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A case study of South African mitigation actions
(For the special issue on mitigation actions in five developing countries)
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A case study of South African mitigation actions (For the special issue on mitigation actions in five developing countries)

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This article seeks to understand how mitigation actions (MAs) are approached and conceptualised in South Africa, and then to capture the particular sets of issues and characteristics relating to these actions. As such it considers three main areas of enquiry from a bottom-up methodological perspective: first, what is the South African approach to individual MAs, second, what are the barriers and challenges to their implementation, and third, what by way of domestic measures and international support could assist in overcoming these challenges. Four examples of potential South African MAs are described and then analysed: the Bus Rapid Transport in Cape Town, the South African Renewables Initiative, the carbon tax and the National Sustainable Settlements Facility. We find from considering these examples that there are significant challenges to defining an MA. We also find that, generally, South Africa is good at identifying, analysing and designing activities to mitigate emissions, but lacks in effective implementation. Two main areas of implementation risk are suggested, namely, counteracting vested interests and the availability of finance. Suggestions are made regarding how these implementation challenges might be overcome with appropriate support at the domestic and international levels.

Keywords: mitigation action implementation; financing; NAMA; South African renewables initiative; carbon tax; bus rapid transport; national sustainable settlements facility.

1. Introduction

As part of this Special Issue exploring the concept of mitigation actions (MAs) in developing countries, this South African case study seeks to understand how individual MAs are approached and conceptualised in the country and then to capture the particular sets of issues and characteristics relating to these actions.

Establishing a precise definition of an MA for the purposes of the analysis proved distractingly complex. While some of the issues around definition arising from consideration of individual MA examples are briefly discussed in the paper, the matter is left unresolved. Therefore, the term MA is used here as a working definition, loosely describing initiatives which have a strong impact on reducing emissions.

The paper has three main areas of enquiry:

1. What is the South African approach to MAs?
2. What are some of the barriers and challenges to the implementation of MAs in South Africa?
3. What by way of domestic measures and international support could assist in overcoming these challenges?

2. Methodology

The research in this article builds on a country study conducted under the Mitigation Action Plans and Scenarios (MAPS) programme, and benefitted from interaction with similar studies undertaken in other MAPS countries, reported in this Special Issue. The studies did not use a
particular theoretical framework, but rather a common set of research questions.

The analysis proceeded by establishing the South African mitigation context, and choosing and describing four examples of South African MAs. The examples were randomly chosen from the suite of prominent MAs in the country, with an emphasis on scale and emission reduction impact, but also on the inclusion of a diversity of actors, sectors and type of mitigation initiative. The research was conducted by the authors between May and July 2011, and was based on the authors’ in-field knowledge and experience, and comprised desktop literature reviews and two semi-structured interviews with key people associated with the chosen examples.

A set of criteria was then developed to consistently analyse the four examples against the study’s three areas of enquiry. The criteria were developed by firstly drawing from previous MAPS work1 on NAMAs as well as existing sources from international think-tanks like Ecofys, before posing ourselves a range of questions to broaden our understanding of how MAs are, or might be, defined, supported and potentially implemented in South Africa. The MA examples were analysed against the criteria, and conclusions were drawn.

The bottom-up method of interrogation of examples was primarily adopted to deepen our understanding of mitigation activity in the country. Although the authors acknowledge the limitations of generalising from such a small and non-representative sample, this method is, nevertheless, held to serve the overarching purpose of opening up the discourse on MA from a developing-country perspective.

3. South African mitigation activity: a brief overview

South Africa is the largest single economy in sub-Saharan Africa, with the highest CO₂ emissions on the African continent. Even though South Africa accounts for only 1.19% of the total world CO₂ emissions, the high carbon intensity of the economy means that it ranks 44th out of 185 countries infor the per capita emissions of CO₂ (CAIT, 2011).

