards establishing and enhancing environmental protection efforts despite the fact that such steps and contributions are normally underwritten by government initiative. The COM's initiative may be attributed to the lack of pro-active environmental governance in Namibia, together with growing levels of concern, both locally and internationally, regarding the necessity of certain environmental measures to be put in place.

Generally, the COM and related activities appear to be able to fortify environmental governance efforts within the domain of uranium mining in Namibia. However, it must be noted that any material non-compliance with the COM's Constitution and Code of Conduct and Ethics (merely) leads to expulsion or termination of the membership of a transgressor.<sup>271</sup> Although recognising that such expulsion may have serious economic consequences and will most certainly not reflect good on a mining companies' corporate image, terminating the membership of a transgressor may merely serve as a shunning process since non-compliance with the COM's Constitution and Code does not constitute any form of legal accountability.

### **3.12 Preliminary observations**

After having analysed the country's environmental law and policy framework, as well as the administering agents that regulate uranium mining in Namibia, the existing framework law and policy framework for the environmental regulation of uranium mining in Namibia shows some reassuring strengths.

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<sup>270</sup> The Chamber of Mines of Namibia 2009 *Newsletter* 14.

<sup>271</sup> Code of Conduct and Ethics s 12.1.

The constitutionally entrenched sovereign state ownership of natural resources may require the state to take environmental or environmental-relevant responsibility for certain areas. This provision may be used by the public and civil society at large to call for positive action on the part of the state to contribute to environmental protection.

The introduction of 'new' environmental legislation reflects a growing concern regarding environmental protection. The enactment of EMA and the draft EA Regulations and thereby the MEA's move towards a more holistic approach to environmental governance may contribute significantly towards establishing co-operative environmental governance.<sup>272</sup> In particular, the establishment of a central decision-making authority may contribute significantly towards facilitating efficient and effective environmental governance. However, it is vital that authorities must also anticipate and act pro-actively in countering the existence and effects of the disadvantages and possible dangers associated with such a central decision-making body. These dangers and disadvantages include fraud and corruption. For purposes of environmental governance in Namibia, it is vital that the central decision-making body serve and advocate in favour of the environment and environmental considerations and not be a threat. Furthermore, the introduction of EAPs responsible for managing the EA process also holds vast potential for environmental protection. Unfortunately EAPs may also prove to be one of the main factors hampering environmental protection, as room is created for bribery and fraud and it is therefore important that the DEA establishes an accreditation system and drafts strict regulations that govern EAPs in order to avoid and overcome these challenges.

Despite various strengths, the existing law and policy framework that regulates uranium mining in Namibia is still fairly novel and in the process of development, as is evidenced by several weaknesses inherent to the country's environmental governance regime. Namibia's fragmented environmental law and policy framework, that comprises numerous laws that are enacted, but not yet enforced, surmount to legal uncertainty. The possibility also exists of duplication of environmental functions between the Environmental Commissioner, the Sustainable Advisory Council and the Ombudsman.

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<sup>272</sup> See 2.3, 3.3 and 3.4.

The environmental management principles, as contained in the EMA, holds vast potential for enhancing environmental protection and establishing sound environmental governance in that it guides the implementation of the EMA, as well as all other applicable and relevant laws. However, the lack of a statutory right of access to information in the EMA, as well as in the environmental regulatory framework in general, represents a genuine lacuna in Namibia's environmental protection effort. Furthermore, the EMA did not optimally seize the opportunity to provide for the adoption, implementation and use of environmental governance tools which could ultimately have, if formally incorporated into the compliance and enforcement regime, enhanced the country's environmental protection effort in general, and that of its uranium mining industry in particular.

Although a comprehensive piece of legislation, the Mining Act ceases to play as an important role in the country's environmental protection effort as it could have had the Legislature required emphasis be placed on environmental and relevant concerns and considerations.<sup>273</sup> This is evident from the Act's silence on providing for historic and future pollution and its failure to grant members of the public a right of access to (environmental) information.

Both the EMA and the WRMA are comprehensive pieces of legislation that contain various provisions holding vast potential for the country's environmental protection effort in general, and environmental governance efforts with regard to the uranium mining industry in particular. Unfortunately, despite the nature and interconnectedness of water and the environmental consequences of mining, the governing legislation as well as the relevant authoritative bodies responsible for water and environmental affairs, namely the MWA and the MET, are and operate as two separate entities. The Namibian environmental governance regime would certainly benefit if the functions and responsibilities related to these two spheres, namely water and environmental affairs, were to be assigned to a single ministry, with separate directorates driving each.

Although the AERPA contains several laudable provisions from an environmental protection point of view, it lacks teeth and significant requirements pertaining to environmental governance tools, as well as a right of access to information. It should also be noted that the

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<sup>273</sup> See 5.1.



type of information guarded by the provision of the Act may possibly cause harm or cause information to be guarded at the expense of the environment and civil society at large.

As far as could be established, the framework of environmental law and policy provisions that would in fact be applicable during the various stages of a uranium mine facility's PLC have not yet been distilled and/or analysed in the Namibian context. This study now proceeds to address this gap by establishing to what extent the body of environmental law and policy regulates uranium mining during the respective phases of the PLC. A fully detailed discussion of all applicable laws, however, falls beyond the scope of this study.

#### **4. PLC analysis of the environmental regulation of Namibia's uranium mines**

The study now proceeds to investigate each of the phases of the PLC of a uranium mine in order to establish to what extent the relevant enforceable environmental law and policy in Namibia embraces environmental governance during the PLC of uranium mining facilities in the country. This paragraph commences with a discussion of the environmental law and policy provisions applicable to uranium mining during the planning and design phase,<sup>274</sup> as the initial phase of developing uranium mine facilities, and continues to the construction<sup>275</sup> and operational<sup>276</sup> phases, until the closure phase<sup>277</sup> of such facilities.

##### ***4.1 Phase I: Planning and design***

The environmental regulatory framework contains various provisions and requirements with regard to this initial phase of developing uranium mining projects. Such provisions and requirements will subsequently be discussed.<sup>278</sup>

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<sup>274</sup> See 4.1.

<sup>275</sup> See 4.2.

<sup>276</sup> See 4.3.

<sup>277</sup> See 4.4.

<sup>278</sup> Reference will be made to present and future environmental law and policies to sketch a realistic view of the existing position, as well as the direction in which the legislature is steering environmental governance in the uranium mining context.

#### 4.1.1 Environmental regulatory provisions in relation to the planning and design phase

Uranium mining companies may commence by applying<sup>279</sup> for a mineral licence,<sup>280</sup> granting them certain rights relating to such minerals within such geographical areas as specified in the licence and in terms of the provisions of the Act. The Minister may, on receipt of an application, require the mining company to give the particulars of the application relating to any existing damage to the environment in the area to which the application relates,<sup>281</sup> the effect which the proposed prospecting or mining operations may have on the environment and the proposed steps to be taken in order to prevent or minimise such effect,<sup>282</sup> and carry out or cause to be carried out such environmental impact studies as may be specified in the notice.<sup>283</sup> When considering an application and/or renewal for a mineral licence, the Minister is obliged to take into account the need to conserve and protect the natural resources in, on or under the land in question, and even adjoining and neighbouring land.<sup>284</sup>

A company wishing to conduct reconnaissance operations for uranium in a certain area must apply<sup>285</sup> for an exclusive reconnaissance licence (ERL). The Mining Commissioner may inspect and investigate a company's premises in order to monitor compliance of its reconnaissance operations.<sup>286</sup> An ERL is valid for a period of six months<sup>287</sup> and shall not be subject to renewal,<sup>288</sup> save for the Minister granting an extension of such licence on one occasion for a period of six months.<sup>289</sup>

In order to carry on prospecting operations, a company must apply<sup>290</sup> for an exclusive prospecting licence (EPL). The contents of the application must include, *inter alia*, the

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<sup>279</sup> Mining Act s 47(1).

<sup>280</sup> Mining Act Part VIII.

<sup>281</sup> Mining Act s 48(1)(c)(ii).

<sup>282</sup> Mining Act s 48(1)(c)(iii).

<sup>283</sup> Mining Act s 48(2)(b)(i).

<sup>284</sup> Mining Act s 48(3).

<sup>285</sup> Mining Act s 59(1).

<sup>286</sup> Mining Act s 5(1).

<sup>287</sup> Mining Act s 65(1).

<sup>288</sup> Mining Act s 65(2).

<sup>289</sup> Mining Act s 65(3). The Minister may, on application made to him/her by the holder, extend such licence if he/she is satisfied that such holder has, during the currency of such licence, been prevented through no fault of such holder to fully carry on the reconnaissance operations authorised under such licence.

<sup>290</sup> Mining Act s 68.

condition of and existing damage to the environment in the relevant area; as well as an estimate of the effect which the proposed prospecting operations may have on the environment and the proposed steps to be taken in order to prevent or minimise such effects.<sup>291</sup> The application must also contain particulars of the technical and financial resources of or available to the applicant.<sup>292</sup>

When applying for an EPL, a company must, in terms of the *Regulations for the health, safety and welfare of persons employed or otherwise present in or at mines*<sup>293</sup> (Mine Safety Regulations) complete an environmental questionnaire,<sup>294</sup> the answers of which are regarded as commitments which will become part of the environmental contract between the prospector and the Namibian Government, duly represented by the MME and the MET. The Mine Safety Regulations contains a pro-forma environmental contract<sup>295</sup> between the applicant company and the Namibian Government. In terms of the contract, the applying uranium mining company recognises that its prospecting operations may have significant impacts on the environment and, accordingly, undertakes to take every practicable step necessary to ensure the mitigation of such impacts during the course of its operations;<sup>296</sup> and to take necessary and practicable steps to ensure that environmental damage is reduced to a minimum and prevented as far as practicable.<sup>297</sup>

The environmental commitments contained in the environmental contract relate to issues pertaining to pollution and waste; vehicles, earthmoving equipment, drilling and blasting; water; protection of plants and wildlife; historical, archaeological and cultural heritage; relations with neighbouring communities and/or the general public; and rehabilitation. Furthermore, a company applying for an exclusive prospecting licence must also complete the environmental management plan (EMP)<sup>298</sup> as contained in the Mine Safety Regulations. The answers provided in the EMP are also regarded as environmental commitments that form part of the

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<sup>291</sup> Mining Act s 68(f).

<sup>292</sup> Mining Act s 68(g).

<sup>293</sup> *Regulations for the health, safety and welfare of persons employed or otherwise present in or at mines* GN 156 in GG 1617 of 1 August 1997.

<sup>294</sup> Mine Safety Regulations Appendix A(2).

<sup>295</sup> Mine Safety Regulations Appendix A(1).

<sup>296</sup> Environmental agreement clause 2.2.

<sup>297</sup> Environmental agreement clause 2.3

<sup>298</sup> Mine Safety Regulations Appendix A(3).

environmental contract. It is argued that, in the event of serious environmental damage as a result of or relating to uranium mining companies' conduct, the Government may pursue contractual remedies available to them in order to improve and drive environmental protection. The EMP requires a detailed list of, amongst other things, the prospecting programme; environmental damage existing in the area at the time; and possible significant environmental impacts<sup>299</sup> that require mitigation.

An EPL shall be valid for a period not exceeding three years and for such further periods not exceeding two years at a time.<sup>300</sup> On completion or suspension of its prospecting operations, the company must ensure that environmental impacts are minimised and that every reasonable and practicable step is undertaken to ensure that the environment is left in a reasonable state.<sup>301</sup> Furthermore, the company is also required to plan reasonable and practicable steps to be taken on completion or suspension of its mining operations in order to ensure that the environment is left in a reasonable state.<sup>302</sup>

In the event of pollution, loss or damage, the holder of an ERL or an EPL must report such incident to the MME and take all such steps as may be necessary in accordance with good reconnaissance practices, or otherwise as may be necessary to remedy the situation.<sup>303</sup> The holder of an ERL or EPL licence also remains subject to a duty of care<sup>304</sup> towards the environment.

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<sup>299</sup> The non-exhaustive list of possible significant environmental impacts requiring mitigation as contained in Appendix A(3) of the Mine Safety Regulations include: pollution (accidental/negligent spillages, vehicles, earthmoving equipment); waste (domestic waste, industrial waste, toilet facilities); stripping and stockpiling soils; tracks and roads; water abstraction and supply (abstraction point and pipeline, groundwater seepage); vegetation; fauna; noise; dust; visual impacts; neighbouring communities and/or the general public; historical, archaeological and cultural heritage; and rehabilitation (all waste and unwanted materials, all structures, all roads).

<sup>300</sup> Mining Act s 71(1).

<sup>301</sup> Environmental agreement clause 2.5.

<sup>302</sup> Environmental agreement clause 2.5.

<sup>303</sup> Mining Act s130(1).

<sup>304</sup> See 3.1. In terms of s 130(2) of the Mining Act, the Minister may direct the holder to take such steps as may be necessary to remedy the spilling, pollution, damage or loss, and if the holder fails to comply with such directions, the Minister may cause such steps to be taken and recover the costs incurred from the licence holder.

The WRMA requires a person who wishes to abstract and use water, except for domestic use,<sup>305</sup> to apply<sup>306</sup> for a licence. An application for a licence to abstract and use water (water licence) must be accompanied, *inter alia*, by an environmental impact analysis of the proposed abstraction of water on the environment and existing water users and water resources.<sup>307</sup>

The issuance of a water licence is subject to the protection of the environment<sup>308</sup> and proper water management. Proper water management relates to, *inter alia*, specifying efficient water management practices and general requirements for any water use, including water conservation measures; requiring monitoring, analysis and reporting by the licensee on every water use dependent upon the licence by specifying the aspects of water use to be monitored and reported and the devices to be used for such monitoring; and requiring the preparation of a water management plan by a proponent, as well as the subsequent approval of such plan.<sup>309</sup>

A person who wishes to discharge effluent or construct an effluent treatment facility or disposal site must apply<sup>310</sup> for a permit. Before submitting the application, the applicant must invite all interested parties to submit their objections in writing.<sup>311</sup> Objections received, as well as an environmental impact analysis and other documents and representations must be considered when issuing the permit.<sup>312</sup> A permit to discharge effluent or to construct an effluent treatment facility or disposal site is subject to the protection of water resources,<sup>313</sup> and proper effluent discharge management which requires, *inter alia*, the monitoring, analysis and reporting in every discharge specifying the aspects of the discharge to be monitored and reported and specifying the devices to be used for such monitoring, and the preparation of an effluent discharge management plan.<sup>314</sup>

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<sup>305</sup> WRMA s 28.

<sup>306</sup> WRMA s 33(1).

<sup>307</sup> WRMA s 33(3)(c).

<sup>308</sup> WRMA s 37(b).

<sup>309</sup> WRMA s 37(c).

<sup>310</sup> WRMA s 59(1).

<sup>311</sup> WRMA s 59(2).

<sup>312</sup> WRMA s 60(2).

<sup>313</sup> WRMA ss 63(a) and (b).

<sup>314</sup> WRMA s 63(c).

A licence or permit may be granted for a term of five years,<sup>315</sup> after which it may be renewed on application.<sup>316</sup> When considering an application for renewal, the MWA must take into account, amongst other considerations, the protection of the environment and proper waste or effluent discharge management.<sup>317</sup> A water licence may be issued as a combined licence to abstract and use water and to discharge effluent and, subsequently, a person in possession of such a combined licence does not require a separate effluent discharge permit.<sup>318</sup> This provision may contribute to facilitating a streamlined co-operative environmental governance<sup>319</sup> regime, thereby enhancing the environmental protection effort.

In order to control and protect the groundwater, the WRMA requires anyone who wishes to drill a borehole or engage in a borehole drilling programme to apply<sup>320</sup> for a permit. Any person who engages in the trade of drilling boreholes or constructing wells must be a licenced borehole driller or well constructor.<sup>321</sup> A person who wishes to drill a borehole for the purpose of searching for or extracting minerals or other substances must inform the Minister of Water Affairs of such proposal, furnish him/her with such data and information as he/she may require in connection with such borehole drilling or improvement and take such measures as may be required by the Minister to conserve and protect the groundwater.<sup>322</sup>

Uranium mining companies will also need to apply<sup>323</sup> for a registration certificate in terms of the *Atmospheric Pollution Prevention Ordinance*<sup>324</sup> (APPO), as it prohibits the carrying on of a scheduled process<sup>325</sup> within a controlled area<sup>326</sup> in or on any premises unless he/she is the holder of a registration certificate authorising the carrying on of such activities on such premises.<sup>327</sup> The director will grant the application if he/she is satisfied that the best

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<sup>315</sup> WRMA ss 39 and 65(1).

<sup>316</sup> WRMA ss 40 and 66(1).

<sup>317</sup> WRMA s 40(2) read with ss 35 and 61; as well as s 66(2) read with s 61.

<sup>318</sup> WRMA s 38.

<sup>319</sup> See 2.3.

<sup>320</sup> WRMA s 46(2).

<sup>321</sup> WRMA s 52.

<sup>322</sup> WRMA s 48(1).

<sup>323</sup> APPO s 6(1).

<sup>324</sup> *Atmospheric Pollution Prevention Ordinance* 45 of 1965.

<sup>325</sup> APPO Schedule II.

<sup>326</sup> The whole of Namibia, with the exception of the Caprivi strip, has been classified as a controlled area in terms of GN 309 in GG 3571 of 1 November 1976.

