

# POLITICAL AND ECONOMIC INTEGRATION IN THE SADC: REFORMING THE ENERGY SECTOR REGULATORY SYSTEM

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## Abstract

The Southern Africa Development Community (SADC), the African Union (AU) and other African regional economic communities (RECs) have as their ultimate objective the political and economic integration of the African continent. The SADC is home to a number of countries, all of them striving to improve their investment climate to attract foreign investors by reducing the costs of doing business in the region. One way of achieving this is by setting targets for and speeding up political and economic integration, improving interconnectivity and thereby enlarging the market size and enhancing its attractiveness. The SADC region still suffers from high levels of energy poverty through low access levels in all countries except South Africa and Mauritius. Numerous studies have shown that greater regional trading and cooperation on power development within the SADC could substantially reduce investment and operational costs as well as carbon emissions. The need for a regional power trading pool and regional cooperation grew out of the power utilities' recognition of the vulnerability of individual countries if each continued to pursue a policy of self-sufficiency rather than out of a desire to minimise the social or financial costs of the region's power. The power sector in southern Africa is undergoing tremendous reforms, more especially since the establishment of the Southern African Power Pool (SAPP) in August 1995. The SADC, however, faces serious challenges that include diminishing surplus generation capacity and the need to ensure that SADC citizens have equitable access to electricity at affordable prices. To meet these challenges, treaties and protocols have been adopted but are failing to deliver at the implementation stage. This article reviews the SADC energy-electricity regulatory framework in the context of economic and political integration and recommends the establishment of an independent regional regulatory authority to oversee the implementation of integrated holistic energy and air pollution control and prevention, and a common climate change policy. Such a regulator would be a highly resourced regional institution that will liaise with international institutions. This independent regional authority will serve as a catalyst for regional economic integration. It will also have a mandate to introduce and coordinate the establishment of an SADC regional emissions trading scheme that will contribute to managing the mitigation of greenhouse gases (GHGs) and the implementation of global warming adaptation strategies in the region.

Keywords: SADC, energy regulation, climate change, global warming, GHGs, economic integration, political integration, treaty regime, UNFCCC, SAPP, regional independent regulatory authority

## 1. INTRODUCTION

The power sector in southern Africa has been undergoing tremendous reforms, more especially since the establishment of the Southern African Power Pool (SAPP) in August 1995. The SAPP was formed to foster and develop a regional electricity infrastructure for the mutual benefit of all Southern Africa Development Community (SADC) member states (Eskom 2010). The SADC, the African Union (AU) as well as other African regional economic communities (RECs) have as their ultimate objective the political and economic integration of the region. The SADC is home to a number of least-developed countries (LDCs), all striving to improve their investment climate for foreign investors by reducing the costs of doing business in the region. One way of achieving this is by speeding up and setting targets for political and economic integration, improving interconnectivity and thereby enlarging the market size and enhancing its attractiveness. Since its establishment, the SAPP has registered several achievements and its Coordination Centre was opened in Harare, Zimbabwe to coordinate SAPP activities and be the link between the power utilities in the region.

The SADC faces serious challenges that include a diminishing surplus capacity of power generation, which retards economic growth in the region, and the need to ensure that SADC citizens have equitable access to electricity at affordable prices so as to improve their standard of living. Musaba and Naidoo (2009) state that the SADC region has an abundance of thermal coal, widespread solar availability and large rivers for hydroelectric power generation. The region also enjoys the world's lowest coal-cost electrical energy, sourced from low-cost thermal coal-operated plants located in South Africa (Musaba and Naidoo 2009, 1–2).

The electricity energy reforms in SADC member states are at different levels of development and different models are being proposed. The region has embraced the power sector reforms in the hope of increasing capacity through the introduction of competition and private-sector participation. Over and above the challenge to restructuring the SAPP, the member states' utilities are still undergoing reforms in their respective countries. The reforms were partially implemented, with all countries retaining their state monopolies in their vertically integrated forms while amending national legislation for the power sector and introducing independent regulators. Acting on the new policy reforms, the regulators are developing appropriate frameworks for creating a conducive environment for investment and also to ensure an increase in access to modern energy services through pro-poor regulatory mechanisms.

The World Bank, through the creation of the Investment Framework for Clean Energy and Development, has conducted some studies determining the financial gap in providing access to energy in developing countries (World Bank 2006). These studies show that, currently, there is a large financing gap in the energy sector: 'about US\$80 billion per year for developing countries, or about 50 per cent of the actual needs for electricity generation.' These studies further estimate that developing countries needed an annual investment in electricity supply of US\$165 billion through to 2010,

increasing at about 3 per cent per annum through to 2030. Out of the US\$165 billion, the investment needed for access to electricity for the poor is in the order of approximately US\$34 billion per annum. The World Bank Report goes further, stating that:

The under-investment in energy is estimated to reduce GDP growth in some countries by as much as 1 to 4 percent per annum, depending on the severity of the problem. The financial health of the energy sector is an important component of meeting the energy needs of poor people. And poor people without access to modern energy suffer from health effects of indoor air pollution; are constrained from engaging in productive activities; and suffer from poor health and education services.

Hammons et al (2010, 28–29) state that economic growth of more than 5 per cent per annum for most SADC member states has resulted in unprecedented growth in consumption and demand. They argue further that ‘sustainable economic growth requires adequate electricity supply. Shortage of power has affected the economic and social development of the entire SADC region. Few countries are now expected to grow above 5% from 2010 onwards.’

The International Energy Agency (IEA) has also done some analyses of the energy investment needs up to 2030 at the regional level (IEA 2003). It reports that developing countries’ energy sectors require an investment of US\$7,9 trillion between 2000 and 2030, of which:

- Africa requires US\$1,2 trillion (4% of GDP)
- China requires US\$2,2 trillion (2,5% of GDP).

The IEA further states that developing countries’ electricity investment needs total US\$71 billion a year. In reality, in 2000, US\$30 billion was made available from the private sector and only US\$1,3 billion of overseas development aid (ODA) was forthcoming. The challenge facing pro-poor regulation in the SADC is that most poor citizens do not have access to modern energy services and therefore fall outside the mandate of existing regulators. Of course, one does not overlook the strides made in electricity and energy provision by South Africa’s post-apartheid governments through extending such services to the historically excluded black masses. But have these efforts been sustainable?

Most countries in the SADC belong to the category of least developed countries (LDCs) and experience climatic extremes which lead to low agricultural output and soil erosion. Cash crop-intensive, rain-fed agriculture leads to deforestation, soil erosion, loss of wildlife (including food supplies) and pollution. The characteristics of an LDC economy are to be found in economies that are characterised by a high birth rate, a relatively high death rate and a low life expectancy. In LDCs, high population growth is accompanied by a high dependency ratio and a low GDP per capita. LDCs often export certain primary commodities, agricultural goods and low-technology products. Consumer protection is important; however, regulators should engage with the relevant poor consumers for their voice to be heard. It is important for regulators to understand

that subsidies will remain a major tool for cushioning the poor as developed countries with lower poverty levels still maintain them. But what is important is that subsidies are properly targeted. Investors will always require credible regulatory regimes that allow for stability and predictability over time coupled with the limited discretion of independent regulators.