Internationally, South Africa committed, under the Copenhagen Accord, to ‘take nationally appropriate mitigation action to enable a 34% deviation below the “Business As Usual” emissions growth trajectory by 2020 and a 42% deviation below the “Business As Usual” emissions growth trajectory by 2025 …’. The extent to which this action will be implemented depends on the provision of financial resources, the transfer of technology and capacity-building support by developed countries …’ (RSA, 2010). This ambition has become known informally within the country as the ‘Peak, Plateau and Decline’ (PPD) trajectory. As the custodian of the Durban Platform for Enhanced Action negotiated under the United Nations Framework Convention on Climate Change in Durban in 2011, the country is increasingly expected to align its domestic MAs with an ambitious international position on mitigation.

South Africa’s seminal endeavour to identify the suite of mitigation opportunities available to it occurred through the 2006–2008 Long Term Mitigation Scenario (LTMS) process conducted for the Department of Environmental Affairs and Tourism. The LTMS used the Pacala–Socolow wedge method (Pacala and Socolow, 2004), describing and quantifying 10 large, 13 medium and 9 small technological and economic policy instrument wedges to reduce the country’s emissions between 2010 and 2050. Many actions will be required to effect these and other emission reductions in South Africa. These will necessarily be very diverse, and potentially include policies, strategies, targets, voluntary agreements, regulation, standards, economic instruments, financial mechanisms, subsidies, programmes, projects, pilots, market initiatives, capacity development, information generation, innovation, institution-building, Centres of Excellence, partnerships, skills development and more. The question of whether all of these initiatives (or indeed the LTMS wedges themselves) should be referred to as MAs has not yet been formally posed in the country.

Policy discourse in South Africa so far has neither yielded a definition of an MA nor a detailed support strategy for these initiatives. The National Climate Change Response White Paper (RSA, 2011a) suggests that MA will result in the country adhering to the PPD trajectory, that different types of mitigation approaches, policies, measures and actions will be used, that actions will be identified at a sector and a sub-sector level, and that companies and sectors will be required to submit mitigation plans. It does not, however, define MA, nor does it formally establish this concept. A carbon budget approach is proposed to frame South African mitigation activity going forward, and the combination of actions incentivised will be identified based on incremental and direct costs, and broader socio-economic development impact and international competitiveness (RSA, 2011b). A suite of near-term priority flagship programmes is identified by the White Paper, including a number in all the major emitting sectors. It also indicates a framework for institutional co-ordination of mitigation opportunities to include parliament, the Inter-Ministerial Committee on Climate Change, the Forum of South African Directors General and the Intergovernmental Committee on Climate Change, with MINMEC and SALGA providing guidance on the provincial and local level.

Climate mitigation is also addressed in the climate change chapter of the National Planning Commission’s First Development Plan (launched in August 2012). However, there are problems of consistency between the
framing of mitigation targets and approach in this chapter and the Climate Change Response White Paper. The chapter supports the need for MA, emphasising the context of economic development and the realisation of the policy objectives of poverty alleviation and employment creation. It is not yet clear what the role of the Development Plan will be in the South African policy environment.

While South Africa has committed to taking ‘nationally appropriate mitigation action’ to enable its adherence to the PPD under the Copenhagen Accord, the term ‘Nationally Appropriate Mitigation Action’ (NAMA) is not extensively used in domestic climate mitigation policy dialogue. Notwithstanding this, South Africa is perceived as one of the most active countries on NAMAs in the international negotiations, having put forward suggestions on what NAMAs could look like, and how support for NAMAs could be organised through a registry linked to the UNFCCC mechanisms for finance and technology. The country’s Copenhagen NAMA commitment is dependent on international support, but so far there are only initial attempts to secure this for specific activities (e.g. SARi). Some donor activity supporting activities to mitigate emissions are evident in the country, with a focus on pilots and capacity-building; however, to date (August 2012) there has been no concerted or coherent effort by government, business or civil society.