<sup>327</sup> APPO s 5(1)(a).

practicable means are being adopted for preventing or reducing to a minimum the escape into the atmosphere of noxious or offensive gases produced or likely to be produced by the scheduled process(es) in question.<sup>328</sup>

The Mining Act provides that in order to possess, dispose of, enrich or reprocess uranium, an uranium mining company must apply<sup>329</sup> for permission from the MME and anyone who contravenes or fails to comply accordingly is guilty of an offence and, on conviction, liable to a fine not exceeding N\$50 000, or imprisonment for a period not exceeding two years, or both.<sup>330</sup> In addition, the AERPA requires anyone who wishes to possess, operate or use, store or keep, dispose of, dump, abandon, import or export any radiation source or nuclear material, to apply<sup>331</sup> for a licence.

An application for a licence in terms of AERPA must be accompanied by, amongst other things, relevant information, which may include environmental information, concerned with public<sup>332</sup> and private<sup>333</sup> interests and the results of all assessments, including EIAs and studies carried out in respect of uranium exploration, prospecting and mining, as well as reports on the assessments and studies with regard to the disposal of radioactive waste and storage of radioactive sources for long periods.<sup>334</sup> Before approving an application for a licence, the Director General (DG) must conduct a pre-licensing safety assessment of the design of facilities and equipment as well as the related operating procedures of the applicant in order to ascertain compliance of the undertaking or the practice with the required standards.<sup>335</sup> When granting or refusing an application for a licence, the DG must take into consideration, *inter alia*, the need to protect the environment and to conserve natural resources; the ability of the applicant to operate in a manner designed to protect the health and safety of users, workers, beneficiaries and other members of the public; as well as the applicant's ability to ensure the

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<sup>328</sup> APPO s 6(2)(a)(i). It should be noted that Namibia's uranium mining industry currently exports so-called yellow cake (see 2.1); therefore the environmental impacts associated with enrichment will not be discussed.

<sup>329</sup> Mining Act s 102.

<sup>330</sup> Mining Act s 103.

<sup>331</sup> AERPA ss 16(1) and (2).

<sup>332</sup> AERPA s 21(1)(f).

<sup>333</sup> AERPA s 21(1)(h).

<sup>334</sup> AERPA s 21(1)(g).

<sup>335</sup> AERPA s 21(2). These standards have, however, not yet been enacted.

security of radiation sources and installations that process radioactive substances and nuclear material.<sup>336</sup>

In terms of the EMA, a person may only undertake a listed activity if that person is the holder of an environmental clearance certificate.<sup>337</sup> The listed activities applicable during uranium mining include resource removal; waste disposal; chemical treatment; water use and disposal; and transportation.<sup>338</sup> An environmental clearance certificate becomes effective and operates from the date endorsed on the certificate and remains effective for a period not exceeding three years, subject to suspension or cancellation of the certificate<sup>339</sup> in the event that the holder thereof has contravened any condition contained in the certificate, has contravened the EMA, or is convicted of an offence in terms of the Act.<sup>340</sup>

The EA procedure is currently regulated in accordance with the provisions of the EA Policy. The Draft EA Regulations also contain various provisions pertaining to the EA process and once these regulations are finalised and in force, the EA procedure will take place in accordance with the EA Regulations. As the Draft EA Regulations contain a sound indication of the eventual EA procedure as provided for in the final EA Regulations, these provisions are also discussed.

The EA procedure<sup>341</sup> is initiated when the proponent submits<sup>342</sup> a proposal to the Environmental Commissioner who officially registers<sup>343</sup> the project proposal. While developing the proposal<sup>344</sup> and in order to facilitate integrated and improved planning during all the stages of the PLC and to ensure that the decision-making process is informed and streamlined, the proponent must notify and consult with interested and affected parties (I&APs); establish applicable policy, legal and administrative requirements; consult with relevant ministries; and

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<sup>336</sup> AERPA s 22(1).

<sup>337</sup> EMA s 27(3).

<sup>338</sup> EMA s 27(2). See also 3.2 and 3.3. Apart from the list of activities requiring environmental assessment as contained in the EMA, the Draft EA Regulations also contain an elaborated list of activities (see regs 2(c) and 22).

<sup>339</sup> EMA s 40.

<sup>340</sup> EMA s 42(1).

<sup>341</sup> See Appendix A of the EA Policy.

<sup>342</sup> Stage 1: Submission of policy, programme or project. See figure 3.

<sup>343</sup> Stage 2: Registration. See figure 3.

<sup>344</sup> Stage 3: Develop proposal. See figure 3.



identify and consider alternatives<sup>345</sup> and issues. Although the responsibility of the proponent, the EA Policy requires these to be planned jointly by the proponent and the Environmental Commissioner who should engage in a consultative process at this early stage in order to identify, amongst other, alternatives, issues, potential impacts and benefits, as well as mitigatory measures which clearly stipulate roles, responsibilities and procedures.

When deciding<sup>346</sup> whether the proposed project requires an EA, the Environmental Commissioner uses the list of activities<sup>347</sup> to guide his/her decision. Proposed uranium mining activities will require an EA and, subsequently, the Environmental Commissioner and the proponent proceed to discuss the terms of reference<sup>348</sup> for the study.

An EA<sup>349</sup> involves three main components, namely scoping, investigating and reporting. The scoping exercise determines the extent of and approach to the investigation and should endorse the terms of reference as established earlier. The proponent in consultation with the Environmental Commissioner, relevant authorities, and I&APs, determine which alternatives and issues should be investigated, the procedural framework that should be followed, as well as report requirements. The proponent is responsible for ensuring that all the above are given adequate opportunity to participate in the scoping process.

The investigation exercise includes literature research and field work, duly guided by the scoping decisions and is intended to provide the Environmental Board<sup>350</sup> with enough

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<sup>345</sup> 'Alternatives', in relation to a proposed activity, is defined in the Draft EA Regulations as "different means of meeting the general purpose and requirements of the activity, which may include alternatives to –  
(a) the property on which or location where it is proposed to undertake the activity;  
(b) the type of activity to be undertaken;  
(c) the design or layout of the activity;  
(d) the technology to be used in the activity; and  
(e) the operational aspects of the activity."

<sup>346</sup> Stage 4: Classification of proposal. See figure 3.

<sup>347</sup> EA Policy Appendix B. Projects requiring EA include *inter alia* mining; transportation of hazardous substances and radioactive waste; waste disposal sites; water intensive industries; major groundwater abstraction schemes; desalination plants; major pipelines; major roads; and railways. If a policy, programme or project is unlikely to result in significant impacts and plans for maximising benefits are adequate, the proposal may proceed without an EA (stage 6: No formal assessment. See figure 3.)

<sup>348</sup> 'Terms of reference' is defined in the Draft EA Regulations as "a document contemplated in a regulation which forms part of the scoping report and sets out how an environmental impact assessment must be carried out" (reg 1).

<sup>349</sup> Stage 5: Environmental Assessment. See figure 3.

<sup>350</sup> See 3.3.

information on the positive and negative aspects of the proposal and feasible alternatives in order to enable it to make a decision. The subsequent report should consist of various components as listed in the EA Policy, and should also include a management plan, a monitoring programme, an environmental agreement and an audit proposal. Once completed, the EA is submitted to the Environmental Commissioner who reviews<sup>351</sup> the document with the assistance of experts, sector ministries and other organisations and/or individuals as is considered necessary, at the cost of the proponent. The Environmental Commissioner may subsequently grant or refuse the application.<sup>352</sup>

Once approved, the Environmental Commissioner, in consultation with the proponent, may set a number of conditions of approval<sup>353</sup> which may provide for the establishment of a management plan or specify certain tasks or obligations to be undertaken during the construction, operational and decommissioning phases of the development. The environmental agreement may also provide for certain penalties for non-compliance to the conditions of approval. Furthermore, a monitoring strategy and audit<sup>354</sup> procedure may be determined by mutual agreement in order for the proponent to make the necessary budgetary provisions in advance. The Board's decision, including the reasons for its decision, must be recorded.<sup>355</sup> The record of decision<sup>356</sup> should be made available by the Environmental Commissioner to interested parties, including the public, and should reflect the conditions of approval. Provision is made for an opportunity to appeal.<sup>357</sup> Once approved, the project may be implemented in accordance with the environmental agreement.<sup>358</sup>

The monitoring programme<sup>359</sup> should include the verification of impact prediction, the evaluation of mitigatory measures, adherence to approved plans, and general compliance with the environmental agreement. In terms of the developed audit procedure,<sup>360</sup> periodic

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<sup>351</sup> Stage 7: Review. See figure 3.

<sup>352</sup> EMA s 37(1).

<sup>353</sup> Stage 8: Conditions of Approval. See figure 3.

<sup>354</sup> 'Auditing' involves the "independent reassessment of the ... project [to the company's EMP and its Environmental agreement] after a given period of time." (EA Policy).

<sup>355</sup> EMA s 38(1).

<sup>356</sup> Stage 9: Record of Decision. See figure 3.

<sup>357</sup> Stage 10: Appeal. See figure 3.

<sup>358</sup> Stage 11: Implementation of proposal. See figure 3.

<sup>359</sup> Stage 12: Monitoring Programme. See figure 3.

<sup>360</sup> Stage 13: Audits. See figure 3.

assessment of the positive and negative impacts of proposals should be undertaken in order to provide feedback on the adequacy of planning during the proposed development,<sup>361</sup> the accuracy of investigations during the EA,<sup>362</sup> the prudence of the decisions taken when reviewed,<sup>363</sup> and the effectiveness of the conditions of approval and monitoring programme during implementation.<sup>364</sup> The responsibility for ensuring that appropriate monitoring<sup>365</sup> takes place lies with the Environmental Commissioner, while the proponent is responsible for the costs.

The EA procedure, as provided for in terms of the EA Policy, may accordingly be illustrated as follows:

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<sup>361</sup> Stage 3.

<sup>362</sup> Stage 5.

<sup>363</sup> Stage 7.

<sup>364</sup> Stage 11.

<sup>365</sup> Monitoring environmental aspects include the verification of impact predictions, the evaluation of mitigatory measures, adherence to approved EMPs, and general compliance with the environmental agreement (EA Policy).

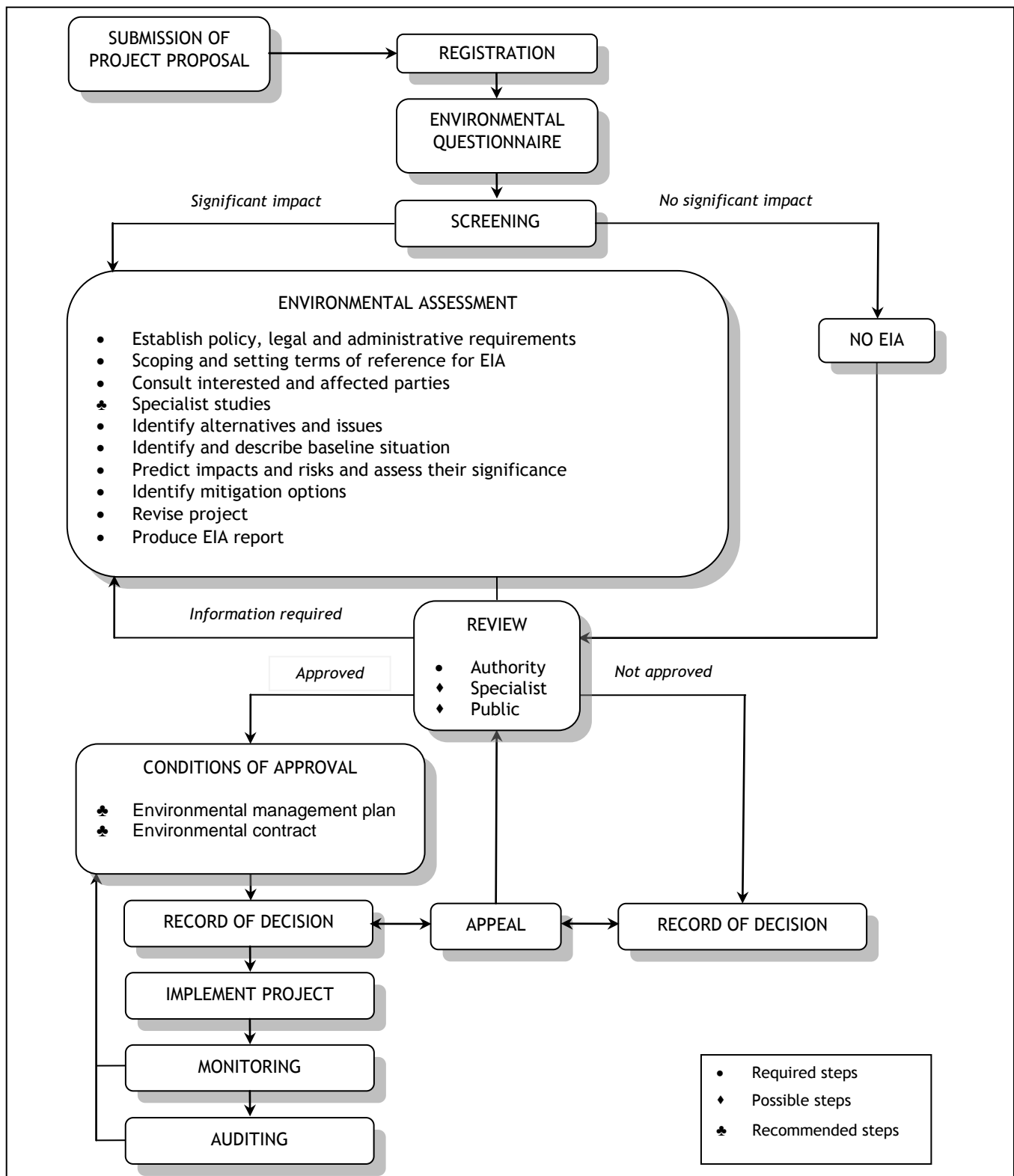


Figure 3: Environmental assessment procedure<sup>366</sup>

<sup>366</sup> Adapted from EA Policy Appendix A.

In terms of the Draft EA Regulations, the proponent is required to designate an environmental assessment practitioner (EAP) to manage the EA process.<sup>367</sup> The proponent is further required to provide the EAP with access to relevant information and to ensure that the EA procedures for the proposed activity are followed.<sup>368</sup>

The EAP must have knowledge of and comply with the provisions of the EMA, the EA Regulations and any relevant guidelines that may be published, and he/she must have knowledge of and experience in conducting EAs.<sup>369</sup> The EAP is required to perform his/her work objectively<sup>370</sup> and to disclose to the applicant and the competent authority all material information in the possession of the EAP, which information reasonably has or may have the potential of influencing any decision to be taken in respect of the application, or the objectivity of any report, plan or report to be prepared by the EAP in terms of the regulations.<sup>371</sup>

Before submitting the application to the competent authority, the EAP is required to give written notice of the proposed application to any organ of state with jurisdiction.<sup>372</sup> The EAP is also required to conduct a public participation process<sup>373</sup> and open and maintain a register of all I&APs in respect of the application.<sup>374</sup>

The public participation process is initiated by giving notice<sup>375</sup> to all I&APs.<sup>376</sup> The EAP is also required to ensure that information containing all relevant facts in respect of the application is

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<sup>367</sup> Draft EA Regulations reg 20(a).

<sup>368</sup> Draft EA Regulations reg 20(b) and (c).

<sup>369</sup> Draft EA Regulations reg 21(a) and (c).

<sup>370</sup> Draft EA Regulations reg 21(b).

<sup>371</sup> Draft EA Regulations reg 21(d)(i) and (ii).

<sup>372</sup> Draft EA Regulations reg 23(a).

<sup>373</sup> Draft EA Regulations reg 23(b). A 'public participation process' is defined as "a process in which potential interested and affected parties are given an opportunity to comment on, or raise issues relevant to, specific matter" (reg 1).

<sup>374</sup> Draft EA Regulations reg 23(b).

<sup>375</sup> Notice must be given to the owners and occupiers of the land adjacent to the site where the activity is or will be undertaken or to any alternative site; all owners and occupiers of the land within 100 metres of the boundary of the site; the local authority council and regional council in whose jurisdiction the site or alternative site is situated; and any organ of state having jurisdiction in respect of any of the activities (reg 38(2)(b)). Notice must be given by fixing a notice board at a place conspicuous to the public at the boundary or on the fence of the relevant site and any alternative site mentioned in the application (reg 38(2)(a)). The notice, notice board or advertisement must give the details of the application (reg 38(3)(a)). The regulations also contain various specifications regarding the contents of such notice, notice board or advertisement (see reg 38(3)(b)).

made available to potential I&APs and that participation by potential I&APs is facilitated in such a manner that all potential I&APs are provided with a reasonable opportunity to comment on the application.<sup>377</sup> Public participation may occur in the form of, for example, the submission of written comments by I&APs to the EAP and/or attending meetings with the applicant or the EAP.