The energy sector has been held responsible for the escalation of air pollution and unacceptable levels of carbon dioxide emissions, hence any integrated regulatory energy regime must of necessity address the impacts on global warming and climate change in the region. According to the Southern Africa Sub-Regional Framework on Climate Change Programmes Report (Chishakwe 2010, 6–8), the main emitters of carbon dioxide in southern Africa are fossil fuel-burning sources (liquid fuels and especially coal in the thermal power stations of South Africa), deforestation and land degradation, which includes the loss of carbon from the soil. The report fingers deforestation as the second largest emitter globally of carbon emissions, after fossil fuel consumption. It is further stated in the report that cement making is also a heavy emitter of carbon dioxide: ‘... (~ 220 kg carbon per tonne of cement), contributing about 2,5% of total CO<sub>2</sub> emissions globally’ (Ragad & Prudhomme 2002). Serious concerns are also expressed regarding greenhouse gas (GHG) emissions from the degradation of forests and the removal of other vegetation types in the region. It is further stated that ‘the carbon storage, or pool, in tropical forests is highly variable and can range from 50–570 Mg/ha (50–570 t/ha), whereas subtropical savannas and grasslands hold less at 70–130 Mg/ha (70–130 t/ha)’ (Chishakwe 2010, 8).

The Intergovernmental Panel on Climate Change (IPCC), in its successive reports (IPCC 1990; IPCC 2001; IPCC 2007), has stated categorically that any change in climate is a result of global warming arising from an increase in the Earth’s temperatures. The increase results from the build-up of carbon dioxide in the atmosphere from the burning of coal, oil, and fossil fuels and the generation of GHGs. Though the countries of the SADC have contributed very little to climate change, their carbon footprint is likely to rise in future as their economic growth rates pick up. This is because of their dependence on the burning of fossil fuels for energy generation (ie liquid fuels and especially coal in the thermal power stations of South Africa). Therefore the emissions from carbon dioxide in southern Africa are a key contributor to climate change within the region, followed by deforestation and land degradation, which include the loss of carbon from the soil.

It is now a fact that the underlying causes of climate change are situated in the form of technologies that propel economic growth and consumption and production patterns, though historically and particularly they emanate from the global North. Even in the SADC region, globalisation is upon us and has not only resulted in the destruction of the environment but has also led to the commoditisation of those same natural resources. The climate change and global warming phenomena should therefore be analysed as a systemic socio-economic and political problem rather than a purely environmental

issue. The SADC region is extremely vulnerable to climate change, and in future it will be faced with a number of developmental challenges that are likely to be intensified by climate change. Some of these critical impacts will include increased water scarcity, food insecurity, ill health and climate-related diseases, the increase of urban slums, increased migration, and the increasing burden on women, particularly those from rural and poor communities, to cope with the aftermaths of climate change (SADC 2011). According to an SADC 2011 report, it is projected that by 2020, 75 to 250 million people will be exposed to increased water stress and that changes in rainfall and intensified land use will further exacerbate desertification. Further, the SADC, in its strategy document, *Climate change and adaptation in SADC: A strategy for the Water Sector*, states:

Developing countries will suffer the most from the adverse impacts of climate change due to their poor resilience. Highly vulnerable regions like the Southern African Development Community (SADC) are already feeling the impacts of climate change through increases in droughts, floods and variability in rainfall.

This article is structured as follows: section 2 presents a wide-ranging critical review of the policies, concepts and theories of regional political and economic integration, integration being viewed partly as a catalyst to systematically integrating the SADC power sector regulatory system. The SADC treaty regime is also discussed. In section 3 the climate change impacts negatively affecting the SADC are discussed in the context of the United Nations Framework Convention on Climate Change (UNFCCC) and the Kyoto Protocol. Section 4 reviews the SADC regional regulatory framework and some of the relevant regional treaties and protocols, such as the SADC Trade Protocol and Energy Protocol, which, it is argued, are fundamental to establishing an independent regional regulatory authority for energy air pollution control and prevention and climate change. The regulatory authority will be responsible for eventually introducing and developing a regional emissions trading scheme. Section 5 charts a way forward with some tentative proposals for the structuring and nature of the envisaged independent integrated regional authority. This article concludes with section 6.

## **2. THEORIES OF REGIONAL INTEGRATION: THE SADC CONTEXT**

### **General assumptions on regional economic integration**

Economic integration refers to trade unification between different states by partially or fully abolishing customs tariffs on trade. Bracewell-Milnes (1976, 36–37) states that economic integration is a ‘commonsense concept as well as a question of political diplomacy’. In this regard, Haas and Smitter (1964, 709) have also asked the following pertinent questions: ‘Does the economic integration of a group of nations automatically trigger political

unity? Or are the two processes quite distinct, requiring deliberate political steps because purely economic arrangements are generally inadequate for ushering in political unity? In response and for the purposes of this paper we may surmise that regional economic integration should be regarded as one of the policy options available to developing countries pursuing their strategies for economic development. Notable in this regard is that the SADC region is developing strategies to have the region ultimately established as a single market. As observed by Casella (1992, 115), markets are becoming larger and more integrated, and institutions are being created and/or modified to reflect the evolution of markets. Balassa (1961, 1–20) states that in everyday usage the word ‘integration’ denotes the bringing together of parts into a whole, though in the economics literature the concept ‘economic integration’ does not have such a clear-cut meaning. Balassa (1961), quoting from Myrdal (1956, 11), states that integration can be regarded as a social and economic process that destroys barriers (social and economic) between the participants in economic activities. Segal (1957, 252) states that political and economic integration should be seen as ‘a continuum in which the one cannot survive without a measure of support from the other’. He argues further that political integration is sustained by arguments concerning its external and internal effects. Regarding its external effects, Segal states that political integration is defended as substantially increasing the international political, influence and strength of ‘both the individual countries and the region’; that, internally, political integration is expected to result in a broader political and intellectual horizon, and a ‘transcendence of allegedly sterile nationalism’ (Segal 1957, 253). Myrdal (1956) had previously written that ‘the economy is not integrated unless all avenues are open to everybody and the remunerations paid for productive services are equal, regardless of racial, social and cultural differences’. Hartog’s definition of economic integration is rather restricted, because he states that integration is a rather advanced type of cooperation, as distinct from the term ‘harmonisation’, which refers to a mutual consultation on important issues of economic policy (Hartog 1953, 165). On the other hand, Marjolin (1953, 41) maintains that ‘any process which brings about a greater degree of unity’ can rightly be called ‘integration’. In this regard, Balassa (1961) states that in interpreting economic integration, a distinction should be made between integration and cooperation. He avers that the difference is qualitative as well as quantitative; that whereas cooperation includes various measures designed to harmonise economic policies and to reduce discrimination, the process of economic integration comprises those measures that entail the suppression of some forms of discrimination. He further gives as an example international agreements on trade policies, which he argues belong to the area of international cooperation, ‘while the abolition of trade restrictions is an act of economic integration’. Balassa (1961, 5) then argues:

Economic integration as a process, then, represents various measures leading to the suppression of discrimination between economic units of national states, and the resulting forms of economic integration can be characterised by the absence of discrimination in various areas. The meaning of this concept is not restricted to total integration but



encompasses various forms of integration, such as a free-trade area, a customs union, a common market, an economic union, and complete economic integration ...