4. A description of four South African mitigation actions

4.1. Bus Rapid Transport in Cape Town

The City of Cape Town’s BRT system, known as ‘MyCiTi’, is part of the Integrated Rapid Transit system envisaged as part of city-wide improvements of the public transport system. The BRT consists of trunk and feeder bus routes operating on dedicated bus lanes. The project comprises the physical infrastructure (roadways and stations), the buses, the centrally managed logistics control centre and tariff collection equipment (DME, 2009).

The MyCiTi network will be rolled out over the next 15–25 years to serve the entire city. The implementation of the first phase 1a started in 2010 for the FIFA Soccer World Cup with an inner city loop service, and in May 2011 a second line was operationalised.

Although the BRT project is not specifically a climate-driven initiative, it has potential to reduce emissions through encouraging a modal shift from single occupancy car usage to buses, thereby providing gains in energy efficiency and reduction in fuel combustion. A project identification note (PIN) was prepared by the City of Cape Town as part of the initial stages of a CDM project, and identified that there is the potential to reduce 1.4 Mt CO₂/year (DME, 2009). At this stage the CDM route has not progressed beyond the PIN.

The City of Cape Town has been responsible for planning, designing and implementing the BRT with some additional input from external consultants, as this is the first Integrated transport system to be designed in South Africa. The operational aspects of running the BRT network such as vehicle operators, station management, a central control centre and fare management will be contracted out. The vehicle operating companies will be designed in such a way as to incorporate existing businesses currently operating on that route.

A component of the National Public Transport Strategy and Action Plan (DoT, 2007) includes implementing high-quality, integrated, mass rapid public transport networks (IRPTNs). The MyCiTi project is part of the National Department of Transports IRPTN programme and is funded primarily through the Public Transport Infrastructure and System Grant (PTISG) (CCT, 2011). Furthermore, the 2009 National Land Transport Act (RSA, 2009) supports cities in developing their own public transport needs from planning aspects to the administering of funds for capital expenditure and subsidies. The Integrated Development Plan for the City of Cape Town has identified eight strategic focus areas of which improving public transport is one (CCT, 2007). This has been taken forward through the City of Cape Town’s Integrated Transport Plan (CCT, 2007).

According to the Business Plan for MyCiTi Phase 1a, the implementation costs are ZAR 4.6 billion. It is estimated that for Phase 1a the operating costs will have a deficit of ZAR 375 million between 2010 and 2014. The funding for this project comes from a variety of national- and city-level sources including the Public Transport Infrastructure Services Grant (PTISG), the City of Cape Town’s Capital Replacement Reserve and the External Financing Fund, the Public Transport Operating Grant, as well as local rates, a share of the fuel levy, advertising and parking revenue. The largest source of funding is from the PTISG, a national grant promoting the provision of appropriate Integrated Rapid Public Transport Network services in major South African cities. The 2010 FIFA Soccer World Cup was a key driver for implementing the project. Leading up to the world cup there was significant national funding made available for improving public transport in the host cities.

This project is a mitigation activity that has already begun implementation, largely due to available national funding and the world cup. There are, however, risks and challenges as the project progresses, including how to address the financial deficit, strengthening institutional capacity to manage a centrally managed system, potential opposition from existing taxi and bus operators, and the complexity in managing fee collection and revenue distribution. Furthermore, as it is the first large scale integrated public transport system in South Africa, the City of Cape Town has to build capacity beyond planning and
coordinating of a large infrastructure project but also the operational aspects.

4.2. **South African renewables initiative**

SARI was initiated in February 2010 as an inter-departmental initiative by the Department of Trade and Industry (DTI) and the Department of Public Enterprises to investigate ways of facilitating an accelerated scaling up of Renewable Energy production in South Africa (Zadek, Ritchken, Fakra, & Forstater, 2010). It has an ambitious stated aim of defining ‘an industrial strategy for securing the economic gains from an ambitious program of renewables development, including financing and associated institutional arrangements that would not impose an unacceptable burden on South Africa’s economy, public finances or citizens’ (DTI, 2010a).