The register of I&APs, which the EAP is required to open and maintain, must contain the names and addresses of all persons who, as a consequence of the public participation process, have submitted written comments or attended meetings with the applicant or the EAP; all persons who have requested the EAP in writing for their names to be placed on the register; and all organs of state which have jurisdiction in respect of the activity to which the application relates.<sup>378</sup> The applicant or EAP is required to give access to the register to any person who submits a written request for access to the register.<sup>379</sup>

Subsequently, the EAP is required to consider all objections and representations received from I&APs following the public participation process by assessing the potential impacts of the activity on the environment, whether and to what extent those impacts can be mitigated; and whether there are any significant issues and impacts that require further investigation.<sup>380</sup> The EAP must then prepare a scoping report<sup>381</sup> and give all I&APs an opportunity to comment on the scoping report.<sup>382</sup>

The scoping report must contain all the information necessary to enable the competent authority to consider the application and to reach a decision.<sup>383</sup> The Draft EA Regulations also contain various provisions regarding the content of such a scoping report.<sup>384</sup>

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<sup>376</sup> Draft EA Regulations reg 38(2). An 'interested and affected party', in relation to the assessment of the environmental impact of a listed activity includes any person, group of persons or organisation interested in or affected by an activity; and any organ of state that may have jurisdiction over any aspect of the activity (reg 1).

<sup>377</sup> Draft EA Regulations reg 38(6).

<sup>378</sup> Draft EA Regulations reg 39(1).

<sup>379</sup> Draft EA Regulations reg 39(1).

<sup>380</sup> Draft EA Regulations reg 23(d).

<sup>381</sup> Draft EA Regulations reg 23(e). 'Scoping report' is defined as a "document prepared by the proponent to present the case for the assessment of an activity as part of the initial assessment process" (reg 1).

<sup>382</sup> Draft EA Regulations reg 23(f).

<sup>383</sup> Draft EA Regulations reg 24(1).

After having complied with the relevant requirements pertaining to the submission of an EA, the EAP must apply for an environmental clearance certificate in the prescribed form<sup>385</sup> together with the relevant documents.<sup>386</sup>

If the Environmental Commissioner accepts a scoping report and advises the EAP to proceed with the tasks contemplated in the terms of reference,<sup>387</sup> the EAP must proceed with those tasks, including the public participation process for an EIA and prepare an EIA Report.<sup>388</sup> An EA Report must contain all information necessary for the Environmental Commissioner to consider the application and to reach a decision.<sup>389</sup> The Environmental Commissioner must

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<sup>384</sup> The scoping report must include the curriculum vitae of the EAP who prepared the report (reg 24(1)(a)); a description of the proposed activity (reg 24(1)(b)); a description of the property on which the activity will be undertaken and the location of the activity on the property (reg 24(1)(c)); a description of the environment that may be affected by the proposed activity and the manner in which the geographical, physical, biological, social, economic and cultural aspects of the environment may be affected by the proposed activity (reg 24(1)(d)); an identification of all legislation and guidelines that have been considered in the preparation of the scoping report (reg 24(1)(e)); details of the public participation process conducted, including the steps that were taken to notify potential I&APs of the proposed application (reg 24(1)(f)(i)), proof that notice boards, advertisements and notices notifying potential I&APs of the proposed application have been displayed, placed or given (reg 24(1)(f)(ii)), a list of all persons, organisations and organs of state that were registered as I&APs (reg 24(1)(f)(iii)), and a summary of the issues raised by I&APs, the date of receipt of and the response of the EAP to such issues (reg 24(1)(f)(iv)); a description of the need and desirability of the proposed activity and any identified alternatives to the proposed activity that are feasible and reasonable, including the advantages and disadvantages the proposed activity or alternatives will have on the environment and on the community that may be affected by the activity (reg 24(1)(g)); a description and assessment of the significance of any environmental impacts, including cumulative impacts, that may occur as a result of any construction, erection or decommissioning associated with the undertaking of the activity (reg 24(1)(h)); terms of reference for the detailed EIA (reg 24(1)(i)); a draft rehabilitation and closure plan (reg 24(1)(j)); and any specific information required in terms of the EMA, the EA Regulations and any relevant guidelines (reg 24(1)(k)).

<sup>385</sup> Draft EA Regulations reg 27(1)(a).

<sup>386</sup> Draft EA Regulations reg 27(1)(b). The prescribed form must be accompanied by the scoping report; copies of any representations, objections and comments received in connection with the application or scoping report; copies of minutes of any meeting held by the EAP with I&APs and other role-players which record the views of the participants; any responses by the EAP to such representations, objections, comments and views; and the application fee, of any (regs 27(1)(b)(i)-(vi)).

<sup>387</sup> The terms of reference must set out the approach the proponent intends to follow when undertaking the EA. The regulations similarly contain provisions regarding the content of the terms of reference. The terms of reference must include a description of all tasks to be undertaken as part of the assessment process, including any specialist to be included if needed (reg 25(a)); an identification of the stages at which the Environmental Commissioner is to be consulted (reg 25(b)); a description of the proposed method of assessing the environmental issues and alternatives, including the no-go option (reg 25(c)); and the nature and extent of the public participation processes to be conducted during the EIA process (reg 25(d)).

<sup>388</sup> Draft EA Regulations reg 31(1).

<sup>389</sup> Draft EA Regulations reg 31(2). The EA Report must include the following information: details of the public participation process conducted, including the steps taken to notify potential I&APs of the proposed application (reg 31(2)(d)(i)), and copies of any representations, objections and comments received from registered I&APs (reg 31(2)(d)(iv)); an indication of the methodology used in determining the significance of

either, in writing, grant the application and issue an environmental clearance certificate or refuse the application and provide reasons for the refusal.<sup>390</sup>

The proponent is further required to compile and submit for approval a rehabilitation and closure plan. The closure plan must contain information on any proposed, management mitigation, protection or remedial measures that will be undertaken to address the environmental impacts that have been identified, including environmental impacts or objectives of the rehabilitation of the environment; and closure, if applicable.<sup>391</sup> The rehabilitation and closure plan must contain details of the person who prepared the plan and his/her expertise;<sup>392</sup> a detailed description of the aspects of the activity covered by the plan;<sup>393</sup> as well as information identifying the persons who will be responsible for the implementation of the measures of the plan.<sup>394</sup> The rehabilitation and closure plan must also describe the manner in which the proponent intends to modify, remedy, control or stop any action, activity or process which causes pollution or environmental degradation; as well as the manner in which it intends to remedy the cause of pollution or degradation and the migration of pollutants.<sup>395</sup> The plan must further contain detailed information regarding the mechanisms proposed for monitoring compliance and reporting thereon;<sup>396</sup> as well as measures to rehabilitate the affected

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potential environmental impacts (reg 31(2)(f)); a description and comparative assessment of all alternatives identified during the EIA process (reg 31(2)(g)); a description of all environmental issues identified during the EIA process, an assessment of the significance of each issue and an indication of the extent to which the issue could be addressed by the adoption of mitigation measures (reg 31(2)(h)); an assessment of each identified potentially significant impact, including cumulative impacts, the nature of the impact, the extent and duration of the impact, the probability of the impact occurring, the degree to which the impact can be reversed, the degree to which the impact may cause irreplaceable loss of resources; and the degree to which the impact can be mitigated (reg 31(2)(i)); a description of any assumptions, uncertainties and gaps in knowledge (reg 31(2)(j)); an opinion as to whether the activity should or should not be authorised, and if the opinion is that it should be authorised, any conditions that should be made in respect of that authorisation (reg 31(2)(k)); an environmental impacts statement which contains a summary of the key findings of the EIA; and a comparative assessment of the positive and negative implications of the proposed activity and identified alternatives (reg 31(2)(l)); financial assurance, if required (reg 31(2)(m)) (this provision is subject to a proposed amendment to the EMA); and any specific information that may be required in terms of the EMA (reg 31(2)(n)). The remainder of the requirements (regs 31(2)(a), (b), (c), (d)(ii), (d)(iii) and (e)) are similar to those of a scoping report.

<sup>390</sup> Draft EA Regulations reg 33(a) and (b).

<sup>391</sup> Draft EA Regulations reg 26(1)(a).

<sup>392</sup> Draft EA Regulations reg 26(1)(b).

<sup>393</sup> Draft EA Regulations reg 26(1)(c).

<sup>394</sup> Draft EA Regulations reg 26(1)(d).

<sup>395</sup> Draft EA Regulations reg 26(1)(g).

<sup>396</sup> Draft EA Regulations reg 26(1)(e).



environment to its natural or predetermined state or to a land use which conforms to the generally accepted principle of sustainable development.<sup>397</sup>

In order to carry on mining operations, a person must apply<sup>398</sup> for a mining licence,<sup>399</sup> the contents of which must, apart from the environmental considerations when applying for a prospecting licence mentioned above, also contain particulars of the manner in which the applicant intends to prevent pollution, deal with any waste,<sup>400</sup> safeguard the mineral resources, reclaim and rehabilitate land disturbed by the prospecting and mining operations and to minimise the effect of such operations on adjoining land.<sup>401</sup> The Mining Commissioner may inspect and investigate a company's premises in order to monitor compliance of such mining operations.<sup>402</sup> When a mining licence is issued to the holder of an EPL in respect of the relevant area of land, such EPL ceases to have effect.<sup>403</sup> A mining licence is valid for a period of twenty-five years,<sup>404</sup> subject to renewal<sup>405</sup> for a period not exceeding fifteen years at a time.<sup>406</sup>

In the event that the proposed reconnaissance, prospecting or mining operations occur within or in relation to a protected place or a protected object, the *National Heritage Act*<sup>407</sup> (NHA)

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<sup>397</sup> Draft EA Regulations reg 26(1)(f).

<sup>398</sup> Mining Act s 90.

<sup>399</sup> Mining Act s 91.

<sup>400</sup> Namibia's environmental law and policy framework contains various definitions for 'waste'. For instance, the Mining Act defines 'waste' as "any rock waste, tailings, slimes or other residue derived from any prospecting operations, mining operations or processing of any mineral or group of minerals" (Mining Act s 1). This definition is disappointingly narrow in scope and leaves ample opportunity for mining companies to make use of the potential gaps created and/or left by the definition, thereby dodging their responsibility towards environmental protection. Neither the Water Act nor the EMA defines 'waste' while, according to the WRMA 'waste' includes "any substance or material that is suspended, dissolved or transported in water, including sediment" (WRMA s 1). Unfortunately this definition does not provide much direction or guidance with regards to a comprehensive definition for waste either. The AERPA simply defines 'waste' as "material for which no further use is foreseen" (AERPA s 1). These variations in legal definitions may create legal uncertainty as an opportunity exists for uranium mining companies and other developers to seek out legal gaps and escape accountability.

<sup>401</sup> Mining Act s 91(f).

<sup>402</sup> Mining Act s 5(1).

<sup>403</sup> Mining Act s 95(1)(b).

<sup>404</sup> Mining Act s 94(1)(a).

<sup>405</sup> Mining Act s 96.

<sup>406</sup> Mining Act s 94(1)(b).

<sup>407</sup> *National Heritage Act* 27 of 2004. The Act aims to provide for the protection and conservation of places and objects of heritage significance.

requires such a person to apply<sup>408</sup> to the National Heritage Council<sup>409</sup> (NHC) for a permit to carry out works or activities in relation to such a protected place or object. The permit may contain conditions of approval which may include the carrying out of protective works; or require the works or activities to be carried out under the supervision of a person with appropriate professional qualifications or experience.<sup>410</sup>

Anyone who intends to undertake certain works and activities within a conservation area must notify<sup>411</sup> the NHC which, with the consent of the MET, must inform such a person whether it requires an environmental impact assessment (EIA) to be conducted.<sup>412</sup> The EIA should determine the existence of heritage resources in the vicinity of the relevant area where work is to be carried out; the impact of the proposed work on those resources; and the extent to which the proposed area and height of the proposed development may be obtrusive in relation to the area and height of any protected place in the vicinity.<sup>413</sup> The NHC may also require meeting with the person proposing to undertake the work for the purpose of discussing the subsequent report as well as ways to minimise any adverse effect of the work on heritage resources as may be indicated in the report.<sup>414</sup>

The mine plans,<sup>415</sup> which are required to be kept and maintained by the mine manager, may also include environmental considerations such as sensitive areas, or designate certain areas as conservation areas with relevant measures applicable thereto. With regard to facility design, the Mine Safety Regulations merely require the mine manager to ensure that machinery used in connection with the working of a mine is of "good design",<sup>416</sup> and that any electrical apparatus used in connection with the working of the mine is of a "suitable design".<sup>417</sup> However, no requirements or guidelines exist to enable (uranium) mining companies to

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<sup>408</sup> NHA s 48(1).

<sup>409</sup> NHA ss 3- 15.

<sup>410</sup> NHA s 52(2).

<sup>411</sup> NHA s 54(6).

<sup>412</sup> NHA s 54(7). The contents of such an EIA tends to lean towards that of a heritage impact assessment (HIA). Although not crucial, this difference may cause confusion and, eventually, affect the efficiency of the overall environmental protection effort.

<sup>413</sup> NHA s 54(7).

<sup>414</sup> NHA s 54(9).

<sup>415</sup> Mine Safety Regulations reg 23.

<sup>416</sup> Mine Safety Regulations reg 169.

<sup>417</sup> Mine Safety Regulations reg 176.

determine the meaning and extent of 'good' and 'suitable' design. The mere mentioning thereof in the Mine Safety Regulations is insufficient and inadequate for purposes of environmental governance and does not assist in facilitating environmental protection.

#### *4.1.2 Preliminary observations*

The environmental regulatory regime contains various provisions relating to and in support of environmental governance. During the planning and design phase of a uranium mine, the environmental law regime provides for various planning tools,<sup>418</sup> as well as command and control instruments<sup>419</sup> and, to a lesser extent, for civil<sup>420</sup> and agreement-based<sup>421</sup> instruments. However, the environmental law regime does not provide for norms and standards<sup>422</sup> or market-based<sup>423</sup> tools and, furthermore, does not make adequate provision for civil,<sup>424</sup> agreement<sup>425</sup> or relationship-based<sup>426</sup> instruments during this initial phase of developing a uranium mine.

Ideally, once the various impact assessments, which serve as baseline studies that include the reviews of the site-specific characteristics with regard to various environmental and related aspects, have been conducted and results assessed, and it has been decided to proceed with developing a uranium mine facility, it is proposed that various other planning tools<sup>427</sup> be used throughout the initial phase in order to identify environmental impacts,<sup>428</sup> aspects<sup>429</sup> and risks,<sup>430</sup> to develop structures and procedures for a cross-sectoral approach to address sustainability issues, and to develop management plans. During this stage a uranium mining company should also engage in extensive stakeholder consultation and participation for a harmonised joint regulatory approach while conducting, applying for and conforming to the

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<sup>418</sup> See 4.5.1.

<sup>419</sup> See 4.5.7.

<sup>420</sup> See 4.5.9.

<sup>421</sup> See 4.5.10.

<sup>422</sup> See 4.5.2.

<sup>423</sup> See 4.5.8.

<sup>424</sup> See 4.5.9.

<sup>425</sup> See 4.5.10.

<sup>426</sup> See 4.5.11.

<sup>427</sup> See 4.5.1.

<sup>428</sup> See 2.2 and 4.

<sup>429</sup> See 2.2

<sup>430</sup> See 2.2.

various assessments, licensing and compliance programmes in order to propose measures that mitigate effects on the environment and the health and safety of persons that may result from the construction, operation and decommissioning of the facility. Furthermore, the environmental law and policy regime does not provide for nor requires design specifications pertaining to sustainable development and green engineering<sup>431</sup> which, if required and applied, may promote environmental protection and enhance environmental governance.

The study now proceeds to analyse Namibia's regulatory provisions as relevant during the construction phase in order to, ultimately, identify the strengths and weaknesses of the country's legislative framework that regulates environmental impacts of uranium mines.

## **4.2 Phase II: Construction**

As mentioned,<sup>432</sup> the construction phase of a uranium mine facility poses significant environmental impacts. Hence it is important that Namibia's environmental law and policy regime should sufficiently provide for and regulate uranium mining companies' activities during this second phase of the PLC in order to prohibit and negate such impacts, thereby enhancing the country's environmental protection effort.

### *4.2.1 Environmental regulatory provisions in relation to the construction phase*

The Mining Act allows for the Minister of Mines and Energy to, with due regard to good reconnaissance practices, good prospecting practices and/or good mining practices, give directions to the holder of a mineral licence in relation to the construction of any accessory works; protection of the environment; and the conservation of natural resources and the prevention of waste of such resources.<sup>433</sup> Unfortunately the Act does not oblige the giving of such directions by the Minister to (uranium) mining companies.

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<sup>431</sup> Green engineering focuses on how to achieve sustainability through science and technology (Anastas and Zimmerman 2003 *Environmental Science and Technology* 95). See also Anastas and Zimmerman 2003 *Environmental Science and Technology* 94-101; McDonough *et al* 2003 *Environmental Science and Technology* 434-441 and Coulter, Bras and Foley "A Lexicon of Green Engineering Terms" 1-8.

<sup>432</sup> See 2.1.

<sup>433</sup> Mining Act s 57(1)(a)-(c).

The Mine Safety Regulations require of companies, before constructing reservoirs, dams or other structures to withstand pressure of water or other liquid matter, or to control an inrush of water, to notify the chief inspector of such commencement. The chief inspector may require such modifications or alterations, which may include modifications and alterations based on or influenced by environmental considerations, to be made in the design of a reservoir, dam or structure as he/she may specify.<sup>434</sup> The Regulations also require the mine manager to ensure that machinery and any electrical apparatus used in connection with the working of a mine is of sound construction, suitable material, adequate strength, and free from defects.<sup>435</sup> Before any mine discards or any mine refuse is discarded at any proposed site, the mine manager is required to ensure that such site is suitable and safe in all respects.<sup>436</sup> In order to comply with this requirement, the mine manager must ensure that sufficient consideration is given to safety and suitability requirements, which may include environmental requirements, thereby enhancing environmental protection.