In regional economic integration, national markets are unified into a single market, the rationale for transforming national markets into a single market being that it tends to improve specialisation and efficiency as well as intensify competition, and, thereby, increase trade and foster economic welfare (Sapir, 1998). This is meant in turn to lead to lower prices for distributors and consumers (as no customs duties are paid within the integrated area) and the goal is to increase trade. The increase in trade between member states of economic unions is meant to lead to an increase in the GDP of its members and therefore to better welfare. This is one of the reasons for the global-scale development of economic integration, a phenomenon now realised in continental economic blocks such as the Association of Southeast Asian Nations (ASEAN), the North American Free Trade Agreement (NAFTA) and the European Union (EU). According to Balassa (1961, 5; Carrim 1997, 154), the degree of economic integration increases in a linear manner, that is, free trade area (FTA) → customs union → common market → and economic and monetary union.

Rana (2006, 16–18) argues, however, that in practice no region in the world has adopted this textbook model. Hence, in other instances, the degree of economic integration can be categorised into six stages:

1. Preferential trading area
2. Free trade area, monetary union
3. Customs union, common market
4. Economic union, customs and monetary union
5. Economic and monetary union, fiscal union
6. Complete economic integration.

An ‘economic union’ combines customs union with a common market (Matejka 1990, 81). A ‘fiscal union’ introduces a shared fiscal and budgetary policy. In order to be successful, the more advanced integration steps are typically accompanied by the unification of economic policies (tax, social welfare benefits, etc) and reductions in the rest of the trade barriers. Viner (1950), among others, has demonstrated that regional trade integration brings benefits to countries that are united under trade integration, and that such benefits range from static gains (efficient resource reallocation, trade increase, welfare improvement, etc) to more dynamic gains (industrial development and economic growth). In further elaboration, Jaber (1970, 234–256) states that the establishment of an economic integration scheme between two or more countries has several consequences, which can be classified under two headings: ‘static effects’ and ‘dynamic effects’ (Balassa

1961, 10–14; Vanek 1962, 1370). According to Jaber (1980, 13), ‘static effects’ refers to the welfare gains or losses from a marginal reallocation of production and consumption patterns, under given assumptions. They include the production effect or inter-country substitution of trade (this effect is also divided into ‘trade creation’ and ‘trade diversion’. Carrim (1999) states that trade creation and trade diversion are possible consequences ‘of the formation of regional arrangements’. ‘Trade creation’ is an economic term related to international economics in which trade flows are redirected due to the formation of a free trade area or a customs union. The issue was first brought into discussion by Viner (1950), together with the trade diversion effect. Trade creation refers to a situation in which, after the formation of an economic union, the cost of the goods considered is decreased, leading to an increase in efficiency of economic integration. Hence, the essence of trade creation is the elimination of customs tariffs at the inner borders of the unifying states. These are, of course, states which are usually already trading with each other, resulting in a further decrease in the price of their goods. There may also be the case of a new trade flow of goods created between the states which have finally decided to integrate (Robinson & Thierfelder 2002, 587–589; Carrim 1996).

Trade diversion, on the other hand, occurs when the trade flow is diverted from one actually cost-efficient partner state to a less efficient one, that is, the one that became a member of economic union and made its goods cheaper within a union, but still higher-priced compared to the rest of the world.

In practice, both trade creation and trade diversion effects take place due to the formation of an economic union. When a customs union is formed, the member nations establish a free trade area among themselves and a common external tariff on non-member nations. As a result, the member nations establish greater intra-trading ties since protectionist barriers (tariffs, import quotas and non-tariff barriers such as subsidies) have been eliminated. The resultant economic effect of such an increase in trade is greater profit revenues. Robinson and Thierfelder (2002), reviewing the literature from various studies on Regional Trade Agreements (RTAs), posed certain questions. First, do RTAs increase welfare? Second, do RTAs hinder or help multilateral free trade? The authors concluded that empirical studies of growth in both developed and developing countries support the view that trade liberalisation policies have led to increased ‘trade and have been associated with welfare gains and more rapid growth’ (Robinson & Thierfelder 2002, 586). On the other hand, Bhwagati and Panagariya (1996) and Panagariya (1998; 2000) have argued that RTAs will probably reduce welfare in member countries and impede multilateral trade liberalisation. These writers argue that because RTAs give preferential treatment to member countries, they divert trade from ‘non-member countries, least cost suppliers’. They argue further that such trade diversion is likely to dominate trade creation, and as a result the RTA will reduce welfare in member states.

Abbott (1993) states that regional integration arrangements represent a threat to the global trading system when they discriminate in favour of regionally based enterprises. He argues that discrimination distorts the operation of comparative advantage. Such



discrimination, especially by more highly developed countries at the expense of the developing countries, is particularly problematic because it exacerbates inequities in the global distribution of wealth (Abbot 1993, 180). Robinson and Thierfelder have also referred to the work of other earlier researchers such as Lipsey (1957) and Gehrels (1956–1957), who have argued that in spite of all these arguments there are instances where welfare could improve in an RTA with trade diversion, and that that is due to ‘consumption gains’ (Robinson & Thierfelder 2002, 587n). However, all in all, there seems to be overwhelming empirical evidence, based on theoretical models, that suggests the net impact of an RTA on trade creation and trade diversion is ambiguous. As argued by Robinson and Thierfelder, everything depends on the export capacity of the partner country and how the world price from the RTA partner compares to ‘the world price from the least cost producer who is not an RTA member’. What needs to be taken into consideration is that an RTA can be net trade creating in one sector while being net trade diverting in another sector. Furthermore, industry studies of trade patterns post-RTA (Robinson & Thierfelder 2002, 590) found trade diversion in some sectors but that ‘trade creation dominates’ in others.

### **SADC political and economic integration under a treaty regime**

In order to promote regional cooperation between neighbouring countries and also to foster regional political and economic integration, states have produced and subscribe to various treaties, memoranda of understanding (eg on macroeconomic convergence, cooperation on taxation strategic documents, creation of institutions, etc), declarations and other relevant regional policy documents. As Gray (2003) has observed, it is easy for governments to commit themselves to certain obligations under a treaty, but the implementation is manifest in the governments’ subsequent activities. It is therefore obvious that the implementation of these agreements and memoranda of understanding is not unproblematic as there are always obstacles to the adherence of agreed principles and actions, as well as the functioning of created institutions compounded by tendencies of bureaucratisation (Gray 2003, 100–103). Gray has argued that there has to be, first, the political will that requires both initiative and leadership on the part of participating governments. Political will is sometimes unfortunately often undermined by competing priorities. While policymakers may be keen on signing new regional integration agreements, there is often not enough commitment to carrying through this process. Such commitments are subject to the availability of resources for implementation them, which, of course, are usually extremely limited; added to that are also some negative perceptions entertained by other participants. To succeed, some incentives to cooperate need be devised. Gray (2003) argues that it may be problematic to allocate resources to implementing international environmental commitments when other developmental or economic concerns need be dealt with more urgently. Besides that, developing country willingness to put a treaty into effect could be eroded by the perception that industrialised countries have failed to meet their own obligations.