At national level, SARI vies for prominence within a relatively crowded but largely uncoordinated energy policy space. The 2010 Integrated Resource Plan, gazetted in May 2011, outlines a new build of 17.8 GW of renewable energy for electricity generation by 2030 which equates to 9% of the SA fuel mix for electricity in 2030 (South African Renewables Initiative, 2010). However, as the National Energy Regulator of South Africa may only issue generating capacity licences within the framework prescribed by the IRP (Ecologic Institute, 2010), without changes to the regulatory framework, the Initiative’s ambitious scale-up target of between 10% and 15% renewable in the energy mix by 2013 is likely to be unattainable within the stricture of the existing ‘new build’ framework (DTI, 2010b).

In 2010, the South African cabinet approved the New Growth Path (NGP) which places job creation at the centre of government policy. SARI’s modelling suggests that the proposed scale-up of renewables would produce 35–50,000 jobs, thus aligning it with one national priority. SARI is designated as part of a scaled-up green economy programme according to the DTI’s Industrial Policy Action Plan (DTI, 2011).

Emission reductions associated with SARI that could be subject to Monitoring, Reporting and Verification (MRV) would not be produced directly by SARI as an ‘entity’, but by any renewable installations (wind farms etc.) built as a consequence of the success of SARI.

In 2011, the Initiative moved into the detailed design phase and was officially launched as a collaboration partnership at COP17 by the South African Government, the European Investment Bank and the Governments of Denmark, Germany, Norway and the UK. Institutionally, SARI is now co-chaired by the Department of Energy and the DTI (South African Renewables Initiative, 2010). It is worth noting that the key risks and requirements mirror each other: a robust and transparent institutional design and the consequent procurement process and the exercise of significant political will or ‘buy-in’ will facilitate SARI. Conversely, without these, there is a substantial risk of a lack of implementation.

4.3. **Carbon tax**

The National Treasury has signalled its intention to implement a carbon tax as an economic policy instrument to achieve greenhouse gas mitigation in South Africa (RSA, 2012; Treasury, 2006, 2011). The National Climate Change Response White Paper (Republic of South Africa, 2011a) also identified that carbon pricing will be part of the mitigation policy suite. At the time of writing, the carbon tax itself remains at an early stage of development. In December 2010, the Treasury released a Discussion Document outlining the rationale for implementing a tax in South Africa, but gives very few design indications. Following this, the Treasury convened a stakeholder engagement after comments on the Discussion Document were submitted, where modelling of the impact of the tax on the economy was presented. Preliminary design indications have been given in the 2012 Budget, together with a timeframe for the implementation of 2013/14, but there are still significant details outstanding.

While a carbon tax in itself does not reduce emissions, the changes in relative prices and responses that this induces have resulted in very significant mitigation in countries that have implemented carbon taxes (Winkler & Marquard, 2011). Academic work on a possible carbon tax in South Africa suggests a similar effect, inducing MAs of many different kinds across the economy (Goldblatt, 2010; Winkler & Marquard, 2011). Modelling for the LTMS analysed a carbon tax separately from other measures, in an energy model and also economy-wide modelling, and found that the carbon tax was the largest single mitigation intervention. Despite the indirect nature of its effects, a carbon tax is therefore a significant policy instrument for mitigation.