The APPO prohibits installing or causing or permitting to be installed on any premises any fuel burning appliance,<sup>437</sup> unless such appliance is as far as is reasonably practicable, capable of operating continuously without emitting dark smoke or smoke of a colour darker than may be prescribed.<sup>438</sup> The Ordinance further prohibits the installing or causing or permitting to be installed on any premises any fuel burning appliance designed to burn pulverised solid fuel, or to burn solid fuel in any form at a rate of 100 kilograms or more per hour, or to subject the solid fuel to any process involving the application of heat, unless such appliance is provided with effective appliances for arresting grit and dust to the satisfaction of the relevant authority.<sup>439</sup>

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<sup>434</sup> Mine Safety Regulations reg 59.

<sup>435</sup> Mine Safety Regulations regs 169(1)(a) and 176(a).

<sup>436</sup> Mine Safety Regulations reg 62.

<sup>437</sup> APPO s 11(4)(a) defines 'appliance' as "any one stoker or any one burner on which there may be more than one stoker, but does not include a single chimney through which the products of several burners or furnaces may be discharged". 'Stoker' is defined as "any mechanism or other means intended for feeding fuel into any place for the purpose of burning it in such place" (APPO s 11(4)(b)) and 'burner' is defined as "any furnace, combustion chamber, grate or other place into which fuel is fed by one or more stokers or manually for the purpose of burning such fuel in such furnace, combustion chamber, grate or other place" (APPO s 11(4)(c)).

<sup>438</sup> APPO s 11(1)(a).

<sup>439</sup> APPO s 11(1)(b).

In terms of the *Soil Conservation Act*<sup>440</sup> (Soil Conservation Act) the owner of the land (the mining company) may be directed<sup>441</sup> by the Minister of Agriculture to construct soil conservation works for the purpose of preventing soil erosion or drift-sand, or stabilising land subject thereto; protecting, conserving or improving the vegetation and the surface of the soil; protecting, conserving or stabilising any natural water resource; or preventing the silting up of dams and the pollution of water by silt.<sup>442</sup>

#### 4.2.2 Preliminary observations

While constructing a uranium mine facility, no environmental governance tools are provided for. Different acts merely contain certain provisions either requiring or prohibiting certain forms of behaviour that find application during the construction phase. Namibia's environmental regime does not require nor provide for construction specifications that enhance or contribute to environmental protection as is evident from the country's lack of legislative and other measures providing for norms and standards,<sup>443</sup> market-based tools<sup>444</sup> and relationship-based tools,<sup>445</sup> which measures, if formally incorporated into and provided for in the country's environmental governance regime, may contribute to environmental protection. The current environmental regulatory regime does not facilitate the infiltration of specifications pertaining to planning and designing a uranium mine facility, as established in the initial phase of the development, to the construction phase. *Idealiter*, the regulatory regime should contain concise provisions with regard to constructing mines and accessory works in such a manner and style as to enhance environmental protection during the construction phase of uranium mine facilities.

Furthermore, the existing environmental governance regime does not require the adoption of international norms and standards pertaining to the construction of (uranium) mines, nor does

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<sup>440</sup> *Soil Conservation Act* 76 of 1969. See also Ruppel in Ruppel and Ruppel-Schlichting (eds) *Environmental Law and Policy in Namibia* 90-91.

<sup>441</sup> *Soil Conservation Act* s 4(1).

<sup>442</sup> *Soil Conservation Act* s 1.

<sup>443</sup> See 4.5.2.

<sup>444</sup> See 4.5.8.

<sup>445</sup> See 4.5.11.

it require the implementation of green engineering.<sup>446</sup> It is also important to note that more often than not, it may be independent contractors<sup>447</sup> hired by the relevant uranium mining companies who are primarily responsible for the construction of certain infrastructure; therefore, it is these independent contractors who are also primarily responsible for environmental degradation during the construction phase. However, these independent contractors are not responsible for obtaining the required licences, permits, authorisations and the like (as this is the responsibility of the relevant mining company); hence it may be vital for environmental protection efforts that a measure of accountability be bestowed upon such independent contractors by, for instance, requiring mining companies to enter into contractual agreements, requiring such contractors to give effect to environmental considerations as provided for in such agreement.

The study now proceeds to analyse the regulatory provisions of Namibia's environmental protection effort as directed at the operational phase of uranium mining.

### ***4.3 Phase III: Operational***

The most significant environmental impacts occur during the operational phase of a uranium mine and; therefore it is vital that Namibia's environmental law and policy regime sufficiently and effectively regulate environmental impacts and provide for environmental protection during this phase of the PLC.

#### ***4.3.1 Environmental regulatory provisions in relation to the operational phase***

During the operational phase, the elements of EMPs, as per the outcome of EAs, must be implemented.<sup>448</sup> The day-to-day running of the mines' operations and functions must be

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<sup>446</sup> See 4.1.2.

<sup>447</sup> Independent contractors are hired by uranium mining companies and are responsible for the physical construction of infrastructure and features inherent to a mine facility including, for example, the construction of roads and railways, blasting and excavating.

<sup>448</sup> The naming of the various documents poses reason for confusion as s 23 of the EMA state that the objects of EMPs are aimed at organs of state. In this particular context, however, the EMP may be understood as performing similar functions as an environmental management system (EMS), but, nevertheless, will still be called an EMP as per the Namibian regulatory framework.

exercised in accordance with the provisions of the EMP and the environmental agreement,<sup>449</sup> the evaluation of which is determined in accordance with the monitoring programme and audit proposal<sup>450</sup> and, in the event of substantial deviation, such deviation must be reported<sup>451</sup> to management and authorities, if required by legislation, and duly acted upon.

The holder of a mining licence is required to *inter alia* carry on operations in accordance with good mining practices; take all reasonable steps necessary to secure, in accordance with any applicable law, the safety, welfare and health of persons employed in the area and to prevent or minimise any pollution of the environment; maintain in good condition and repair all accessory works; and take reasonable steps to warn persons who may from time to time be in the vicinity of any accessory works of the possible hazards resulting from same.<sup>452</sup> If the holder of the mining licence contravenes or fails to comply with the general terms and conditions of the mining licence, the holder is guilty of an offence and, on conviction, liable to a fine not exceeding N\$8 000.00, or imprisonment for a period not exceeding twelve months, or both.<sup>453</sup> If the holder fails to take such steps to the satisfaction of the Mining Commissioner, he/she may cause such steps to be taken and recover the costs incurred from the licence holder.<sup>454</sup> The Minister of Mines and Energy may also give directions to holders of mineral licences, with due regard to good mining practices, in relation to environmental protection and the conservation of natural resources, including mineral resources and the prevention of the waste of such resources; and the maintenance, operation or use of accessory works.<sup>455</sup>

The mine manager must ensure that the machinery and any electrical apparatus used in connection with the working of the mine is properly maintained and operated in a safe manner.<sup>456</sup> The mining company also remains subject to its duty of care.<sup>457</sup>

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<sup>449</sup> EA Policy.

<sup>450</sup> See 4.1.

<sup>451</sup> EA Policy.

<sup>452</sup> Mining Act s 41(1).

<sup>453</sup> Mining Act s 41(2)(b).

<sup>454</sup> Mining Act s 41(2)(c).

<sup>455</sup> Mining Act s 57(1)(b)-(d).

<sup>456</sup> Mine Safety Regulations regs 169(1) and 176(a).

<sup>457</sup> Mining Act s 130. See 3.1.



In terms of the Water Act, uranium mining companies are allowed to remove any subterranean water from the mining area whereof the removal is necessary for the efficient carrying on of such mining operations or the safety of persons employed therein.<sup>458</sup> The Act further allows uranium mining companies, unless the Minister of Water Affairs directs otherwise, to use such water in such mining operations or for domestic purposes connected therewith and may, under permit, use such water for other purposes or sell, give, exchange or otherwise dispose of such water.<sup>459</sup> A mining company that does not use, sell, give or exchange any such water is required to dispose thereof as the Minister may direct.<sup>460</sup> The Act further allows for the Minister to, on application of the uranium mining company, issue a permit entitling such company to sell, give, exchange or otherwise dispose of subterranean water removed from the mine.<sup>461</sup>

In terms of the WRMA, water use and abstraction and the proper discharge or disposal of any return flow or effluent must occur in accordance with the conditions of the company's licence to use and abstract water, the implementation elements as contained in the water management plan<sup>462</sup> and the effluent discharge management plan.<sup>463</sup> The mining company must use water in accordance with efficient water management practices.<sup>464</sup> Groundwater is not allowed to run to waste from any borehole, except for the purpose of testing the extent or quality of the supply or in connection with the cleaning, sterilising, examining or repairing of the borehole, or if such water interferes with the execution of underground mining operations and no other method of disposal is reasonably practicable.<sup>465</sup> The mine manager must ensure that, where necessary, any storm water drain and embankment are established and maintained in good order on surface for the protection from flooding of mine workings,<sup>466</sup> thereby enhancing environmental protection and preventing pollution. In the event of an abnormal seepage of water, the mine manager must cause the mine operations to be stopped immediately.<sup>467</sup>

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<sup>458</sup> Water Act s 30(4)(a).

<sup>459</sup> Water Act s 30(4)(a).

<sup>460</sup> Water Act s 30(4)(b).

<sup>461</sup> Water Act s 30(5).

<sup>462</sup> WRMA s 37.

<sup>463</sup> WRMA s 63.

<sup>464</sup> WRMA s 76. See 3.5.

<sup>465</sup> WRMA s 50.

<sup>466</sup> Mine Safety Regulations reg 56(a).

<sup>467</sup> Mine Safety Regulations reg 58(1).

If the company is in control of a dam with a safety risk it must be registered<sup>468</sup> with the MWA. Furthermore, the company must provide the Minister with such information as required and give access to the dam to any person authorised by the Minister to inspect the dam.<sup>469</sup> The Minister may, by written notice to the company, direct it to submit a report by a professional engineer<sup>470</sup> regarding the safety of the dam, or undertake specific repairs or alterations necessary to protect the public, the resource quality and property from any risk of structural failure.<sup>471</sup>

The Minister must undertake periodic reviews in order to determine compliance with the efficient water management practices<sup>472</sup> and, if a water user fails to comply therewith, it is issued with a notice of non-compliance, requesting the user to take corrective measures within a certain period.<sup>473</sup> If the company fails to comply with such notice, the Minister may cancel or suspend the company's licence or impose monitoring or other measures.<sup>474</sup>

The holder of the registration certificate in terms of APPO must ensure that all necessary measures are taken to prevent the escape into the atmosphere of noxious or offensive gases.<sup>475</sup> All mine plants and apparatus used for the purpose of carrying out the scheduled processes in question and all appliances used to prevent or reduce to a minimum the escape into the atmosphere of noxious or offensive gases, must at all times be properly maintained and operated.<sup>476</sup>

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<sup>468</sup> WRMA s 81(2).

<sup>469</sup> WRMA s 79(1).

<sup>470</sup> A professional engineer carrying out a task on a dam must ensure that the task is carried out in accordance with acceptable dam engineering practices; keep the prescribed records and compile the prescribed reports; and, where the task includes constructing, altering or repairing a dam, issue a completion certificate to the company to the effect that the task on the dam was carried out in accordance with the applicable design, drawings and specifications (WRMA s 80(2)). When performing a dam safety evaluation, a professional engineer must inspect whether the safety norms pertaining to the design, construction, monitoring, operation, performance and maintenance of the dam safety are acceptable dam safety engineering practices and, accordingly, compile a report and submit it to the company (WRMA s 80(3)). When carrying out his/her duty as a professional engineer, he/she has a duty of care towards the state and the general public (WRMA s 80(1)).

<sup>471</sup> WRMA s 79(3).

<sup>472</sup> WRMA s 76(1). See 3.5.

<sup>473</sup> WRMA s 76(2).

<sup>474</sup> WRMA s 76(3).

<sup>475</sup> APPO s 8(1).

<sup>476</sup> APPO s 8(1).

The mine manager must also prevent air pollution by ensuring that no dust, fumes or smoke from any dust or fume extraction system or from any other operation at the mine is discharged into the atmosphere unless adequate provision is made to ensure that the discharge is harmless to the peoples' health.<sup>477</sup> The mine manager must monitor and record the quality of air circulating in any ventilating district, the environmental conditions and the amount of respirable dust in the air,<sup>478</sup> and maintain a ventilation plan accordingly, indicating the direction and distribution of the air currents, every location where air measurements is taken, and every devise for the regulation and distribution of air.<sup>479</sup> The mine manager must formulate a scheme for the control of airborne dust at the mine and in its vicinity<sup>480</sup> and make suitable arrangements to control airborne dust at all workplaces, loading and dumping points, transfer points, crushing stations and haulage roadways.<sup>481</sup>

The APPO further requires a uranium mining company who carries out any industrial process, the operation of which causes or is liable to cause a nuisance to persons residing or present in the vicinity on account of dust originating from such process becoming dispersed in the atmosphere,<sup>482</sup> or has deposited or caused or permitted to be deposited on any land a quantity of matter which exceeds, or two or more quantities of matter which exceed twenty thousand cubic metres in volume and which causes or is liable to cause a nuisance to persons residing or present in the vicinity of such land on account of dust originating from such matter becoming dispersed in the atmosphere<sup>483</sup> to take the required steps or, where no steps have been prescribed, adopt the best practicable means<sup>484</sup> for preventing such dust from becoming dispersed or causing such nuisance.

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<sup>477</sup> Mine Safety Regulations reg 76.

<sup>478</sup> Mine Safety Regulations reg 80.

<sup>479</sup> Mine Safety Regulations reg 81.

<sup>480</sup> Mine Safety Regulations reg 78.

<sup>481</sup> Mine Safety Regulations reg 79.

<sup>482</sup> APPO s 24(1)(a).

<sup>483</sup> APPO s 24(1)(b).

<sup>484</sup> APPO s 1 defines 'best practicable means', when used in relation to the prevention of the escape of noxious or offensive gases or the dispersal or suspension of dust in the atmosphere or the emission of fumes by vehicles as "... includ[ing] the provision and maintenance of the necessary appliances to that end, the effective care and operation of such appliances, and the adoption of any other methods which, having regard to local conditions and circumstances, the prevailing extent of technical knowledge and the cost likely to be involved, may be reasonably practicable and necessary for the protection of any section of the public against the emission of noxious or offensive gases, dust or any such fumes".

Fires also pose significant environmental damage and, in this regard, a mine manager must plan, work and equip the mine so as to minimise the risk of fire,<sup>485</sup> take the necessary precautions<sup>486</sup> against fire, prepare a fire-fighting plan<sup>487</sup> and establish an effective organisation to conduct fire-fighting work.<sup>488</sup>

The AERPA requires of a licence holder to register every radiation source, every facility used in respect of such source and the location where such source is used and stored.<sup>489</sup> Before approving an application for registration, the DG must conduct a pre-registration safety assessment of the design facilities and the equipment as well as the related operating procedures in order to ascertain compliance of the facility design and installations or practice with prescribed requirements.<sup>490</sup> A licence or a registration remains in force for the period as prescribed for a particular class of licence or registration<sup>491</sup> and is subject to renewal.<sup>492</sup> A licence holder is responsible for the safety and security of radiation sources and nuclear materials<sup>493</sup> and, accordingly, the company must *inter alia* operate in accordance with the provisions of the AERPA and the conditions of the licence; prepare radiation safety rules for the use handling, storage, transportation or disposal of radiation sources or nuclear materials; and keep records and compile reports relating to radiation protection or radiation safety standards.<sup>494</sup>

Every licence holder must appoint a person, who is technically competent in radiation protection matters, as a radiation safety officer. A radiation safety officer must *inter alia* advise the licence holder in relation to all matters pertaining to the protection of workers and the public from radiation exposure and the safety of radiation sources and the environment; advise the licence holder regarding the application of the AERPA and the radiation safety rules; and advise and consult with the DG regarding the implementation of radiation protection measures

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<sup>485</sup> Mine Safety Regulations reg 208.

<sup>486</sup> Mine Safety Regulations reg 209.

<sup>487</sup> Mine Safety Regulations reg 214.

<sup>488</sup> Mine Safety Regulations reg 208.

<sup>489</sup> AERPA s 18.

<sup>490</sup> AERPA s 19(2).

<sup>491</sup> AERPA s 19(1).

<sup>492</sup> AERPA s 25(2).

<sup>493</sup> AERPA s 29(1).

<sup>494</sup> AERPA s 29(2).

at his/her workplace.<sup>495</sup> A licence holder must further, as soon as possible but in any event within a reasonable time, notify the DG of any accident which has occurred in any undertaking operated by the company.<sup>496</sup> The transportation of radiation sources or nuclear material must occur in accordance with the authorisation as issued by the DG in relation to any safety measures to be taken, the route along which and the container in which the source or material must be transported.<sup>497</sup>

Members of the COM are required to prevent accidents by drafting and adhering to an environmental risk management programme that includes an environmental response programme.<sup>498</sup> Members are further required to continuously monitor the environmental impact of all their operations.<sup>499</sup> Namibia's environmental regulatory framework contains a number of provisions aimed at checking and reporting on environmental compliance. In terms of the EMA, environmental officers may enter into and inspect<sup>500</sup> companies' premises in order to conduct inspections for monitoring compliance<sup>501</sup> with environmental agreements or EMPs. The Mining Commissioner may, in terms of the Mining Act, inspect and investigate companies' premises in order to monitor compliance of its mining operations,<sup>502</sup> which may include environmental obligations.