The SADC vision for political and economic integration is one of a common future in a regional community that will ensure the improvement of the standards of living and quality of life of the peoples of southern Africa as well as freedom, social justice, peace and security. This shared vision is enshrined in the SADC Treaty and the historical and cultural affinities that exist between the peoples of southern Africa. The sub-region's mission is to promote sustainable and equitable economic growth and socio-economic development through productive systems, deeper cooperation and integration, good governance and durable peace and security, so that the SADC emerges as a competitive and effective player in international relations and the world economy. Accordingly, the SADC Common Agenda defines the region's objectives as including:

- the promotion of sustainable economic growth and socio-economic development;
- the alleviation of poverty;
- enhancing the standard and quality of life of the peoples of southern Africa and supporting the socially disadvantaged through regional economic integration;
- achieving sustainable use of mineral resources and the protection of the environment;
- achieving complementarities between national and regional strategies and programmes, and
- mainstreaming gender in the process.

The SADC Common Agenda is spelled out in article 5 of the SADC Treaty (as amended, 2009), as well as in the Review of Operations of SADC Institutions. It consists of the policies and strategies of the organisation (Schade & Matomolola 2008).

The SADC Common Agenda includes:

- harmonising the policies and plans of member states;
- encouraging people and institutions in the region to forge ties among themselves and participate in programme implementation;
- promoting the development of human resources, and
- promoting the development, transfer and mastery of technology.

The SADC Treaty also provides for the development of sector protocols which spell out the objectives, scope and institutional mechanisms for cooperation and integration at sector level.

Recent studies (Davidson 2005; Sparrow et al 1999; Musaba 2005; Bowen et al 1999; O'Leary et al 1998; Graeber et al 2005; Gnansounou et al 2007) endorse the view that trade with neighbouring countries enables power production from the cheapest sources in the region. Davidson (2005) notes that pooling agreements have been concluded

in Africa to promote regional integration via energy trading and the investments in least-cost electricity generation options. The SAPP is one of those regional powers that embarked on the creation of a competitive regional electricity market (Sparrow et al 1999; Musaba 2005). A similar initiative was subsequently launched by 14 member states of the Economic Community of West African States (ECOWAS). The aim of this ECOWAS initiative is to coordinate electricity generation and transmission in the sub-region. So far, the ECOWAS pool will be limited to the electricity exchanges among the member states based primarily on long-term contracts and the allocation of the surplus electricity production. It is envisaged that an independent regulation authority will be established to supervise the implementation of these exchanges (Manley 2002).

Gnansounou et al (2007) have reviewed related studies on regional power integration by Bowen et al (1999), O’Leary et al (1998) and Graeber et al (2005). Bowen et al, using linear programming models, demonstrated that the benefits from centralised and competitive despatch in the SAPP could reach US\$100 million per year compared to the existing bilateral electricity trade agreements. It is shown that these benefits would result primarily from the increased use of hydropower under integrated operational conditions. In another study by O’Leary et al (1998) on the SAPP, the evidence compared the costs of integrated regional development with those of independent development, where each country follows a strategy of self-sufficiency. The study showed savings of US\$785 million, or 20 per cent, during the period 1995–2010. In a recent study by Graeber et al (2005), the benefits from the optimisation of regional generation and transmission expansion planning within the SAPP are estimated at US\$2,2 billion over 20 years (2000–2020).

The centralisation of the power grid model has, however, been questioned by other researchers. Sebitosi and Okou (2010: 1451) state:

In principle the creation of super grids would appear to establish a shared network with increased reliability and cost-effectiveness for the group members. But there is reason to suspect that these grids largely serve to extract untapped natural resources from the less developed to the more industrialised members: a perpetuation of the age-old paradigm that characterised trade between colonial Africa and Europe for centuries.

The capital costs that are necessary for the massive trans-national power line infrastructure are seen as counterproductive as power gets lost in the process of transmission over long distances. Sebitosi and Okou (2010, 1451–1452) refer to the case of the Cahora Bassa Hydropower Dam (in Mozambique), a remote energy source from which power is delivered over a long distance to Johannesburg in South Africa. These authors state that in the process of such power transportation losses are incurred ‘through very expensive long infrastructure that requires continued maintenance’ (2010, 1452). Sebitosi and Okou recommend (2010, 1452–1453) that ‘instead, new industrial centers could be constructed close to these resources’. Some other observations made (Sebitosi & Okou, 2010, 1453) are that:

the bulk of power generation in Africa is coal based. The massive losses that must be incurred along the long transmission lines enroute to distant load centers mean that generation capacity must overproduce to compensate for these losses. This imposes further stresses (over and above what would have been) on the environment not only at global level in terms of climate change but also at local level the prevalence of respiratory disorders particularly in young children is well known. This also results in additional stress to water resources both at surface and underground as a combined result of both coal mining and the cooling of thermo power plants. Other hazards include land occupation where large tracts along the route necessitate the restriction of human presence/activities mainly due to health problems.

Other alternative approaches have been suggested, among other researchers, by Graeber et al (2005, 2338), who introduce what they call an 'integrated resource planning (IRP)' strategy, which is an electricity planning methodology that 'integrates supply- and demand-side options for providing energy services at a cost that appropriately balances the interests of all stakeholders'. However, the further discussion of this model is beyond the scope of this article.

By its nature, the power sector is a catalyst of development and economic growth, so its impact on the environment is crucial – the more so because the environment itself is by its nature multi-sectoral and ignores national boundaries. Therefore, cross-cutting strategies are necessary to implement energy–electricity policies, because agreements touch upon economic, agricultural, energy and even trade issues. Besides, various regional and national groups compete with one another for the same markets in order to realise local and short-range goals, though these do not translate into common goals and a united front within regional stakeholder groups (Relfon 1996, 169). In the premises, political and economic integration becomes crucial as a policy option. As stated by Graeber (2005), in the SADC region numerous studies have shown that greater regional trading and cooperation within the SADC on power development could substantially reduce investment and operational costs as well as carbon emissions (Rowlands 1998; SADC 1993; Sparrow et al 1999). In this regard, Graeber et al further state that the need for a regional power trading pool grew out of the power utilities' recognition of the vulnerability of individual countries if each continued to pursue a policy of self-sufficiency rather than out of a desire to minimise the social or financial costs of the region's power.

In the SADC region, several regional treaties attempt to harmonise country practice and encourage joint efforts at compliance, but these agreements suffer from similar problems seen together with their larger multilateral environmental agreements (MEAs). These problems include limited financial resources, poor training, a lack of political will, and a lack of firm institutional structures. Of great concern is that in the region public participation in government policymaking is absent. More direct involvement of all stakeholders in environmental governance would give greater legitimacy to the policies, decisions and acceptance by society as a whole. Successful enforcement can

depend on the extent of public support for environmental regulation. Gray (2003) has argued that the involvement of civil society in monitoring, assessing and auditing – along with free access to environmental information – will increase the effectiveness of implementation and compliance and decrease the burden on the budget. Gray (2003) suggests that NGOs can play a watchdog role and create awareness of the consequences of non-implementation.