According to the Budget (RSA, 2012), the tax will have a broad base, covering a large number of South Africa’s emissions sources and thereby potentially inducing significant mitigation. As the tax is likely to be levied on fossil fuels, and as supporting policies take effect, it may be difficult to identify the number of tonnes of CO₂ equivalent (tCO₂e) mitigated in response to the tax. If the carbon tax covers a large part of the economy, its mitigation benefits might be found through GHG inventories rather than through direct measurement of reductions. The tax may have significantly positive knock-on effects, as the price of carbon is anticipated to stimulate low-carbon industries, products and processes across a range of sectors. The Budget indicates a tax rate starting at R120 per tonne CO₂e, but subject to significant discounts. The tax itself as currently proposed (without any supporting incentives) will self-finance, and will generate revenue although this
is not its primary purpose. How carbon tax revenues are recycled is crucial in analysing the broader socio-economic implications. Economy-wide modelling shows that revenues recycled in favour of poor households (e.g. through increasing the poverty tariff) can lead to overall positive impacts in those sectors (Kearney, 2008; Pauw, 2007). Another possibility is to use revenues for industries more sensitive to carbon pricing due to higher energy-intensity and providing incentives to improve energy efficiency. Both of these options are mooted in the Budget Review.

The carbon tax appears to be aligned both with national mitigation policy objectives and with the government priorities of growth and employment creation, depending, however, on how the revenues are recycled (National Treasury, 2011).

While Treasury is an influential department, and is determined to introduce the tax, it engages and potentially threatens incumbents in the minerals and energy sectors, and as such may face substantial opposition or lobbying from vested interests. The complexity of applying an economic instrument to an uncompetitive and regulated energy sector may also prove problematic. Institutionally, Treasury has the capacity to administer the tax, but may require assistance from external consultants and experts to design the tax, particularly those with an understanding of energy economics. While these are available domestically, international assistance is likely to be beneficial.

Therefore, the tax is an ambitious policy instrument, and one that is central to the country’s mitigation efforts. However, it requires careful design to ensure minimal negative impact on economic growth, and careful political and process management to navigate vested interests in South Africa’s carbon-intensive economy. Ensuring policy contextualisation, alignment and co-ordination with the Department of Environmental Affairs (DEA)-led overarching mitigation policy will be important.

4.4. National Sustainable Settlements Facility

The NSSF will administer financing, enabling the Department of Human Settlements (DHS) to increase the mandatory specifications of all new subsidised housing in South Africa to include solar water heaters and thermal performance improvements such as orientation, roof overhangs and insulating building materials. It is a public facility, relying largely on a combination of international and domestic public funding. The NSSF is designed to earn income through an international carbon market mechanism such as the CDM.

The Facility has substantial co-benefits in the form of improved health and reduced energy bills for home occupants, access to improved energy service for both urban and rural communities, employment generation, air quality improvements and reduced requirements for national electricity generation at peak times, and is therefore fully aligned with national priorities. It has knock-on mitigation benefits through the stimulation of demand for energy-efficient interventions and awareness of mitigation issues in the low-income sector.

The NSSF was conceived and developed by South-SouthNorth Projects Africa (SSN), a Cape Town-based NGO. The SSN-initiated Kuyasa Housing Project demonstrated the use of sustainable energy technologies in low-income housing in South Africa, together with approaches for crediting emission reductions from these under the CDM (SSN, 2004), but did not consider financing for the project beyond the CDM. This becomes critical to achieve scale, hence the development of the NSSF. SSN has partnered with the Development Bank of Southern Africa, which will host the Facility, at least in the development phase. The DHS, Department of Energy (DoE), DEA, and Department of Science and Technology, together with the South African National Energy Research Institute (now called the South African Energy Development Institute), National Energy Efficiency Association and key Metropolitain councils have been involved in developing the concept and have given it their formal support. This formal support across several government departments makes this one of the more ‘official’ MAs of the four considered in this paper.

The NSSF is in the early design and planning stage, having been proven conceptually and subjected to extensive stakeholder engagement. Further development on MRV for the programme is being undertaken under the Gold Standard and the CDM, with local technical capacity. The NSSF is being piloted at a large project scale in the housing development Cosmo City to develop and demonstrate a sustainable financial model.