The holder of a mineral licence may only abandon the reconnaissance area, prospecting area, retention area and/or mining area after notifying the Mining Commissioner, in writing,<sup>503</sup> of such intention, whereupon the Mining Commissioner shall take all such steps as may be necessary to remedy, to the reasonable satisfaction of the Minister, any damage caused by any prospecting and mining operation carried out by such holder to the surface of, the environment on and the land in the area in question.<sup>504</sup> If a uranium mining company contravenes or fails to comply with these provisions, it shall be guilty of an offence and on

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<sup>495</sup> AERPA s 30(4).

<sup>496</sup> AERPA s 32(1).

<sup>497</sup> AERPA s 17(4).

<sup>498</sup> COM Constitution s 4.19 and Code of Conduct and Ethics s 8.2.7.

<sup>499</sup> COM Code of Conduct and Ethics s 7.1.

<sup>500</sup> EMA s 19.

<sup>501</sup> EMA s 17(1)(i).

<sup>502</sup> Mining Act s 5(1).

<sup>503</sup> Mining Act s 54(1).

<sup>504</sup> Mining Act s 54(2)(b).

conviction be liable to a fine not exceeding N\$8 000.00, or imprisonment for a period not exceeding twelve months, or both.<sup>505</sup>

Proper water management, in accordance with the water management plans, requires monitoring, analysis and reporting by the company as licensee on every water use dependent on the licence and specifying the aspects of water use monitored and the devices used for such monitoring.<sup>506</sup> The MWA or an authorised person may enter any such premises for the purpose of, *inter alia*, inspecting waterworks, water resource or the use of water, or taking samples or making tests in order to determine whether water is being wasted, misused or polluted; whether the terms and conditions of any licence or permit are complied with; or whether an offence under the Act has been committed.<sup>507</sup>

The mine manager is, during the main working shift in any underground workings, required to cause measurements to be made of the quantity of air circulating the ventilating district, the environmental conditions and the amount of respirable dust at fixed places; and to keep record of such measurements taken and the samples analysed.<sup>508</sup>

If the mining land or any part thereof is a protected place of heritage significance or is situated within a protected place of heritage significance, the area must be managed in accordance with the implementation elements of a site management plan,<sup>509</sup> taking into consideration the best cultural, environmental, ecological, scientific and educational principles that can reasonably be applied.<sup>510</sup> In terms of the NHA, heritage inspectors<sup>511</sup> may enter any land or premises for the purpose of inspecting a heritage resource<sup>512</sup> or work being done under permit or consent<sup>513</sup> in relation to or in the vicinity of a heritage resource.

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<sup>505</sup> Mining Act s 54(4).

<sup>506</sup> WRMA s 37(c)(ii).

<sup>507</sup> WRMA s 124(1).

<sup>508</sup> Mine Safety Regulations reg 80.

<sup>509</sup> See 3.

<sup>510</sup> NHA s 58(1).

<sup>511</sup> NHA s 60.

<sup>512</sup> NHA s 60(6).

<sup>513</sup> NHA s 60(7).

Nevertheless, in the event that a uranium mining company does not carry out its environmental obligations, it may be held liable thereto in terms of the provisions as contained in the environmental agreement entered into in terms of the Mine Safety Regulations.<sup>514</sup> In the event of such non-compliance, the Namibian Government reserves the right to demand, at any time, financial or other guarantees to restore the environment or mitigate environmental damage which has occurred or may occur as a result of the company's activities; as well as to undertake such mitigatory or restorative measures and to recover the costs thereof from the uranium mining company; and to claim compensation for environmental damage which may have been brought about by the company's activities.<sup>515</sup>

#### *4.3.2 Preliminary observations*

During the operational phase of a uranium mine, the country's environmental governance regime provides for doing tools,<sup>516</sup> command and control tools<sup>517</sup> and agreement-based tools.<sup>518</sup> Furthermore, provision is made to a limited albeit insufficient extent for checking,<sup>519</sup> reporting<sup>520</sup> and acting<sup>521</sup> tools, as well as market,<sup>522</sup> civil<sup>523</sup> and relationship-based<sup>524</sup> tools. No provision is made for norms and standards.<sup>525</sup>

*Idealiter*, environmental audits should be conducted and environmental awareness and training be endorsed before and after commissioning the plant and, subsequently, uranium mining companies should adopt, implement and use managing, checking, reporting and communication tools<sup>526</sup> in order to manage environmental impacts and aspects of uranium

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<sup>514</sup> Mine Safety Regulations, Environmental agreement clause 2.4.

<sup>515</sup> Mine Safety Regulations, Environmental agreement clause 2.4.

<sup>516</sup> See 4.5.3.

<sup>517</sup> See 4.5.7.

<sup>518</sup> See 4.5.10.

<sup>519</sup> See 4.5.4.

<sup>520</sup> See 4.5.5.

<sup>521</sup> See 4.5.6.

<sup>522</sup> See 4.5.8.

<sup>523</sup> See 4.5.9.

<sup>524</sup> See 4.5.11.

<sup>525</sup> See 4.5.2.

<sup>526</sup> See 2.4.

mines.<sup>527</sup> Furthermore, a genuine lacuna exists in the environmental law and policy regime pertaining to managing and controlling change to existing developments.<sup>528</sup>

Mining corporations should seek to maximise the use of remedial actions concurrent with production during facility operations.<sup>529</sup> Although currently no provision is made for the MET, the MME and/or the MWA to consider the cumulative impacts<sup>530</sup> of uranium mining, and no uranium mines currently required to consider or to determine the cumulative effect of their activities, products, services and facilities, the Draft EA Regulations require, *inter alia*, cumulative impacts to be considered and addressed in a scoping report and an EIA report as part of the EA process during the planning and design phase. However, until these EA Regulations become finalised and enter into force, the content thereof is not enforceable.

The study subsequently proceeds to analyse Namibia's regulatory provisions as are applicable during the final phase of the PLC of a uranium mine in order to identify the strengths and weaknesses of Namibia's legislative framework that regulates environmental impacts of uranium mines.

#### **4.4 Phase IV: Remediation, rehabilitation, decommissioning and closure**

As mentioned,<sup>531</sup> environmental problems associated with uranium mining continue after mining operations have ceased; therefore it is vital that the environmental law and policy regime should adequately provide for environmental protection, remediation and rehabilitation when decommissioning and closing a uranium mine facility.

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<sup>527</sup> Nel and Kotzé in Strydom and King (eds) *Fuggie and Rabie's Environmental Management in SA* 15. See also figure 2.

<sup>528</sup> See Nel and Kotzé in Strydom and King (eds) *Fuggie and Rabie's Environmental Management in SA* 15. See also figure 2.

<sup>529</sup> Principle 11 (Decommissioning and site closure) of the WNA Policy document on Sustaining Global Best Practices in Uranium Mining and Processing (available at <http://www.world-nuclear.org/WorkArea/linkit.aspx?LinkIdentification=id&ItemID=1698>).

<sup>530</sup> A cumulative impact is the consequence of more than one direct or indirect impact acting together and can be very difficult to predict. Cumulative impacts can therefore be indirect and often so far down the chain of causation that manifests in unexpected places, and possible after considerable delay (Barrow *Environmental Management for Sustainable Development* 211.) 'Cumulative impact', in relation to an activity, is defined in the Draft EA Regulations as "the impact of an activity that in itself may not be significant but may become significant when added to the existing and potential effects effectuating from similar or diverse activities or undertakings in the area".

<sup>531</sup> See 2.1.



#### *4.4.1 Environmental regulatory provisions in relation to the remediation, rehabilitation, decommissioning and closure phase*

In terms of its environmental agreement with the government, a uranium mining company must, on completion or suspension of its operations, ensure that the impact on the environment is minimised and that every reasonable and practicable step is undertaken to ensure that the environment is left in a reasonable state.<sup>532</sup>

In terms of the AERPA, the licence holder is required to notify the DG of the intention to terminate operations and, subsequently, must follow the prescribed decommissioning procedure or, if no procedure is prescribed, such procedure as the DG may determine in order to ensure the safety of the public and the environment.<sup>533</sup>

The Draft EA Regulations also require the compilation and submission of a rehabilitation and closure plan during the planning and design phase of a development.<sup>534</sup> In terms of the Regulations, the proponent is required to comply with the requirements of the rehabilitation and closure plan,<sup>535</sup> hence non-compliance by a uranium mining company to its environmental undertakings as contained in the rehabilitation and closure plan may constitute legal liability on the part of the mine. The inclusion of a rehabilitation and closure plan (during the planning and design phase) holds vast potential for environmental governance efforts during the final phase of a uranium mine development, since environmental problems associated with uranium mining continue after mining operations have ceased. Therefore steps need to be taken to eliminate, minimise or at least mitigate environmental impacts that occur after closure of a mine in order to return the environment to its former condition. The inclusion of a rehabilitation and closure plan during the planning and design phase of a development may also prove to be immature. Before the potential benefits of such an inclusion for purposes of environmental governance and, ultimately, environmental protection may be enjoyed, the Draft EA Regulations need to be finalised and to enter into force.

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<sup>532</sup> Mine Safety Regulations, Environmental agreement clause 2.5.

<sup>533</sup> AERPA s 31.

<sup>534</sup> See 4.1.1.

<sup>535</sup> Draft EA Regulations reg 26(4)(b).

Although little regulatory obligations or guidance is provided for in the current environmental regime, mining companies remain subject to the polluter pays principle as provided for in terms of national and international regulatory provisions. In terms of the polluter pays principle, a person involved in any polluting activity should be responsible for the costs of preventing or dealing with pollution caused by such activity, instead of passing these costs on to another, and includes both the costs of prevention (future pollution) and the costs of dealing with the consequences of pollution already caused (historic pollution).<sup>536</sup> In the context of uranium mines, therefore, uranium mining companies may be held responsible for the costs of dealing with pollution caused by such uranium mining activities. However, in the absence of scholarly analysis and jurisprudence, it is not certain whether and/or to what extent the Namibian courts will give effect to this principle.

#### *4.4.2 Preliminary observations*

Evidently, Namibia's environmental regulatory regime does not seem to contain adequate provisions relating to environmental protection, remediation and rehabilitation when decommissioning and closing a uranium mine facility, constituting a genuine gap in the country's environmental governance effort. No environmental governance tools are seemingly provided for during this final phase of a uranium mine. A number of legislative provisions merely require or prohibit certain behaviour that finds application during the final phase of a uranium mine. The environmental governance regime does not provide for norms and standards,<sup>537</sup> market,<sup>538</sup> civil,<sup>539</sup> agreement<sup>540</sup> or relationship-based<sup>541</sup> tools, nor is provision made for checking,<sup>542</sup> reporting<sup>543</sup> or acting<sup>544</sup> tools specifically catering for circumstances inherent to this final phase of a uranium mine.

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<sup>536</sup> Kidd *Environmental Law* 7.

<sup>537</sup> See 4.5.2.

<sup>538</sup> See 4.5.8.

<sup>539</sup> See 4.5.9.

<sup>540</sup> See 4.5.10.

<sup>541</sup> See 4.5.11.

<sup>542</sup> See 4.5.4.

<sup>543</sup> See 4.5.5.

<sup>544</sup> See 4.5.6.

Although the rehabilitation and closure plan provided for in the Draft EA Regulations is a laudable and vital inclusion for the environmental governance regime, it may prove to be immature as all the variables inherent to rehabilitation and closure cannot be anticipated at the early stage of planning and designing a uranium mine. Nevertheless, the compilation and submission of such a plan is not yet compulsory, as the Regulations have not yet been enacted.

Perhaps the one tool (currently) in the hands of the authorities pertaining to environmental accountability during this final phase is contained in the environmental agreement as provided for in the Mine Safety Regulations. However, the Regulations only provide that a uranium mining company must, on completion or suspension of their operations, ensure that the environmental impacts are minimised and that every reasonable and practicable step is undertaken to ensure that the environment is left in a reasonable state.<sup>545</sup> It is unfortunate that the Regulations do not contain any specifications pertaining to, for instance, minimum requirements nor do they provide any guidance towards determining what 'every reasonable and practicable step' entails.

After having analysed various environmental law and policy provisions relevant to each phase of the PLC of a uranium mine in Namibia, the study now proceeds to identify whether or not the different environmental governance tools are provided for in the country's environmental law and policy framework.

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<sup>545</sup> See 4.4.1.

#### **4.5 Critical evaluation of environmental governance tools provided for in the existing environmental regime during the PLC of a uranium mine**

As mentioned above,<sup>546</sup> governance efforts should, as a minimum, include the identification or planning of issues, doing or implementing the planning outcomes and checking or verifying the implemented arrangements that are topped by review and improvement of all phases of the PLC of uranium mines. Furthermore, the country's existing command and control regime will be complemented and supported by the adoption, implementation and use of alternative environmental governance tools, namely market-based instruments, agreement-based instruments and civil-based instruments, thereby improving the overall environmental protection effort. Although numerous environmental governance tools exist,<sup>547</sup> only a limited few are provided for in the country's existing environmental governance regime pertaining to uranium mining.

##### **4.5.1 Planning tools**

Planning requires an understanding of the gaps between the public has for the uranium mining companies and the roles these mining companies set for themselves. Namibia's current environmental regulatory regime provides for planning tools, such as EIAs,<sup>548</sup> heritage impact assessments (HIA)<sup>549</sup> and public participation<sup>550</sup> while the COM recently conducted a SEA<sup>551</sup> and a life cycle assessment (LCA)<sup>552</sup> in order to assess the ambit of the impact of uranium mining activities on the environment.<sup>553</sup> Startlingly, Namibia's environmental law framework does not provide for risk assessment and emergency and disaster planning. Furthermore, I&APs are not afforded with a right of access to environment-relevant information. This

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<sup>546</sup> See 2.3.

<sup>547</sup> See Du Plessis and Nel "Driving compliance to and enforcement of South African legislation by means of a hybrid of "new" environmental governance instruments" 6-32. See also 2.3.

<sup>548</sup> See for example EMA s 3(2)(e); EA Policy; Draft EA Regulations reg 23; Mining Act ss 48(3)(b)(i) and 50(f)(i); and WRMA ss 33(2)(b) and 60(1)(b).

<sup>549</sup> See for example NHA s 54(7).

<sup>550</sup> See for example EMA ss 2(b), 3(2)(c) and 44; Draft EA Regulations regs 23(b), 38; and WRMA ss 33(2)(a) and 59(3).

<sup>551</sup> See 2.2.4.

<sup>552</sup> See 2.2.4.

<sup>553</sup> See 3.10.

shortcoming is further emphasised by the fact that the Constitution also does not provide for a right of access to information.

#### *4.5.2 Norms and standards*

Namibia's environmental regulatory regime does not make adequate provision for norms and standards.<sup>554</sup>

#### *4.5.3 Doing tools*

Doing involves implementing changes and collecting data in order to identify gaps and in order to determine whether identified gaps are closing. Doing tools are to some extent provided for in Namibia's environmental regulatory regime as is evident from the provisions relating to the implementation elements of EMPs,<sup>555</sup> EMSs,<sup>556</sup> emergency plans,<sup>557</sup> and codes of practice.<sup>558</sup> The environmental regulatory regime also provides for mandatory requirements for environmental awareness and training,<sup>559</sup> and for empowering the public,<sup>560</sup> as well as mandatory specifications for competence requirements for personnel,<sup>561</sup> and for keeping records.<sup>562</sup>

#### *4.5.4 Checking tools*

Checking involves observing the effects of changes by continuously analysing data and pinpointing problems. Namibia's environmental regulatory regime does provide for certain

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<sup>554</sup> Norms and standards are provided for in for example WRMA ss 25(2)(a), 25(2)(d), 26(2)(a), 26(2)(d) and 64; and COM Code of Conduct and Ethics s 7.2

<sup>555</sup> See for example EMA ss 3(2) and 23-26; EA Policy; Mining Act s 50(f)(ii); WRMA s 37; and NHA s 58.

<sup>556</sup> See for example EMA Part XI; WRMA ss 37(c)(iii) and 37(d); and COM's Code of Conduct and Ethics s 7.1.

<sup>557</sup> See for example COM Constitution ss 4.19 and 8.2.7.

<sup>558</sup> See for example COM Code of Conduct and Ethics s 6.

<sup>559</sup> See for example WRMA s 5(n); NHA ss 6(4)(f) and 6(4)(g); COM Constitution 4.15 and 4.17; COM Code of Conduct and Ethics 3 3.1; and Mine Safety Regulations reg 66.

<sup>560</sup> See for example WRMA ss 3(j) and 13(b); COM Constitution s 4.18 and Namibia's Constitution art 95(k).

<sup>561</sup> See for example EMA 8(3); WRMA ss 3(i), 52, 88(1)(a) and 118(6); and AERPA ss 30(1) and 34(2).

<sup>562</sup> See for example AERPA s 21(1).

checking mechanisms in the form of environmental monitoring;<sup>563</sup> inspections;<sup>564</sup> and environmental auditing.<sup>565</sup>

#### 4.5.5 Reporting tools

Reporting tools such as environmental<sup>566</sup> and social<sup>567</sup> reporting; and triple bottom line (TBL) reporting<sup>568</sup> are, to some extent, provided for in the country's current environmental regime.