The 1995 SADC Protocol on Energy, the 1996 Energy Co-operation Strategy, and the Energy Action Plan all place a high priority on regional cooperation in energy investment and trade, particularly in electricity. The establishment of the SAPP in 1995 from the region's national utilities therefore marked the most important step towards realising the benefits of regional electricity planning (SAPP 1997). The SADC member states have different endowments of natural resources: some have abundant hydropower resources, while others have domestic resources of coal or natural gas. Still others have no domestic energy resources but depend on imported diesel fuel to generate power. Commercial energy resources in the sub-region include non-renewables such as coal, petroleum, natural gas and electricity and renewables such as biomass, solar, wind, geothermal, mini-hydro and tidal waves. The sub-region generates electricity from both thermal and hydroelectric resources and South Africa has the sub-region's only nuclear power station. Namibia and South Africa exploit uranium for mineral exports rather than as nuclear energy sources for their domestic markets. All the SADC countries except the Democratic Republic of the Congo (DRC) and Angola are net petroleum importers and hence are adversely affected by international price movements. Natural gas is prevalent in the shallow and deepwater coastal areas of South Africa, Tanzania, Angola, Namibia and Mozambique. However, any discussion of energy and electricity supply in the SADC can never be complete without factoring in Eskom, South Africa's parastatal electricity and energy utility.

The generation and transmission of electricity in southern Africa is dominated by this utility. According to Eskom's 2012 annual report, Eskom Holdings generates, transports and distributes approximately 95 per cent of South Africa's electricity, making up 60 per cent of the total electricity consumed on the African continent (Eskom 2012). Eskom is the world's 11th-largest power utility in terms of generating capacity, ranks ninth in terms of sales, and boasts the world's largest dry-cooling power station. The organisation sells power directly to some 6 000 industrial, 18 000 commercial, 70 000 agricultural and 3 million residential customers. It owns and operates a number of coal-fired, gas-fired, hydro and pumped-storage power stations, as well as one nuclear power station. Eskom's 26 000 kilometres of transmission line span the entire country and extend into most SADC countries. According to Eskom (2012), its distribution teams 'connect an average of 1 000 new homes every day – an achievement unprecedented anywhere else in the world'. Eskom owns and operates 92 per cent of generation capacity, with municipalities and private generators owning six and two per cent, respectively. According to Graeber et al, the total amount of electricity generated in 1993 was 190 TWh (NER 1999). South Africa's generating technology is based largely

on coal-fired power stations, mostly concentrated near and to the east of Johannesburg, Emalahleni and other neighbouring districts. Coal production is therefore close to the main coal-mining areas, as are the major demand centres.

The SADC needs to deal first with the obsolescence of its electricity generation and transmission infrastructure, the unfavourable hydrological conditions and difficulties in attracting the investments for the construction of new facilities required to satisfy the increasing energy demand. Climate change and global warming, which result in prolonged drought seasons, have been major impacts on water availability and its use in generating hydroelectricity. In the 1990s, under pressure from donors, states in the region have gradually undertaken reforms in the electricity industry. The principal characteristic of these reforms has been the privatisation of public electricity companies. The goal is to raise the necessary funding from private-sector investors and especially, in the case of South Africa, the World Bank.

### **3. CLIMATE CHANGE AND GLOBAL WARMING: THE SADC REGION**

According to the national academies of sciences and other scientific institutions, observations and measurements show that the Earth's climate has always changed, flowing through series of warming and cooling cycles (Deatherage 2011, 5). However, according to successive reports of the IPCC, especially the latest one (IPCC 2007), recent large-scale anthropogenic influences have now led to dramatic changes within the world's climate system. The result is that the Earth has entered into a warming cycle of unprecedented speed at a time when it should be cooling. The changes in climate are attributed to global warming arising from an increase in the Earth's temperature due to the build-up of carbon dioxide in the atmosphere from the burning of coal, oil, fossil fuels and other greenhouse gases. The balance of evidence suggests a discernible human influence on global climate. Without specific policies to mitigate climate change, the global average surface temperature relative to 1990 is projected to increase by about 2 degrees Centigrade (between 1 and 3.5 degrees Centigrade) by 2100; the average sea level is projected to rise by about 50 centimetres (between 15 and 95 centimetres) above present levels by 2100. The stabilisation of atmospheric concentrations at twice pre-industrial levels will eventually require global emissions to be less than 50 per cent of current levels. The projected changes in climate will result in significant and often adverse impacts on many ecological systems and socio-economic sectors, including food supply and water resources, and on human health. In some cases, the impacts are potentially irreversible.

Developing countries and small island countries are typically more vulnerable to climate change. This global warming phenomenon is associated with such events as sea-level rise, glacial melts and unpredictable weather patterns. At the root of climate change is global warming, which, as observed above, is caused by anthropogenic emissions of carbon dioxide, methane and other GHGs. The IPCC, in its 2007 report,



has concluded that climate change is in large part being caused by human emissions of GHGs, and that during the past hundred years the concentration of carbon dioxide in the environment has steadily increased. In particular, the report states that:

Human activities intensify the blanketing effect through the release of GHGs. For instance, the amount of carbon dioxide in the atmosphere has increased by about 35% above the industrial era. And this increase is known to be due to human activities, primarily the combustion of fossil fuels and removal of forests. Thus human kind has dramatically altered the chemical composition of the global atmosphere with substantial implications for climate (IPCC 2007, 665).

As the warming is occurring and temperatures are rising worldwide, most notable are the impacts on the African land mass and its surrounding oceans. However, Africa is distinctive in the combination of climate-change effects. Collier et al (2008, 338) have made three observations. They state, first, that there is evidence that Africa is warming faster than the global average and that this is likely to continue. Secondly, these authors state that because Africa is such an enormous landmass, stretching from ‘about 35 °N to 35 °S, the climatic effects are very different according to location within the continent: there is no Africa-wide climate effect’. They elaborate further, stating that some areas in Africa will become drier, others become wetter, ‘and that some regions may derive economic benefit, while most are adversely affected.’ Some studies have shown that approximately two-thirds of the African continent is made up of dry lands and considered to be highly vulnerable to climate variability (Watson et al 1996). Collier et al also state that because mainland Africa is divided into more than 50 countries, these geographic variations imply not just that some people gain while others lose, but that these redistributions are essentially between countries (Collier et al 2008). The third point raised by Collier et al, as a matter of the continent’s vulnerability to global warming impacts, is that agriculture is the largest single economic activity in Africa, accounting for around 60 per cent of employment and, in some countries, more than 50 per cent of GDP. Some of this activity is ‘already close to the limits of plant tolerance, so changing climate will have an immediate and direct effect, beyond that in many other regions of the world’. The impact of global warming in the SADC region has recently been documented. For example, a Regional Policy Paper has stated that:

SADC is extremely vulnerable to climate change. The region is faced with a number of development challenges that are likely to be intensified by climate change. Some of the most critical impacts are: increased water scarcity, food insecurity, ill health and climate related diseases, the increase of urban slums, increased migration, and the increasing burden on women to cop[e] with the aftermaths of climate change, particularly those from rural and poor communities (Muchaibiwa & Ritter 2011).

The Regional Policy Paper further states that projections are that by 2020, 75–250 million people in the region will be exposed to increased water stress; and that, further, changes

in rainfall and intensified land use will further exacerbate desertification (Muchaiwiwa & Ritter 2011, 7).