The NSSF requires proving at scale, and detailed development of the mechanisms for implementation, including an institutional structure, disbursement mechanisms, MRV systems and access to the technologies and skills to install and maintain them. Proving a sustainable financing model, which effectively balances the interest and capabilities of all stakeholders, is the primary challenge of the NSSF. However, it also relies on many supportive measures that are not necessarily yet in place, including local skills to install and monitor the technologies, acceptance of the interventions by the households, a supply of domestically manufacturing technologies, and maintenance capabilities at scale. The current delivery of low-income housing is challenged by corruption and delivery issues on the ground, and overlaying a complex environmental mechanism on top of this may exacerbate these issues. However, it is also possible that these challenges could be overcome through design.

Emission reductions are achieved indirectly by the mechanism, through the housing projects which the NSSF financially enables. These are anticipated to be in the region of 25 Mt over the first 10 years of the project,
at a cost of around ZAR370 per tonne. This figure excludes energy saving and co-benefits. Depending on the eventual MRV requirements, a capacity to MRV may exist in the country, but is likely to require further development.

The NSSF needs to gain traction politically and momentum through confidence-building examples and pilots. As it spans the Housing, Energy and Environment sectors, some level of co-operation and co-ordination of these three departments on the NSSF would be advantageous.

5. Analysis of the examples

A set of criteria was developed in order to consistently analyse the four examples against the study’s three areas of enquiry. The criteria were developed by firstly drawing from previous MAPS work4 on NAMAs as well as existing sources from international think-tanks like Ecofys, before posing ourselves a range of questions to broaden our understanding of how MAs are or might be defined, supported and potentially implemented in South Africa.5

The resultant criteria fall into three subsets: descriptive, implementation issues, and NAMA-specific elements with a view to addressing issues of international financing and reporting. These are presented in the tables appearing in this section, which summarise each example’s performance against the criteria and provide the basis for the authors’ analysis.

The analysis is admittedly limited in that it considers only a very small and randomly chosen sub-set of South African MAs, all but one of which have not yet been implemented. However, it raises a number of issues relating to the South African approach to MAs, barriers to implementation and how implementation can be supported going forward.

5.1. Describing the examples

The four examples could be categorised as a local transport project; a national financing mechanism for renewable energy; a national mechanism for financing, aggregating and facilitating sustainable energy interventions in the low-cost housing sector; and an economic policy instrument (carbon tax). Therefore, while each covers different areas of mitigation, there is a strong weighting towards those that are focused on financing in the sample.

Of the four examples examined, only the BRT has been implemented, and then only in its first phase. The tax and SARi are likely to be implemented in the medium term (within two to three years) while the NSSF is a long-term mitigation project. It is interesting that only the BRT – whose primary motivator was not climate mitigation – has ‘broken ground’.

All of the activities to mitigate emissions can be relatively easily modelled to understand their emission reduction potential. However, this does not necessarily reveal much about the issue of attribution, particularly in the case of the carbon tax and SARi. For example, whilst SARi would primarily provide coordination of more ambitious action on renewable energy and a proposed financial framework to encourage investment, any reductions would not be produced directly by SARi as an ‘entity’, but by any renewable installations (wind farms etc.) that were built as the consequence of the success of SARi. Emission reductions could therefore only be counted either for individual renewable energy projects or for a programme like SARi as a whole, but not for both.

The examples were further considered for their ability to produce ‘knock on mitigation effects’, or mitigation beyond the individual activity’s boundaries. This varied amongst the examples, pointing perhaps to the difference between local and national level activities to mitigate emissions, and also potentially to the difference in the number of people, economic actors, end users or sectors the activity reached. The type of activity may also play a role, with financial mechanisms having a greater potential for additional mitigation, although potentially for different reasons (Table 1).

The four examples provided an opportunity to explore a South African approach to MA, and to gain an insight into some of the challenges of generating an MA definition. Attribution is a key element in determining an MA, but it is not always straightforward. Whilst projects and programmes which directly reduce emissions are uncontroversially MAs, those that act as indirect levers or incentives, such as the carbon tax, or financing initiatives are less clear-cut. Even more controversial are information initiatives, enabling activities and general policies or strategies. Further issues raised but not resolved by the authors included: whether it is useful to have a definition of MA at all; the importance of an implementation focus to any MA definition; and that the reason for establishing a definition would impact the outcome. Further discussion on what was agreed by the authors to be a side issue to this paper can be found in the extended report from which this analysis is drawn (Tyler et al., 2011).