#### 4.5.6 Acting tools

Acting supposes examining the results obtained and redesigning the system accordingly. Acting tools are only provided for to some extent in Namibia's environmental law regime in that provision is made for technical and management control measures.<sup>569</sup>

#### 4.5.7 Command and control tools

Namibia's environmental protection effort relies extensively on command and control tools such as authorisations,<sup>570</sup> permits<sup>571</sup> and licences,<sup>572</sup> directives,<sup>573</sup> inspections,<sup>574</sup> orders;<sup>575</sup> penalties and prosecutions;<sup>576</sup> statutory record-keeping<sup>577</sup> and environmental law<sup>578</sup> in general.

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<sup>563</sup> See for example EA Policy; WRMA ss 25(2)(b), 25(2)(c), 37(c)(ii) and 76(3)(b); COM Code of Conduct and Ethics 7.1; and Mine Safety Regulations reg 80.

<sup>564</sup> See for example EMA ss 19(3) and (10); Mining Act ss 5(1)(d), 5(1)(e) and 45(3); WRMA ss 80(3)(a) and 124(1)(d); AERPA s 7; and NHA s 60.

<sup>565</sup> EA Policy. See 3.3 and 4.1.

<sup>566</sup> See for example EA Policy.

<sup>567</sup> See for example EA Policy; and COM Code of Conduct and Ethics s 8.2.6.

<sup>568</sup> See for example COM Code of Conduct and Ethics s 10.

<sup>569</sup> See for example Mining Act s 50(g); and WRMA s 26(2)(c).

<sup>570</sup> See 4.1 - 4.4.

<sup>571</sup> See 4.1 - 4.4.

<sup>572</sup> See 4.1 - 4.4.

<sup>573</sup> See for example Mining Act ss 41(2)(a), 100(1), 128(1), 129(1), 130(2); WRMA ss 9, 79(3)(a) and 79(3)(b); AERPA ss 24(1) and 30(4).

<sup>574</sup> See for example Mining Act s 66(3); AERPA ss 35(2)(b) and 36; and HSO 9(1).

<sup>575</sup> See for example EMA s 20(1).

<sup>576</sup> See for example EMA ss 5(5), 22(1) and (2), 27(3) and (4), 34(3), 37(3), 43, 54, and 56(2); Draft EA Regulations reg 48; Mining Act ss 3(2), 5(4)(b), 16(6)(a), 24(2), 31(6)(a), 39(a), 41(2)(b), 43(4), 45(4), 51(3), 53(5), 54(4), 57(2), 67(6)(a), 73(4), 77(6)(a), 88(3), 89(4), 90(5), 100(3), 101(4), 103, 122, 128(3), 129(2), 133 and 129; WRMA ss 132 and 136(3); AERPA ss 29(3), and 40(1), (2) and (3); APPO s 43(1); Mine Safety Regulations reg 232; COM Code of Conduct and Ethics s 12.1; NHA s 63; and EIFA s 26(2).

#### 4.5.8 *Market-based tools*

Given the developing status of Namibia as a country, its environmental regulatory regime will benefit greatly from adopting, implementing and using market-based instruments in order to enhance environmental protection. There is a great number of market-based tools that may, if implemented and managed correctly, facilitate environmental governance during the various phases of the PLC of uranium mining. These tools include demand-side management, depository return schemes, deposit refund schemes, differential indirect taxes, emission charges, green purchasing, incentives and rewards, pricing policies, process product and/or resource charges or taxes, security deposits, subsidies, tax concessions, tradable or marketable permits, trade restrictions, two-tier tariffs, and user fees. Unfortunately though the country's current environmental governance regime does not provide for market-based environmental governance tools. Nevertheless, the EIF<sup>579</sup> is a novel and laudable instrument which holds considerable potential for environmental protection. Whether the EIF will be managed in such a manner so as to obtain its objectives and facilitate and enhance environmental protection will only become clear in future.

#### 4.5.9 *Civil-based tools*

Although alternative environmental governance tools are less common to Namibia's environmental law and policy regime, provision is made for access to public participation;<sup>580</sup> education<sup>581</sup> and, to a limited extent, access to information.<sup>582</sup>

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<sup>577</sup> See for example EMA s 38; Mining Act ss 24, 36(2), 45(1), 51(1), 57(1)(h), 66, 76, 89, and 101; WRMA ss 47 (a) and (b), 80(2)(b); AERPA ss 15, 19(4), 21(5), 29(2)(b) and 33(3)(d); and Mine Safety Regulations reg 34 and 80.

<sup>578</sup> See 2, 3 and 4.

<sup>579</sup> See 3.8.

<sup>580</sup> See for example EMA ss 3(2)(b) and (c), 8(4) and (5), 31(1)(b) and (c), and 44; Draft EA Regulations regs 23(b), 38; WRMA ss 13(b), 59(2), 76(2), and 136(2); and the Namibian Constitution s 95(k).

<sup>581</sup> See for example Mining Act ss 50(c) and (e); WRMA ss 13(b) and 76(2)(d); and COM Code of Conduct and Ethics s 5.

<sup>582</sup> See for example EMA s 47; Draft EA Regulations 20(b); WRMA s 3(f); and COM Constitution s 4.20.

#### *4.5.10 Agreement-based tools*

Agreement-based tools appear in the form of covenants;<sup>583</sup> co-operative agreements;<sup>584</sup> and international environmental agreements.<sup>585</sup>

#### *4.5.11 Relationship-based tools*

The current environmental law and policy regime contains regulatory provisions that may serve as relationship-based tools, such as arrangements for conflict resolution,<sup>586</sup> and the empowerment of civil society to serve as watchdogs.<sup>587</sup> These are not sufficient to make (significant) contributions to environmental protection. However, a number of relationship-based tools are not currently provided for, including formal and informal (voluntary) agreements, voluntary submissions to self-registration, arrangements for conflict resolution, and the empowerment of civil society to serve as watchdogs.

In an attempt to address the gap in scholarly and regulatory discourse by establishing to what extent the body of environmental law and policy regulate uranium mining in Namibia, the study now concludes with some critical observations regarding Namibia's environmental governance framework with regard to uranium mining. Recommendations are aimed at improving the existing environmental governance regime in order to mitigate and better regulate environmental impacts of uranium mining in Namibia.

## **5. Recommendations and conclusion**

### ***5.1 Summary and critical observations***

This study aimed to determine to what extent the body of environmental law and policy regulates uranium activities, impacts and aspects during the respective phases of the PLC of a uranium mine and to make recommendations towards the improvement and strengthening of

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<sup>583</sup> See for example Mining Act ss 49 and 72(4)(iii).

<sup>584</sup> See for example WRMA s 14.

<sup>585</sup> See for example Namibian Constitution art 144; EMA s 48; and WRMA Part X. See also 1.2.

<sup>586</sup> See for example WRMA ss 122 and 123.

<sup>587</sup> See for example EMA s 3(2)(b); WRMA s 26(2)(d).



Namibia's environmental framework law and policy. The study commenced with a discussion on environmental governance in the country in general<sup>588</sup> and proceeded with a brief overview of the main environmental framework laws<sup>589</sup> pertaining to uranium mining followed by a critical analysis of the environmental law and policy provisions that apply to each phase of the PLC<sup>590</sup> of uranium mining in Namibia.

The constitutional recognition of environmental concerns triggered widespread legislative reform relating to the management of natural resources in Namibia. Namibia's current environmental law and policy framework consists of a plethora of national and international legislative measures<sup>591</sup> while different government ministries are responsible for different aspects of environmental regulation. This fragmented<sup>592</sup> legislative and institutional regime does not facilitate an integrated approach towards environmental governance and may ultimately inhibit and negate sustainable governance efforts. Due to the fragmented nature of the country's environmental governance regime, it is unable to address the entire PLC of uranium mines. From the aforementioned it may be deduced that such non-regulation may pose significant detrimental consequences for environmental protection efforts in the uranium mining context.

Apart from a fragmented legislative regime, much of Namibia's existing environmental law and policy are outdated and in serious need of revision. Although the introduction of 'new' environmental legislation reflects a growing concern towards environmental protection, many of these 'new' environmental laws have been enacted, but have since not yet been put into operation.<sup>593</sup> This unfortunate situation further surmounts to legal uncertainty as it is difficult for those that regulate as well as those being regulated to determine what is required of them. It is therefore vital that these laws be put into operation and that the Draft EA Regulations be finalised and enacted very soon in order to develop and maintain an efficient and effective environmental governance regime. Although recognising that the country has a fragmented environmental governance regime with regard to uranium mining as well as the disadvantages

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<sup>588</sup> See 2.2.

<sup>589</sup> See 3.

<sup>590</sup> See 4.1 – 4.4

<sup>591</sup> See 1.2.

<sup>592</sup> See 1.2.

<sup>593</sup> See 1.2.

associated therewith, the PLC as a regulatory mechanism has the potential to overcome the consequences of such a fragmented regime.

The nature and extent of the environmental impacts associated with uranium mining require of authorities to establish and enhance environmental protection and sustainability during uranium mining operations and to ensure that all environmental impacts that inevitably occur as a result of uranium mining activities are addressed in a holistic and integrated manner during each phase of the PLC. One way of doing this is through environmental governance.<sup>594</sup>

#### *5.1.1 Environmental governance*

Environmental governance, for purposes of this study, was defined as:

The management of uranium mines' activities, products, services and facilities and the effects thereof by and between institutions and individuals in the public and private sector at international, regional, sub-regional, national and local level as provided for in the collection of legislative, executive and administrative functions, processes and instruments aimed at or contributing to environmental protection by means of different governance tools as applicable during each phase of the project life cycle of uranium mining in Namibia.

This study identified various components and characteristics of Namibia's ideal environmental governance regime.<sup>595</sup> These requirements, together with an evaluation of each, are listed below:

- A collection of legislative, executive and administrative functions, processes and instruments aimed at or contributing to environmental protection.<sup>596</sup> The current environmental governance regime indeed comprises a collection of legislative, executive and administrative functions, processes and instruments aimed at and contributing to environmental protection.

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<sup>594</sup> See 2.2.

<sup>595</sup> See 2.3.

<sup>596</sup> See 1.2 and 3.

- A management process executed by institutions and individuals in the public and private sector. Provision is made for a management process in the current environmental governance regime.
- Holistic regulation of activities, products, services and facilities in relation to uranium mines, as well as the effects of such activities, products, services and facilities on the environment. From the study it is evident that various components of the PLC are not provided for or otherwise adequately provided for in the current environmental law and policy framework. For instance, the current environmental law and policy framework makes little provision for the construction and decommissioning and closure phases of the PLC. Hence the activities, products, services and facilities in relation to uranium mines are not regulated in a holistic manner.
- Regulation at international, regional, sub-regional, national and local levels. This point is discussed below as one of the requirements for establishing co-operative environmental governance within Namibia's uranium mining industry.
- Regulation by and between the various ministries involved (the MET, MME and MWA). This point is also discussed below as a requirement for the establishment of co-operative environmental governance within Namibia's uranium mining industry.
- Regulation by means of different governance tools (command and control tools,<sup>597</sup> market-based tools,<sup>598</sup> civil-based tools,<sup>599</sup> agreement-based tools<sup>600</sup> and relationship based-tools<sup>601</sup>). The current environmental governance regime is dominated by command and control tools, while little or no provision is made for alternative environmental governance instruments.

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<sup>597</sup> See 4.5.7.

<sup>598</sup> See 4.5.8.

<sup>599</sup> See 4.5.9.

<sup>600</sup> See 4.5.10.

<sup>601</sup> See 4.5.11.

- Regulation in accordance with the management cycle (planning,<sup>602</sup> norms and standards,<sup>603</sup> doing,<sup>604</sup> checking<sup>605</sup>, reporting<sup>606</sup> and acting<sup>607</sup>). Namibia's uranium mining industry is not adequately regulated in accordance with the management cycle as various components thereof are not adequately provided for. For example, currently no provision is made for norms and standards, while little provision is made for checking, reporting and acting.
- Regulation during each of the different phases of the PLC of a uranium mining development (planning and design phase,<sup>608</sup> construction phase,<sup>609</sup> operational phase,<sup>610</sup> and the decommissioning, rehabilitation and closure phases<sup>611</sup>). As is evident from the study, the current environmental governance regime makes significant provision for the planning and design phase as well as the operational phase of a uranium mine, while little or no provision is made for the construction and decommissioning, rehabilitation and closure phases.

Apart from an efficient and effective environmental governance regime, the uranium mining industry also requires co-operative environmental governance<sup>612</sup> to be present. Various requirements have been identified for establishing co-operative environmental governance within Namibia's uranium mining industry.<sup>613</sup> These requirements, together with an evaluation of each, are listed below:

- The integration of governance structures at international, intra-regional and national level. Although the current environmental governance effort does not provide for or encourage integration at international and intra-regional level, the enactment of the

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<sup>602</sup> See 4.5.1.

<sup>603</sup> See 4.5.2.

<sup>604</sup> See 4.5.3.

<sup>605</sup> See 4.5.4.

<sup>606</sup> See 4.5.5.

<sup>607</sup> See 4.5.6.

<sup>608</sup> See 4.1.

<sup>609</sup> See 4.2.

<sup>610</sup> See 4.3.

<sup>611</sup> See 4.4.

<sup>612</sup> See 2.3.

<sup>613</sup> See 2.3.

EMA<sup>614</sup> and the EA Regulations<sup>615</sup> and thereby the MET's move towards a more holistic approach to environmental governance may contribute significantly towards establishing co-operative environmental governance at a national level.<sup>616</sup>

- Co-operation within and between the MET, the MME and the MWA. Although the current environmental governance regime requires these authorities to work together at various instances during the PLC of a uranium mine in order to perform their respective mandates, it does not contain provisions that facilitate co-operation within and between them.
- Integration of environmental law and policy and environmental governance tools. As is evident from the study, the current environmental regulatory regime does not sufficiently provide for nor facilitate the integration of environmental law and policy and environmental governance tools.
- Co-operation between the uranium mining industry and the people of Namibia.<sup>617</sup> The current environmental regulatory regime does not provide for nor require the co-operation between the uranium mining industry and the people.

As is evident from the above it also is vital to have an efficient and effective co-operative environmental governance regime that improves communication and addresses organisational behaviour by government officials that contribute to fragmentation of the environmental governance regime.

Although recognising the dangers associated with a fragmented environmental governance effort, the adoption, implementation and use of environmental governance instruments during the entire PLC of a uranium mine may facilitate environmental governance within the uranium mining context. The current environmental law and policy framework makes provision for

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<sup>614</sup> See 3.2.

<sup>615</sup> See 3.4.

<sup>616</sup> See 2.3.

<sup>617</sup> See 2.3.

various types of environmental governance tools during the PLC of a uranium mining development.

### *5.1.2 Environmental governance tools and the PLC*

#### *5.1.2.1 Planning and design phase*

The initial phase of development of a uranium mine is governed by various regulatory requirements. These regulatory requirements also provide for various forms of environmental governance tools.

The Mining Act makes provision for planning tools in the form of EIAs; command and control instruments in the form of authorisations and licences, inspections, penalties and prosecutions and statutory record-keeping; as well as civil-based tools in the form of environmental education. The environmental law and policy regime in general also does not provide for nor require design specifications pertaining to sustainable development and green engineering, which may enhance environmental governance and ultimately improve environmental protection efforts.

The EMA holds vast potential for establishing and enhancing a sound environmental governance regime by means of various provisions contained therein, such as the environmental management principles as well as various environmental governance tools. The EMA makes provision for planning tools such as EIAs; command and control tools such as authorisations, directives, orders, penalties and prosecutions, and statutory record-keeping; civil-based tools in the form of public participation and, to a limited extent, access to information; and also relationship-based tools in the form of arrangements for conflict resolution and the empowerment of civil society to serve as watchdogs. The EMA does not provide for the adoption, implementation or use of other environmental governance tools with regard to the planning and design phase, which may ultimately have, if formally incorporated into the compliance and enforcement regime, enhanced the country's environmental governance effort in general, and that of its uranium mining industry in particular. The lack of a statutory right of access to information in the EMA, as well as in the Constitution and the

environmental regulatory framework in general, also represents a legal gap in Namibia's environmental governance effort. Despite the vast potential vested in the introduction of EAPs, that will be responsible for managing the EA process, it may also prove to be one of the main factors hampering environmental governance due to the potential of fraud.

During the planning and design phase the Draft EA Regulations make provision for planning tools in the form of EIAs and public participation; command and control tools in the form of environmental authorisations and penalties and prosecutions; and civil-based instruments such as public participation and, to a limited extent, access to environment-relevant information.

Despite the nature and interconnectedness of water and the environmental consequences of mining, the governing legislation as well as the relevant authoritative bodies responsible for water and environmental affairs, namely the MWA and the MET, are and operate as two separate entities.

The Water Act provides for command and control tools in the form of authorisations and permits. The WRMA makes provision for various environmental governance tools, namely: planning tools in the form of EIAs and public participation; norms and standards; command and control tools such as authorisations, licenses and permits, directives, penalties and prosecutions, and statutory record-keeping; civil-based tools in the form of public participation, environmental education and, to a limited extent, access to information; as well as relationship-based tools, including arrangements for conflict resolution and empowerment of civil society to serve as watchdogs.