A number of institutions have been created to deal with these questions. The UNFCCC was created in 1992 to provide a framework for policymaking to mitigate climate change. The ultimate aim of the UNFCCC, as stated in article 2 of the Convention, is to stabilise atmospheric GHGs at a sufficiently low level to prevent dangerous anthropogenic influence on the climate. In 1997 the Kyoto Protocol was formed as a keystone document in international climate change policy formulation. The targets contained in the protocol were to be met by 2012. Significant reductions in net GHG emissions are technically possible and economically feasible by using an array of technology policy measures that accelerate technology development, diffusion and transfer; and significant no-regrets opportunities to reduce net GHG emissions are available in most countries.

The SADC countries have contributed very little to climate change. However, because of their dependence on burning of fossil fuels for energy generation (liquid fuels and especially coal in the thermal power stations of South Africa), the emissions from carbon dioxide are key contributors to climate change within the region, followed by deforestation and land degradation, which include the loss of carbon from the soil. According to Graeber et al (2005, 2343), South Africa, Zimbabwe and Botswana are, within the SADC, the countries that rely most on coal as a source of power generation. Furthermore, according to an International Energy Agency (IEA) Report (2001), South Africa contributes about 47 per cent of the continent's carbon dioxide emissions and could therefore play a big part in reducing GHG contributions in the region. Graeber et al argue further that SADC countries 'on their own, however, cannot significantly affect global anthropogenic carbon emissions, nor do they have commitments to do so under the Kyoto Protocol to the United Nations Framework Convention on Climate Change (UNFCCC)' (Graeber et al 2005, 2343). While the SADC has a role to play in the mitigation of GHG emissions, its major focus should in the meantime be on issues of adaptation. However, for that to happen the SADC needs substantial financial resources. The region also requires information systems, technical capacity, and the right policies and institutions: the governance of climate change adaptation is as important as its financing. The provision of finance for adaptation has become a major issue in international climate policy.

#### **4. REGULATION AND NATURE OF AN INDEPENDENT REGULATORY AGENCY**

A report by the United Nations Commission on Africa (UNECA) states that electricity delivery requires adequate generation capacity and supply, and the ability to move the electricity to its end users. It defines the reliability of an electric power system as 'the

degree to which the performance of the elements of the system results in power being delivered to consumers within accepted standards and in the amount desired'. In order to provide electricity to consumers in 'a reliable manner' organisations that generate and transmit electricity must ensure that the generating and transmission-line capacities are adequate to meet demand. These organisations must also ensure that the proper operating procedures for the bulk power system are followed. In the report it is stated that 'bulk power systems are fundamentally different from other large infrastructure systems such as natural gas pipelines or long-distance telephone networks'. It is further stated that the electricity systems have two unique characteristics:

- the need for continuous and near instantaneous balancing of generation and load, consistent with transmission network constraints: this requirement stems from the absence of technologies to store electricity easily and involves metering, computing, telecommunications, and control equipment to monitor loads, generation, and the transmission system, and to adjust generation output to match or reduce load to match available generation; and
- the passive nature of the transmission network, owing to very few 'control valves' or 'booster pumps' to regulate electricity flows on individual lines: power flows according to the laws of physics (Kirchoff's Laws); and control actions are limited primarily to adjusting generation output and to opening and closing switches to reconfigure the network.

From the above it is clear that there needs to be a comprehensive scientific, administrative and managerial understanding of a relevant regulatory regime for such complex systems. Barton (2006) has assembled and analysed a number of useful definitions associated with the concept 'regulation', and they are summarised below:

- Regulation, according to Selznick (1985, 363), is a 'sustained and focused control exercised by a public agency over activities that are valued by the community'.
- For his part, Prosser (1997, 4) states that regulation 'consists of public interventions, which affects the operation of markets through command and control, though one should be aware of the fact that command and control may be delegated through use of 'self regulation'. 'Command and control' simply means conventional regulation backed by legal sanctions.
- Baldwin et al (1998, 2), on the other hand, take what may be termed the middle ground, seeing regulation as including a variety of policy tools that go beyond command and control to include taxation, disclosure requirements, contracting and even public ownership.
- Macgregor et al (2000, 348) posit that there are three elements involved in regulation: 'Firstly, there is a "conscious ordering of activity" ... Secondly, there is some reference to economic activity ... Thirdly, regulation will be institutionalised.'

- According to Vincent Jones (2002, 29), ‘responsive regulation is the systematic exercise of control for the pursuit of public purposes – social as well as economic – through the linking of law to policy instruments of force, wealth, and information and persuasion.’
- Black (2002, 1–5; 26–34) has offered nuanced and comprehensive definitions of regulation, stating, *inter alia*, that ‘regulation is the sustained and focused attempt to alter the behavior of others according to defined standards or purposes with the intention of producing a broadly identified outcome or outcomes, which may involve mechanisms of standard setting, information gathering and behavior-modification’. Black (2002, 26–27) further states that regulation ‘is thus understood here to be the intentional, goal directed problem solving attempts at ordering undertaken by both state and non-state actors’. In his summary of some of these definitions, Barton states (2006, 120) that:

Regulation is a process intended to alter activity or behavior, or to carry out an ordering, often by restricting behavior, but at times enabling or facilitating behavior that would otherwise be possible. It is systematic and intentional. It is goal oriented, even if there are multi-goals, and even if the goals get forgotten ... It is institutionalised, often in a bureaucracy that brings expertise to bear on its field of work. It involves discretionary judgment, in making rules, in deciding cases individually, and in enforcement. Its target is an area of activity that is valued, or is at least tolerated. The target is often, but not always, economic activity.

Having defined what is meant by regulation, it becomes important to explain the characteristics of the envisaged regional institution.

In this article an independent regulatory agency (IRA) at a regional level is contemplated. To qualify as such, there are certain minimum requirements that characterise an IRA:

- According to Thatcher (2002, 125–126), an IRA comprises the following: ‘the agency has its own powers and responsibilities under public law; it is organisationally separated from ministries; it is neither directly elected nor managed by elected officials.’
- Gillardi (2002, 873) states that ‘governments are increasingly willing to abandon their regulatory competencies and to delegate them to specialized institutions that are at least partially beyond their control’.
- Thatcher states further that the creation, design and consequences of IRAs represent a ‘classic example of delegation to non-majoritarian institutions’; that IRAs ‘are created by legislation; hence elected officials are their principals. They are organisationally separate from governments and headed by unelected officials. They are given powers over regulation, but are also subject to controls by elected politicians and judges’ (Thatcher 2002, 125–126).

The independent regional regulatory authority suggested in this article will be a highly modified version of an IRA, created by treaty but subject to the collective oversight of all SADC member states. Against this background, this article, by way of some recommendations, proposes ‘an independent regional integrated regulatory structure’ which will cater for the needs of the region, fully aware that the impacts of global warming need to be dealt with by formulating and developing effective mitigation and adaptation strategies. The implementation of these strategies is complex and costly, and no single SADC member state has the capacity to meet such obligations; they will have to be implemented through a coordinated collective regional action programme.