Although the AERPA contains several laudable provisions from an environmental governance point of view, it lacks teeth and does not make adequate provision for environmental governance tools, nor does it establish a right of access to information. The AERPA provides for environmental governance tools in the form of command and control instruments, namely authorisations and licences, directives, inspections, penalties and prosecutions, and statutory record-keeping.

The APPO provides for command and control tools such as authorisations, and penalties and prosecutions, while the HSO makes provision for command and control tools in the form of inspections. The NHA contains planning tools in the form of HIAs; as well as command and control tools such as authorisations, penalties and prosecutions. The EIFA provides for command and control tools in the form of penalties and prosecutions and the Constitution provides for civil-based instruments in the form of public participation. The EIF<sup>618</sup> is a novel and laudable instrument which holds sheer potential for environmental protection. Whether the EIF will be managed in a manner so as to obtain its objectives and facilitate and enhance environmental protection may only be established in due time.

In summary therefore, during the planning and design phase<sup>619</sup> of a uranium mine, the environmental governance regime provides for various planning tools,<sup>620</sup> as well as command and control instruments<sup>621</sup> and, to a lesser extent, for civil<sup>622</sup> and agreement-based<sup>623</sup> instruments. However, the environmental governance regime does not provide for norms and standards<sup>624</sup> or market-based<sup>625</sup> instruments and, furthermore, does not make adequate provision for civil,<sup>626</sup> agreement<sup>627</sup> or relationship-based<sup>628</sup> tools during this initial phase of developing uranium mines.

Extensive provision is made for command and control tools in the country's environmental governance regime. However, the environmental law and policy framework does not make adequate provision for norms and standards or market-based tools during any of the four phases of the PLC. Alternative environmental governance tools are less common to Namibia's environmental regime; provision is made for various civil-based tools,<sup>629</sup> including access to public participation, education and, to a limited extent, access to information. Although there

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<sup>618</sup> See 3.8.

<sup>619</sup> See 4.1.

<sup>620</sup> See 4.5.1.

<sup>621</sup> See 4.5.7.

<sup>622</sup> See 4.5.9.

<sup>623</sup> See 4.5.10.

<sup>624</sup> See 4.5.2.

<sup>625</sup> See 4.5.8.

<sup>626</sup> See 4.5.9.

<sup>627</sup> See 4.5.10.

<sup>628</sup> See 4.5.11.

<sup>629</sup> See 4.5.9.



are existing regulatory provisions that may serve as relationship based tools, such as arrangements for conflict resolution and the empowerment of civil society to serve as watchdogs, these are not sufficient to make (significant) contributions to the country's environmental protection effort with regard to uranium mining.

#### 5.1.2.2 Construction phase

While constructing<sup>630</sup> a uranium mine facility, the environmental law and policy framework does not provide for environmental governance tools. Different acts merely contain certain provisions, either requiring or prohibiting certain behaviour that finds application during the construction phase.

Namibia's environmental law and policy regime also does not require nor provide for construction specifications that enhance or contribute to environmental protection as is evident from the country's lack of legislative and other measures providing for norms and standards,<sup>631</sup> market-based tools<sup>632</sup> or relationship-based tools<sup>633</sup> with regard to the construction phase. Furthermore, the current environmental regulatory regime does not facilitate the infiltration of specifications pertaining to planning and designing a uranium mine facility as established in the initial phase of the development to the construction phase. The existing environmental governance regime also does not require international norms and standards pertaining to the construction of (uranium) mines, nor green engineering.

It is important to note that it is often independent contractors hired by the relevant uranium mining companies who are primarily responsible for the construction of certain infrastructure; therefore it is these independent contractors who are also primarily responsible for environmental degradation during the construction phase. The environmental liability of these contractors are limited, since they are not responsible for obtaining the required licences, permits, authorisations and the like, as this is the responsibility of the relevant uranium mining company.

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<sup>630</sup> See 4.2.

<sup>631</sup> See 4.5.2.

<sup>632</sup> See 4.5.8.

<sup>633</sup> See 4.5.11.

#### 5.1.2.3 Operational phase

The operational phase poses the most significant environmental impacts during the PLC of a uranium mine; therefore it is vital that the environmental law and policy framework regime, as provided for during this phase of the development, adequately provide for and establish environmental governance.

The Constitution allows for agreement-based instruments in the form of international environmental agreements to form part of Namibia's environmental governance effort. International agreements pertaining to uranium mining (that have been entered into in the past and those that may be entered into in future) may pose significant potential for environmental protection efforts during uranium mining. However, more often than not the contents and provisions of international environmental law that pose significant consequences for environmental governance are not taken into consideration during operations in general, and uranium mining operations in particular.

During the operational phase, the Mining Act makes provision for doing tools, including the implementation elements of EMPs; checking tools in the form of inspections; command and control tools, namely authorisations and licences, inspections, penalties and prosecutions, and statutory record-keeping; and also civil-based tools in the form of environmental education. Subsequent to the Mining Act, the Mine Safety Regulations provide for checking tools in the form of environmental monitoring; command and control tools such as penalties and prosecutions, and statutory record-keeping and agreement-based tools such as covenants.

The EA Policy makes provision for the implementation elements of EMPs as a doing tool, for environmental monitoring and auditing as checking tools, as well as environmental and social reporting as reporting tools. The EMA makes provision for various environmental governance tools during the operational phase of a uranium mine, namely: doing tools in the form of implementation elements of EMPs and EMSs; checking instruments in the form of inspections; command and control tools such as authorisations, directives, orders, penalties and prosecutions, and statutory record-keeping; civil-based tools, including public participation

and, to a limited extent, access to information; agreement-based instruments such as international environmental agreements; and relationship-based tools in the form of arrangements for conflict resolution and empowerment of civil society to serve as watchdogs.

The Water Act provides for command and control tools in the form of authorisations and permits, while the WRMA makes provision for norms and standards; doing tools in the form of implementation elements of EMPs and EMSs; checking tools such as environmental monitoring, and inspections; command and control tools in the form of authorisations, permits and licences, directives, penalties and prosecutions, and statutory record-keeping; civil-based instruments such as public participation, environmental education, and, to a limited extent, access to information; agreement-based tools in the form of co-operative agreements, international environmental agreements; and also relationship-based instruments such as arrangements for conflict resolution, and the empowerment of civil society to serve as watchdogs.

The AERPA provides for command and control instruments in the form of authorisations and licences, directives, inspections, penalties and prosecutions, and statutory record-keeping. The APPO also makes provision for command and control tools in the form of authorisations, and penalties and prosecutions. The NHA provides for doing tools in the form of implementation elements of EMPs; checking tools such as inspections; as well as command and control tools in the form of authorisations, penalties and prosecutions. Command and control instruments are furthermore also provided for in the National Forest Act and the EIFA in the form of penalties and prosecutions; and in the HSO in the form of inspections.

In general, the environmental governance regime does not provide for nor requires the MET, the MME and/or the MWA to consider the cumulative impacts of uranium mine facilities, nor are uranium mines required to consider the cumulative effect of their activities, products, services and/or facilities. Although the Draft EA Regulations require cumulative impacts as one of the factors to be considered and addressed in a scoping report and an EIA report as part of the EA process during the planning and design phase, such requirements will only become obligatory and enforceable once these EA Regulations are finalised and enter into force. However, once the EA Regulations enter into force the consideration of cumulative

impacts of uranium mining companies will be provided for and mandated. Furthermore, the cumulative impacts of uranium mining and associated activities, products, services and facilities in a given area will also have to be taken into consideration by the relevant authorities when considering the approval of an environmental clearance certificate, or the issuance of a prospecting, exploration or mining right, for instance.

When viewed against the above, it is evident that the country's environmental law and policy framework provides for doing tools,<sup>634</sup> command and control tools<sup>635</sup> and agreement-based tools.<sup>636</sup> Provision is also made in a limited, albeit insufficient, extent for checking,<sup>637</sup> reporting<sup>638</sup> and acting<sup>639</sup> tools, as well as market,<sup>640</sup> civil<sup>641</sup> and relationship-based<sup>642</sup> instruments. No provision is made for norms and standards.<sup>643</sup>

A genuine lacuna exists in Namibia's environmental law and policy regime pertaining to managing and controlling change to existing developments. It is important to note that, in the event of expansion of or modification to existing mining operations, such activities must also adhere to the relevant legislative provisions applicable during each respective phase of the PLC.

The current environmental governance regime does to some extent provide for doing tools<sup>644</sup> such as the implementation elements of EMPs and EMSs, as well as mandatory requirements for environmental awareness and training, and for empowering the public, records, as well as mandatory specifications for competence requirements for personnel. Other doing tools, such as emergency plans and codes of practice, are only provided for in the COM Constitution and Code of Good Practice and are therefore not legally enforceable doing instruments.

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<sup>634</sup> See 4.5.3.  
<sup>635</sup> See 4.5.7.  
<sup>636</sup> See 4.5.10.  
<sup>637</sup> See 4.5.4.  
<sup>638</sup> See 4.5.5.  
<sup>639</sup> See 4.5.6.  
<sup>640</sup> See 4.5.8.  
<sup>641</sup> See 4.5.9.  
<sup>642</sup> See 4.5.11.  
<sup>643</sup> See 4.5.2.  
<sup>644</sup> See 4.5.3.

Acting tools<sup>645</sup> are only provided for to some extent in Namibia's environmental governance regime in that provision is made for technical and management control measures.

Although environmental impacts that occur during the operational phase are the most significant, environmental problems associated with uranium mining continue after mining operations have ceased. It is therefore vital that Namibia's environmental governance regime adequately provide for environmental protection, remediation and rehabilitation when decommissioning and closing a uranium mine facility.

#### 5.1.2.4 Decommissioning, rehabilitation and closure phase

No environmental governance tools are currently provided for during this final phase of a uranium mine. Different acts merely contain certain provisions either requiring or prohibiting certain behaviour that finds application during the construction phase. Evidently, Namibia's environmental regulatory regime does not adequately provide for environmental protection, remediation and rehabilitation when decommissioning and closing a uranium mine facility,<sup>646</sup> constituting a gap in the country's environmental governance regime.

The rehabilitation and closure plan provided for in the Draft EA Regulations is therefore a vital inclusion and a step in the right direction towards regulating uranium mining activities in accordance with the PLC of a mine development. Unfortunately the compilation of a rehabilitation and closure plan during the initial phase of the PLC may prove to be immature and even futile as a comprehensive and sensible rehabilitation and closure plan cannot accurately be compiled at this early stage of developing a uranium mine. Unfortunately the environmental governance regime and also the people of Namibia have not yet been able to enjoy the fruits of such an inclusion, since the Regulations are not yet enforceable.

Apart from the potentially significant rehabilitation and closure plan, the one tool in the hands of the authorities pertaining to this final phase of a development is the environmental agreement as provided for in the Mine Safety Regulations. However, this one tool is severely handicapped. The Regulations merely provide that a uranium mining company must, on

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<sup>645</sup> See 4.5.6.

<sup>646</sup> See 4.4.

completion or suspension of their operations, ensure that the environmental impacts are minimised and that every reasonable and practicable step is undertaken to ensure that the environment is left in a reasonable state.<sup>647</sup> The Regulations do not contain any specifications pertaining to, for instance, minimum requirements nor do they provide any guidance towards determining the parameters of 'every reasonable and practicable step'. These agreements are also standard documents; therefore do not cater for site-specific characteristics.

It is vital that the country's environmental regulatory regime introduce adequate provisions relating to environmental protection, remediation and rehabilitation when decommissioning and closing a uranium mine facility. It is also important to highlight that, even in the absence of sufficient and comprehensive environmental law and policy, uranium mining companies may still use various environmental governance instruments, which instruments are not necessarily dependant on the force of environmental law and policy, to limit or regulate their impact on the environment.

After critically analysing Namibia's environmental framework law and policy that regulates uranium mining, it is clear that the country's environmental governance regime does not cover the entire PLC of uranium mining. Room exists for the improvement of and bridging the legislative gaps within and between the different phases of the PLC in order to holistically regulate uranium mining activities, impacts and aspects.

## **5.2 Recommendations**

### *5.2.1 Environmental governance*

In order to establish and enhance an effective and efficient environmental governance regime, the following recommendations are made in relation to the identified components and characteristics of Namibia's ideal environmental governance regime.<sup>648</sup>

- Apart from merely consisting of a collection of legislative, executive and administrative functions, processes and instruments, Namibia's environmental governance regime that

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<sup>647</sup> See 4.4.1.

<sup>648</sup> See 2.3.

regulates the uranium mining industry requires further steps to be taken by government aimed at the alignment of administrative practices, procedures and instrumentation of separate, autonomous functions of all ministries and directorates in order to achieve effective and integrated service-delivery efforts.

- Although provision is made for a management process in the current environmental governance regime, it is recommended that guidelines aimed at addressing the organisational behaviour by government officials should be published.
- The environmental governance regime must recognise and give effect to the integrated nature of the environmental media and the need for an integrated perspective on the various environmental media in order to prevent intra-media transfer of impacts. Steps should also be taken to integrate or align authorisation between the various ministries, and within ministries but between various directorates.
- It is also vital that Namibia's environmental governance regime recognises the integrated use of various environmental governance instruments by providing for the adoption, implementation and use of alternative environmental governance tools so as to improve the overall environmental protection effort.
- In order to provide for and facilitate continual improvement of the country's current environmental governance regime, authorities must recognise the need to provide for all the components of the management cycle.
- In order for Namibia to have an efficient and effective environmental governance regime in relation to uranium mining, it is vital that the need to address all the phases of the PLC is recognised and that effect is given thereto by means of, amongst others, the recommendations made in this study.

The following recommendations are made with regard to co-operative environmental governance in relation to Namibia's uranium mining context:

- The establishment of a central decision-making authority may contribute significantly towards facilitating efficient and effective environmental governance. Once established, the Environmental Commissioner and the Sustainable Development Advisory Council may assist the Ombudsman with the environmental mandate bestowed thereupon. The government must, however, take the necessary measures to prevent the duplication of environmental functions between the Environmental Commissioner, the Advisory Council and the Ombudsman. It is further recommended that, whereas the Environmental Commissioner serves as the central authority in terms of impact assessment law, the DEA should serve as an environmental lead agent, a so-called 'one-stop environmental governance shop' in order to refrain from the dangers associated with a fragmented environmental governance effort. By establishing an environmental lead agent, enforcement measures may be integrated in an attempt to streamline authorisation procedures and enhance efficient and effective decision-making, thereby facilitating the establishment of a sound environmental governance regime.
- It is recommended that the MET, the MME and the MWA actively lodge an effort to foster closer relations within and between them, especially the Mining Commissioner and the Environmental Commissioner, since such closer relations may facilitate co-operative environmental governance which may, in turn, contribute to an improved environmental governance regime. In order to facilitate closer relations, the publishing of a set of guidelines is recommended, which guidelines must be aimed at enhancing the co-operation and co-ordination among and between the various authoritative parties involved. Apart from the publishing of guidelines, a motivated and driven effort from the ministers involved, right down to every public servant employed by each ministry, is required. By facilitating co-operative environmental governance, the authorities may have achieved a great deal in contributing to the establishment of an efficient and effective environmental governance regime.
- The Namibian Government should recognise the need to build a culture of encouragement, recognition and reward alongside (and to some extent replacing) that of shame and punishment associated with existing command and control regulation.



The Namibian Government should also provide incentives that encourage participation in and establishment of environmental protection, thereby enhancing environmental governance during uranium mining activities. *Idealiter*, the Namibian Government must design and establish an environmental regulation and policy framework within the country's economic and political context in a manner which is both efficient and effective and does so at the least cost to regulators (including the DEA, MEA, MME, MWA, regional and local authorities) and uranium mining companies.

It is further recommended that the DEA/MET, in conjunction with the MME, when negotiating the terms and conditions of environmental contracts, include into the terms and conditions thereof an integrated use of various environmental governance tools and implementation strategies<sup>649</sup> so as to strengthen the environmental governance effort which may enhance environmental protection at the various uranium mines.

- In order to facilitate co-operation between the uranium mining industry and the people of Namibia, the authorities should create a platform for the establishment of public advisory forums so as to empower the public and ultimately assist the government with protecting the environment while, at the same time, encouraging development and economic growth within Namibia.

The following recommendations may be made with regard to the environmental governance regime pertaining to the PLC of uranium mining in Namibia.

## *5.2.2 Environmental governance tools and the PLC*

### *5.2.2.1 Planning and design phase*

It is vital that the environmental framework law and policy pertaining to uranium mining provide for environmental governance during the initial phase of a uranium mine, or alterations or modifications thereto, in order to establish and enhance environmental governance efforts lodged by such a uranium mine during the remainder of the PLC of a uranium mine.

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<sup>649</sup> See 4.5.

Although the Mining Act provides for various planning tools, it is recommended that the Mining Act be amended to also provide for risk assessment and emergency and disaster planning during (uranium) mining operations. It is further suggested that the Mining Act be amended or, alternatively, that policy or guideline documents be enacted, advocating in favour of design specifications pertaining to sustainable developments and green engineering aimed at influencing conceptual design and detail design in order to ultimately enhance the overall environmental protection effort.

As mentioned, the EMA holds vast potential for establishing and enhancing a sound environmental governance regime as it provides for various environmental governance tools. It is, however, important that the DEA establish an accreditation system and draft strict regulations that govern EAPs in order to avoid and overcome instances of fraud and other foreseeable challenges. It is further recommended that the EMA, serving the role of framework environmental law in Namibia, should be amended to also require and provide for risk assessment and emergency and disaster planning as these are vital planning tools, the outcomes of which should influence the entire PLC of a uranium mine facility.

Due to the lack of a statutory right of access to information in the EMA, as well as in the Constitution and the environmental regulatory framework in general, it is recommended that an act effecting a general right of access to information be enacted, which act should make specific provision for environment-relevant information, thereby allowing the public access to environment-relevant information with regard to uranium mining. Legislation affording civil society with an enforceable right to environment-relevant information may contribute significantly towards strengthening Namibia's environmental law regime and, ultimately, the country's environmental governance regime.

Seeing that the entering into force of the EMA is pending the finalisation and subsequent enactment of the EA Regulations, it is vital that the Draft EA Regulations be finalised as soon as possible in order to allow for and enable Namibia's environmental law and policy framework (in general, and specifically in relation to its uranium mining industry) to become a force to be reckoned with by all current and prospective developers so as to establish and enhance the country's environmental governance regime.

It is also recommended that the functions and responsibilities related to water and environmental affairs, be assigned to a single minister, with separate directorates driving water affairs and environmental affairs respectively, due to the nature and interconnectedness of water and the environment. This may also establish and facilitate co-operative environmental governance as a strengthened relationship between various interest groups as a powerful mechanism to drive compliance by addressing the weaknesses inherent to disjointed interests.

Although the country's environmental governance regime provides for and relies extensively on command and control tools, the adoption, implementation and use of various other command and control tools, such as environmental restoration orders and restraint orders and environmental standards during the initial phase of the PLC of a uranium mine, shall greatly benefit the environmental protection effort and significantly enhance environmental governance. The country's environmental protection effort with regard to uranium mining should provide for and require certain norms and standards as well as market-based environmental governance tools within the uranium mining industry during each phase of the PLC. Furthermore, it is suggested that, where there is a difference between national norms and standards and international norms and standards, uranium mining companies should strive to and/or be compensated by the regulatory powers for adhering to the most stringent of the two.

Given the developing status of Namibia as a country, its environmental regulatory regime will benefit greatly from adopting, implementing and using market-based instruments<sup>650</sup> in order to enhance environmental protection.

A great number of market-based tools exists that may, if implemented and managed correctly, facilitate environmental governance during the various phases of the PLC of uranium mining, such as demand-side management, depository return schemes, deposit refund schemes, differential indirect taxes, emission charges, green purchasing, incentives and rewards, pricing policies, process product and/or resource charges or taxes, security deposits, subsidies, tax concessions, tradable or marketable permits, trade restrictions, two-tier tariffs, and user fees.

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<sup>650</sup> See 4.5.8.

It is suggested that further studies be conducted regarding the viability and use of these market-based tools in order to determine which tools, or which combination of tools, may be successfully implemented and managed, given Namibia's administrative capacity.

Apart from the alternative environmental governance tools currently provided for, numerous other civil-based tools exist, including beneficial cost awards, green rights, increased *locus standi*, private prosecution, protection of workers and whistle-blowers, public awareness, and public waste inventories, which should also be introduced to Namibia's environmental governance regime as these tools may significantly contribute to enhanced environmental protection efforts within Namibia's uranium mining industry. It is also recommended that relationship-based tools not currently provided for in the environmental regulatory regime, such as formal and informal (voluntary) agreements, voluntary submissions to self-registration, arrangements for conflict resolution, and the empowerment of civil society to serve as watchdogs, be introduced and provided for in the country's environmental governance regime, so as to enhance environmental protection efforts during uranium mining.

It is important that, throughout the planning and design phase, the uranium mining company should engage in stakeholder consultation and participation for a harmonised joint regulatory approach during the various assessments, licensing and compliance programmes in order to propose measures that mitigate effects on the environment and the health and safety of persons that may result from the construction, operation and decommissioning of the facility.

The EMA, as the country's framework environmental law, contains numerous shortcomings pertaining to environmental governance. It is therefore recommended that sufficient legislative provision be made, either by means of amending the EMA or by the introduction of new environmental legislation that provides for civil-based instruments, such as protection of workers and whistle-blowers, and in particular that of private prosecution and increased *locus standi*, which, together with beneficial cost awards, may enable or at least encourage civil society to litigate against uranium mining companies. Furthermore, increased provision should also be made, either by means of amending the EMA or by introducing new environmental legislation, for relationship-based instruments such as the arrangements for conflict resolution, and the empowerment of civil society to serve as watchdogs. Policy documents that

encourage formal and informal (voluntary) agreements and voluntary submissions to self-registration should also be enacted. The incorporation of the abovementioned into the country's compliance and enforcement regime may significantly enhance the country's environmental protection effort in general, and that of its uranium mining industry in particular. Getting things right from the start may facilitate environmental governance and environmental protection efforts along the rest of the PLC.

#### 5.2.2.2 Construction phase

As no provision is made for environmental governance tools during the construction phase, it is vital that Namibia's environmental governance regime provide for and require the adoption, implementation and use of command and control tools, norms and standards, as well as market, agreement and relationship-based tools during the construction phase of the PLC of a uranium mine in order to establish and maintain environmental protection during this phase of a uranium mine. Hence it is recommended that the Mining Act be amended or, alternatively, that policy documents be enacted providing for and requiring other environmental governance tools.

*Idealiter*, the regulatory regime should contain concise provisions with regard to constructing mines and accessory works in a manner and style so as to enhance environmental protection during the construction phase of uranium mine facilities. In this regard it is suggested that the Mining Act be amended or, alternatively, that policy documents be enacted providing for and requiring design specifications pertaining to sustainable development and green engineering. Furthermore, design specifications from the planning and design phase must infiltrate the commercial loop (tender specifications of contract pertaining to suppliers or contractors) in order to address site-specific characteristics and to avoid or minimise environmental impacts during construction.

It is further recommended that the DEA, in conjunction with the MME, conduct research and subsequently compile a policy document that facilitates the infiltration of design specifications into the construction phase and similarly requires best practice and norms and standards and encourages green engineering with regard to the construction of uranium mines.

Seeing that independent contractors who are hired by uranium mining companies may often be primarily responsible for environmental degradation during construction, it is recommended that policy documents be enacted whereby uranium mining companies are encouraged to enter into contractual agreements with such independent contractors in terms whereof a measure of accountability is bestowed upon the independent contractors for gross environmental damage caused.

Before commissioning the plant, uranium mining companies are also recommended to conduct environmental audits, and environmental awareness and training should also be endorsed.

#### 5.2.2.3 Operational phase

Since the operational phase of a uranium mine poses the most significant environmental impacts during the PLC of a uranium mine, it is vital that the environmental law and policy framework regime as provided for during this phase of the development, have as its objective environmental protection and establish and enhance environmental governance through the adoption, implementation and use of environmental governance tools.

Although the Constitution recognises international agreements pertaining to uranium mining, the contents and provisions thereof are generally not taken into consideration during operations by mining companies. It is therefore recommended that a thorough investigation into the contents and parameters of international environmental law be launched, the findings be made public and, subsequently, uranium mining companies receive environmental education regarding same. It is also important that such findings be continually revised so as to provide for changing circumstances and new international agreements entered into.

For the purpose of environmental protection, it is vital that the cumulative impacts of uranium mining be determined and considered, especially when taking into consideration the location of the various current and prospective uranium mines, that being in the water scarce Namib Desert. Uranium mines should furthermore be required to design and implement their activities, products, service and/or facilities in accordance with or subject to the considerations pertaining to the cumulative impacts of their activities. Once the EA Regulations enter into

force, the consideration of cumulative impacts of uranium mining companies will be provided for and mandated. Nevertheless, it is recommended that the Mining Act be amended to mandate the determination of the cumulative impacts of existing mining activities, particularly uranium mining activities or, alternatively, that policy documents be enacted to direct existing (uranium) mining companies to conduct the necessary research in order to determine the cumulative impacts of their mining activities on the Namib Desert.

Recognising that Namibia's environmental law and policy regime pertaining to managing and controlling change to existing developments disclose a legal gap, it is important that environmental governance tools be used throughout the operational phase. In any event, it is important that uranium mining companies adhere to relevant legislative provisions in the event of any expansion of or modification to existing mining operations.

In order to enhance the environmental governance regime, it is recommended that the environmental law and policy framework, apart from the doing tools currently provided for, also provide for disaster management plans, administrative tools such as standard operating procedures, as well as market and relationship-based tools. In order for uranium mining companies to maximise the use of remedial actions concurrent with production during facility operations, environmental governance, checking and communication tools must be implemented in order to manage environmental issues such as water and energy consumption, atmospheric emissions (including greenhouse gas emissions), impacts on land use and waste disposal (including hazardous waste and radiation), and considerations pertaining to the biodiversity, cultural heritage sites and visual impacts.

It is further recommended that the EMA, as the country's framework environmental law, be amended to provide for or, alternatively, that policy documents be enacted that encourages checking tools such as mandatory requirements for audits to be conducted periodically, measures providing for analyses and records, public review, and the introduction of community based-monitoring committees; as well as reporting tools, such as environmental and social communication, statutory reporting and TBL reporting. The EMA may also be amended or

policy documents enacted that encourages agreement-based tools<sup>651</sup> in the form of improved co-operative agreements and controlled self-regulation so as to enhance the country's environmental governance regime.

Apart from acting tools such as technical and management control measures currently provided for in the environmental law and policy framework, further steps should also be taken to improve communication between administering agents and between administering agents and uranium mining companies in order to improve the overall environmental governance regime. Improved communication may be facilitated by means of improved co-operative environmental governance and, subsequently, it is vital that measures be introduced to improve the level of co-operative environmental governance in general and with regard to the uranium mining sector in particular.

#### 5.2.2.4 Decommissioning, rehabilitation and closure phase

As there are no environmental governance tools currently provided for during this final phase of a uranium mine, it is vital that the country's environmental regulatory regime introduce adequate provisions relating to environmental protection, remediation and rehabilitation when decommissioning and closing a uranium mine facility. It is therefore recommended that provision should be made for same in the Mining Act or, alternatively, guidance should be provided in comprehensive policy documents relating to the remediation and rehabilitation of uranium mines in order to establish and enhance the environmental governance regime. Furthermore, and as mentioned above, the EMA should be amended in order to provide for or regulate historic and future pollution so as to establish accountability for those responsible for the pollution caused in the past, the pollution being caused in the present, as well as pollution that will occur in future. It is also important that the EMA be amended, alternatively that the final EA Regulations require provision to be made for adequate final resources during the life of the mine, which resources are to be used during rehabilitation of the mine for the costs and expenses to be incurred.

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<sup>651</sup> See 4.5.10.



Given the absence of sufficient and comprehensive environmental law and policy pertaining to the PLC of a uranium mine, uranium mining companies are nevertheless recommended to use a hybrid of environmental governance instruments, which instruments are not necessarily dependant on the force of environmental law and policy, to limit or regulate their impact on the environment.

### *5.2.3 Integration of environmental governance tools into the PLC*

It is important to acknowledge and act on the need to integrate, adopt, implement and use a hybrid of environmental governance tools in an attempt to establish a sound environmental protection effort, seeing that implementing and using any of the instruments in isolation would not achieve the desired effect. Put differently, the shortcomings inherent to the different types of environmental governance instruments may be lessened by or overcome with an optimal policy mix. Hence, in order to have an effective environmental governance regime, the different phases of the entire PLC of a uranium mine, as well as interfaces with supporting and outsourced processes, need to be addressed by selecting, implementing, adopting and using an optimal mix<sup>652</sup> of different PDCA tools, norms and standards, as well as reporting tools.<sup>653</sup> Environmental protection through the PLC and the PDCA management cycle, demands the selection, adoption and use of very specific portfolios of environmental governance tools that are able to perform under specific circumstances and should cover all the phases of the management cycle, as no one tool performs equally across the entire PDCA Management Cycle. Hence a combination of environmental governance instruments should be selected from the various groups of tools in order to improve environmental protection capability when compared to the adoption and use of single, stand alone, environmental governance tools.

How should alternative environmental governance tools be selected and used in order to ensure both effective and efficient environmental protection? The following insights may guide the regulatory authorities, as well as uranium mining companies when selecting, adopting and

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<sup>652</sup> See 3.2.

<sup>653</sup> See 3.2.

using environmental governance tools or portfolios thereof to drive environmental governance:<sup>654</sup>

- Not one tool or category of environmental governance tools offers a one-stop solution to environmental protection challenges and therefore a series of tools must be selected, adopted and used in order to harness the synergies offered by both their differential performance and failure potentialities.
- There is no universal package of tools that guarantee successful environmental protection for all situations; therefore it is essential to select, adopt and use the correct or optimum mix of environmental governance tools that suit the specific conditions or requirements of a uranium mine situated in the Namib Desert.
- The efficient and effective deployment of mixed portfolios of environmental governance tools also depend on the number and independence of the role-players involved. Generally, the greater the number of role-players involved and the greater the independence among them, the better the performance potential of the environmental protection effort. A strengthened relationship between various interest groups is a powerful mechanism to drive compliance by addressing the weaknesses inherent to disjointed interests.
- Environmental governance through complex chains of the various process sequences, namely the PLC and PDCA management cycles, demand the selection, adoption and use of very specific portfolios of environmental governance tools that are able to perform under specific circumstances.
- Environmental governance tools should be selected to cover all the phases of the PDCA cycle, since no one tool performs equally across the PDCA management cycle.
- A combination of environmental governance tools selected from the four main groups of tools offer improved environmental protection capability when compared to the adoption and use of single, stand-alone, environmental governance tools.
- Alternative environmental governance tools used as stand-alone instruments in the absence of a sound command and control base generally fail to deliver on enforcement and compliance expectations. Command and control tools remain the principal driver of

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<sup>654</sup> Nel and Wessels *PER* 13(5)7-12.

compliance by organisations; therefore all portfolios of compliance tools should be based on a sound command and control regime.

In any event, environmental law should remain the primary environmental governance tool used by authorities to establish environmental protection at uranium mine facilities in Namibia as a rule-based system may be easier to administer given the country's low-capacity administrative and governance systems and the independence of the judiciary, as clear rules reduce the risk of bribery and unwarranted influence in the application of law.

By closing the loops in the country's existing regulatory framework and by establishing an efficient and effective environmental governance regime as envisaged in this study, the administering agents may actively promote and maintain the welfare of the people, ecosystems, essential ecological processes and the biodiversity of Namibia, as well as the utilisation of living natural resources on a sustainable basis to the benefit of all Namibians, both present and future, as pledged in the Namibian Constitution.

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## REPORT

Alet Louw

2 February 2012

This report serves as an attachment to the declaration regarding the final editions/corrections that have been made to the final copy of my dissertation entitled “The environmental regulation of uranium mines in Namibia: a project life cycle analysis”:

Where (Page)	What corrections/editions have been made	
i	Was:	4. PLC analysis of Namibia’s uranium mines
	Now:	4. PLC analysis of <i>the environmental regulation of</i> Namibia’s uranium mines
ii-iii	Checked and corrected page numbers following corrections/editions made	
2	Footnote #10:	
	Was:	The text of this book reflects the law of the Republic of Namibia as at 30 June 2011.
	Now:	The text of this <i>study</i> reflects the law of the Republic of Namibia as at 30 <i>December</i> 2011.
15	Was:	In order to facilitate environmental governance during the entire PLC of a uranium mining development, environmental governance instruments should be implemented, adopted and used in order to enhance and establish environmental protection.
	Now:	In order to facilitate environmental governance during the entire PLC of a uranium mining development, environmental governance instruments should be implemented, adopted and used in order to enhance and <i>achieve</i> environmental protection.
17	Was:	Greater focus on the use of fiscal, agreement and civil-based environmental governance instruments, as opposed to command

		and control regulation only, has the potential to harness market forces in the management or use of environmental resources ...
	Now:	Greater focus on the use of fiscal, agreement and civil-based environmental governance instruments, as opposed to command and control regulation only, has the potential to harness market forces in the <i>governance</i> or use of environmental resources ...
22	A footnote was accidentally omitted from the text. This mistake was rectified as follows:	
	Was:	For purposes of this study, and based on Kotzé's definition of environmental governance, environmental governance with regards to Namibia's uranium mining industry may be defined as: ...
	Now:	For purposes of this study, and based on Kotzé's <sup>134</sup> definition of environmental governance, environmental governance with regards to Namibia's uranium mining industry may be defined as: ...
47	Was:	4. PLC analysis of Namibia's uranium mines
	Now:	4. PLC analysis of <i>the environmental regulation of</i> Namibia's uranium mines
82	The following was included as introductory remarks to the various sub-sections as it was suggested that the theory of the different environmental tools be briefly discussed:	
	4.5.1 Planning tools	
	Planning requires an understanding of the gaps between the public has for the uranium mining companies and the roles these mining companies set for themselves.	
83	4.5.3 Doing tools	

<sup>134</sup>

Kotzé *A Legal Framework* 56. See 2.3.

	Doing involves implementing changes and collecting data in order to identify gaps and in order to determine whether identified gaps are closing.
83	<p>4.5.4 Checking tools</p> <p>Checking involves observing the effects of changes by continuously analysing data and pinpointing problems.</p>
84	<p>4.5.6 Acting tools</p> <p>Acting supposes examining the results obtained and redesigning the system accordingly.</p>