## SADC regulatory framework

The present SADC energy regulatory framework is informed by the SADC Protocol on Energy, which was signed in Maseru in August 1996 and came into force in 1997 (Rakolonjatovo & Ramilison 2008). The implementation of the SADC Protocol on Energy is as espoused by the SADC Regional Indicative Strategic Development Plan (RISDP), which was approved by the summit of political heads of government (Tabengwa & Salkin 2008, 35–38). The programme deals with the challenges of three major pillars of the sector, namely:

- Delivering sufficient, reliable and least-cost energy supplies to the region in order to attain economic efficiency and poverty eradication, given that energy is a key economic driving force.
- Harmonising legislative, regulatory and policy frameworks within the SADC region, and in so doing ushering in policy predictability for investors.
- Integrating the utilities in the SADC and as a result facilitating the pooling of energy into a single integrated market (Tabengwa & Salkin, 2008).

These initiatives seek to underscore the centrality of attaining the United Nations Millennium Development Goals (MDGs) as a new paradigm in development. The RISDP, among other things,

- provides strategic direction for efficiently implementing the SADC programme of action over a period of 15 years;
- identifies priority interventions for integration across a range of areas;
- aligns the overarching long-term integrated development goals and objectives with discrete policies and priority intervention areas;
- enhances and strengthens inter-sectoral linkages and synergies.

The SADC is undergoing a process of restructuring which has to date resulted in the SADC Energy Sector Utilities being administered from the SAPP in Harare (SADC 2006), and

regulatory issues being administered by the Regional Electricity Regulatory Association (RERA). Eskom is a founding member of the SAPP, which facilitates the relationship and contracting with the utilities and end-use customers in the SADC region. This provides the platform for a regional energy market where Eskom is able to pursue additional import options from potential regional power sources. In addition, Eskom participates in the SAPP day-ahead market, which trades electricity on a day-ahead basis when short-term surplus energy is available. Eskom is a net exporter (exports exceed imports) of electricity to the region:

- Exports = 6,30% of the total electricity available in South Africa
- Imports = 5,39% of the total electricity available in South Africa
- Net exports = 0,93%.

Most of Eskom's current exports are to the national utilities of Botswana (BPC), Namibia (NamPower), Swaziland (SEC) and Lesotho (LEC). Eskom also has trading relationships with Zimbabwe (ZESA) and Zambia (ZESCO), but these agreements are for non-firm power when surplus capacity exists and during emergency situations. In addition, Eskom exports to three end-use customers, one in Mozambique and two in Namibia.

The bulk of the imports are currently received from the Cahora Bassa hydroelectric scheme in Mozambique, with non-firm imports received on occasion from other regional utilities. Eskom has been purchasing approximately 1 250 MW from Cahora Bassa for a number of years and this agreement is effective until 2030. Eskom is currently exploring a number of other potential projects in the region, such as the Western Power Corridor Project (WESTCOR).

### ***The Western Power Corridor Project (WESTCOR)***

WESTCOR's aim is to develop Inga-3 in the DRC and the associated transmission and telecommunications infrastructure that will export energy to Angola, Botswana, Namibia and South Africa. Such activities will include:

- the building of Grand Inga, which has an estimated potential capacity of over 39 000 MW;
- the Mepanda Uncua hydroelectric project in Mozambique, with an estimated capacity of 1 300 MW;
- Kafue Lower in Zambia, with an estimated capacity of 750 MW;
- Gokwe North in Zimbabwe, with an estimated capacity of 1 200 MW;
- the 800 MW Kudu Gas-to-Power Project in Namibia;
- the Batoka hydroelectric project in Zambia and Zimbabwe, with an estimated capacity of 1 600 MW;



- the Mmamabula thermal plant in Botswana, and
- a thermal plant in Swaziland with an estimated capacity of 1 000–2 000 MW.
- The SAPP's priority projects include several interconnectors:
- Zambia–Tanzania interconnector;
- Mozambique–Malawi interconnector;
- DRC–Zambia interconnector;
- Internal interconnection of Angola.

These interconnectors are also aimed at linking three non-operating members (Angola, Malawi and Tanzania) into the SAPP grid.

### ***The Regional Electricity Regulatory Association (RERA)***

RERA has six members, namely, Zambia, Namibia, Malawi, South Africa, Lesotho and Zimbabwe. Other SADC member states are being approached to indicate their stand on the formation of regulators and most of them have indicated that they will set up regulators once all the formalities have been completed in their respective countries. The overall objective of RERA is to facilitate the operation of the national electricity regulators, to exchange information on their activities, to identify areas of common interest and to engage in regional cooperation in electricity regulation by:

- building regulatory understanding, capacity and skills among regulators and other entities with regulatory responsibilities;
- promoting the timely creation and establishment of independent regulators in countries where these currently do not exist;
- assisting in the harmonisation of legal and regulatory systems and practices governing electricity markets in the region, and
- undertaking the economic regulation of electricity interconnection and trade between SADC member states.

The process of consolidating and updating information on SADC energy programmes and projects, which is in line with the RISDP, requires more technical support and manpower than initially envisaged. Some of the more prominent challenges and constraints are that the restructuring exercise has to contend with:

- the inability of a new structure to address issues previously deliberated on by the dissolved energy sector technical committees;
- inadequate financial resources to implement projects;
- inadequate human resource capacity due to the scaling down of personnel in the new structure.

## ***Power crisis in the SADC region***

Hammos et al (2010) have identified what they call ‘the main reasons’ for the power crisis of southern Africa and aver that such crisis situations have been attributed to the following key factors. First, economic growth of more than 5 per cent per annum for most member states of the SADC has resulted in unprecedented growth in consumption and demand. In this regard, they argue that sustainable economic growth requires an adequate electricity supply. Therefore shortages of power have affected the economic and social development of the entire SADC region. Now, few countries can be expected ‘to grow above 5% from 2010 onwards’. Secondly, they have observed an increase in base metal demand on the world market, resulting in mining companies opening up in southern Africa. In Zambia and the DRC, most of the copper mines which were closed and deemed unprofitable are now back in operation. At the same time, new mines have been opened in many countries, requiring more power from the SAPP. Thirdly, these authors state that there has not been sufficient investment in both generation and transmission infrastructure over the past 20 years – the irony being that some years ago the region had excess capacity, electricity was cheap and some power stations in South Africa were closed as they were regarded as too expensive to operate. Fourthly, they observe that southern Africa is dominated by coal-fired thermal power stations and that South African power plants (Eskom) account for more than ‘80% of the SAPP installed capacity’. They also maintain that ‘in the [past] few years, coal price volatilities and [the] quality of coal have affected electricity generation’. Therefore, as a result, South Africa’s future plans are centred on increasing nuclear power, ‘by adding over 10 000 MW of nuclear by 2025’. Lastly, Hammons et al (2010) observe that as early as 1999 the SAPP predicted that the SADC region would run out of surplus capacity and informed the relevant authorities. However, the problem was ‘identified but unfortunately was not fully mitigated’.

## **5. WAY FORWARD: AN INNOVATIVE INTEGRATED REGIONAL REGIME**

The integrated holistic regional regulatory regime this article seeks to instal is one where SADC member states will be prepared to abandon part of their sovereignty and allow some aspects of that sovereignty to be subsumed under an independent regional entity, with institutions insulated from stakeholder capture and free from the influence of departmental units of particular governments. This regional entity will make its own rules and regulations and have enforcement powers. The SAPP will now be subsumed, after some modification, under this new regional entity. The SAPP also does not generally address climate change and global warming issues.

The new regional entity will have direct consultations with the UNFCCC and Kyoto Protocol regimes. The governments of SADC member states will be represented on this new regional entity through a regional council established under the protocol founding

the entity. State representatives may be ministers of finance, energy or even foreign affairs, according to each country's choice. Besides such governmental participation, the regional entity will decide on its own academically and technically qualified experts, which they will appoint without interference from the governments of member states.

Most SADC countries are high up on the scale of 'countries with the most amount of corruption in the world'. In general, research conducted on corruption in Africa over the past 50 years has shown that it is one of the most important contributors to high levels of poverty and deprivation in the region (Mbaku 2000, 70). What fuels corruption in Africa is foreign aid, which is diverted by authorities into their own personal bank accounts. The SADC member states depend on development assistance to pay for essential imports and essential domestic services. Mbaku (2000) states that the development assistance received by Malawi, Zambia and Zimbabwe in 1994 amounted to more than 10 per cent of their gross national product (GNP) (Lichthelm 1997, 63). However, Mbaku argues that in general Africa is not regarded as an attractive location for direct foreign investment (DFI) due to prevailing negative perceptions of civil unrest, crime, economic disorder, starvation and fatal diseases. Corruption therefore adds to these negative perceptions. It is further observed that due to economic stagnation and declining output, various African countries had negative average growth rates, although this trend has been reversed since 1994, especially in sub-Saharan Africa (Prinsloo & Naudé 2000, 40–48). Regarding corruption in Nigeria, Mbaku refers to Pita Agbese's observations (1992, 229–230) that,

in post independence Nigeria, all political coalitions and groups have been engaged in determined efforts to capture the apparatus of state in order to use the state's redistributive powers to amass wealth for themselves. Soon after capturing the government, the incumbent regime usually erects significant barriers to entry and monopolises the supply of legislation, thus making certain that other groups do not participate in the allocation of resources.

Therefore few, if any, SADC countries can be trusted and entrusted with the finances of this independent regional entity, so this entity must control, mobilise and disburse its own finances independently of outside influence. For example, corruption in South Africa includes the private use of public resources, bribery and improper favouritism (Lodge 2001/2009, 403–424). The 2012 Transparency International Corruption Perceptions Index assigned South Africa an index of 4.3, ranking the country 69th out of 176 countries (tied with Brazil and Macedonia). A new political order that eschews corruption must therefore be introduced in the SADC region.

With regard to the management of energy resources and their supporting institutional entities in the context of climate change regulation, an efficient regulatory system of governance must be established which will, amongst other things:

- improve efficiencies in the transmission grid management;

- improve grid reliability;
- eliminate discriminatory transmission practices by vertically integrated utilities (eg Eskom);
- improve wholesale electricity market performance, and
- introduce lighter-handed regulation.

The power pooling concept is based on the principle that the delivery of electricity requires adequate generation capacity and supply, and the ability to move that electricity to its end users. For an electric power system, reliability is therefore defined as the extent to which the performance of the elements of the system results in power being delivered to consumers within accepted standards and in the amount desired. In order to provide electricity to consumers in a reliable manner, organisations that generate and transmit electricity must ensure that the generating and transmission-line capacities are adequate to meet demand. They must also ensure that the proper operating procedures for the bulk power system are followed. It is for the SADC now to put in place credible regulatory institutions, as the region has all the requisite ingredients, as stated by Musaba and Naidoo (2009, 5), besides massive coal reserves:

the great and mighty water systems of Southern Africa have the capacity and capability to produce large scale electrical energy, in bulk. Just as Eskom had set the world's benchmark for lowest cost electrical energy employing thermal coal as primary energy, Southern African Rivers can do similar employing water as primary energy. The prime candidates for exploration are the Congo River in DR Congo, the Medico Quanza River in Angola and Southern Africa's Zambezi River in Zimbabwe, Zambia and Mozambique.

Last but not the least, the regional entity may be tasked with conducting feasibility studies that will research the optimal means by which the SADC will participate in the world's emission trading schemes through the UNFCCC, participating directly in Conference of the Parties of the UNFCCC, the Kyoto Protocol and UNFCCC finance mechanisms. It will therefore be recommended that UNFCCC funding be paid directly to this independent regional entity instead of directly to individual member states.

## 6. CONCLUSION

This article extols the virtues of political and economic integration through enhancing the economic development of the SADC region. Regional political and economic integration must be seen as just two faces of the same coin; in other words, they complement each other. The focus of this article, however, is on the integration of the energy power sector into the whole regional economy. Southern Africa is rich in natural energy resources. In the SADC region, there is definite potential to supply low-cost energy in future, with abundant hydroelectric power potential in the north, vast coalfields in the south and oil reserves off the west coast.

However, the disparate distribution of natural, human and capital resources in the region militates against the deepening of political and economic integration. These negative factors necessitate regional coordination and cooperation to ensure the development of an efficient and reliable power system. Trade can improve the security of supply through the diversification of supply and the sharing of reserve margins. The argument for full integration is based on the notions that, amongst other things, SADC member states should surrender part of their sovereignty, pool energy resources and have energy utilities subsumed under an independent integrated regional regulatory authority. Such an authority will holistically regulate air pollution control and prevention together with climate change regulation under the auspices of the UNFCCC and the Kyoto Protocol regime.

The SADC, the AU as well as other African RECs have as their ultimate objective the political and economic integration of the region. The SADC is home to a number of LDCs, all striving to improve their investment climate for foreign investors by reducing the costs of doing business in the region. All these countries have weak economies and poorly managed social and political institutions and depend on foreign aid for their survival. Instead of struggling in vain alone, these economies and institutions should be better integrated regionally, with harmonised policies and laws, all collectively sharing their resources. As been argued, one way of achieving this is by speeding up and setting targets for political and economic integration, improving interconnectivity and thereby enlarging the market size and attractiveness of the region. Of course, there is work in progress, as evidenced by the establishment of the SAPP.

It is being argued, however, that a more comprehensive regional plan should be in place which will take the form of an independent integrated and holistic climate change and air pollution control and prevention energy authority. Climate change and global warming are probably among the most significant catastrophes facing humankind. The SADC region is as vulnerable as other regions in Africa to negative climate change impacts. The changes in climate are attributed to global warming caused by burning coal, oil, fossil fuels and other GHGs. This independent integrated regional structure will serve to act on behalf of all SADC member states, with highly qualified and technologically endowed personnel in charge of its own finances to avoid 'capture' by individual governments. It is this structure that will be an interface between the SADC and the UNFCCC/Kyoto Protocol institutions and their programmes.

Other main aspects facilitated by this structure will be cost-effectiveness in the generation and supply of energy and in developing and implementing climate change adaptation strategies to enhance the region's adaptive capacity. These strategies will also lead to the development of GHG mitigation strategies in the region through, amongst other things, the establishment of a future SADC emissions trading scheme in line with the EU Emissions Trading Scheme (EU-ETS).

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