5.2. Implementation issues

The analysis presented in this and the following sub-section is based on the authors’ assessment of each MA’s level of risk against the criteria. A one-star (low risk), two-star (medium risk) and three-star (high risk) system of risk or feasibility ranking is applied.

The application of the implementation risk criteria to the four examples was a challenging and fundamentally subjective process, given that most of the MAs have not yet been implemented. In addition, because the examples are at different levels of maturity, the analysis focuses on areas which have been challenging to implementation,
rather than assessing current levels of implementation. The analysis is presented in Table 2.

The highest level of risk to all the examples can be found in the two right-hand columns ‘vested interest opposition’ and ‘additional financing requirements’. International climate finance is largely being identified to cover the additional financing requirements. It is interesting that these two criteria are not yet present in the international literature relating to NAMAs. Overall, the carbon tax comes out as the least risky MA, with only technical capacity to operationalise and vested interests a potential risk. The NSSF appears to be the most risky, followed by SARi and then the BRT.

Risks arising from a poor mandate and weak or poorly defined ownership for the MA could occur when there is a disparity between what the owner typically does, and what the MA does (in the case of the NSSF), or when the MA cuts across government departments (e.g. SARi which appears to straddle Departments of Public Enterprise, Trade and Industry and Energy, and the NSSF which straddles both the DHS and the DoE). Clear, high-level and possibly legal mandates for MAs would facilitate implementation.

The risk of insufficient institutional capacity to take the MA to implementation seems to diminish, the closer the MA is aligned to successful mainstream and existing activities (e.g. the tax, which is a variant on the very well established policy tool of taxation, appears to have a lower implementation risk than the NSSF, which is a first of its kind from a variety of perspectives).

A supportive policy, regulatory and planning context is an important enabling factor for implementation, and the risks of this seemed to diminish where there is a non-climate change mitigation driver (such as the world cup driver for the BRT), or a strong owner (such as the Treasury for the tax). As noted when considering the risk of insufficient mandate and poorly defined ownership, MAs which need to cut across government departments may encounter greater challenges (eg SARi, NSSF). One way around this may be to situate an MA clearly in one area (eg the BRT in transport), with co-benefits in another (energy efficiency), but not attempt to require both to drive the MA.

Interestingly, all four examples are aligned to national priorities. This should help with implementation, and tends to suggest that they are nationally appropriate and that their mandate could be part of broader mandates or enhancements of existing mandates.

A financial structure was completed for the BRT (first phase) and SARi. The NSSF’s financial structure is under development, and the issue of a financial structure is not

### Table 1. Describing the examples.

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Timing: is this a short, medium or long term MA?</th>
<th>What are the relative CO2e saving?</th>
<th>Potential mitigation knock on effects (S, M, L)</th>
<th>Any co-benefits?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tax</td>
<td>M</td>
<td>No figures given but could be deduced</td>
<td>L (behaviour, price internalisation)</td>
<td>Recycling or revenue may yield co-benefits</td>
</tr>
<tr>
<td>NSSF</td>
<td>L</td>
<td>6 Mt per annum at full operation</td>
<td>L (education, manufacturing industries)</td>
<td>Skills, employment, health, energy poverty alleviation, avoided electricity generation</td>
</tr>
<tr>
<td>SARi</td>
<td>M</td>
<td>1.2 Bt tonnes by 2045 or 60 Mt per annum at full ramp-up</td>
<td>M (increasing of manufacturing base etc.)</td>
<td>Manufacturing, air quality, FDI attraction, skills development</td>
</tr>
<tr>
<td>BRT</td>
<td>S</td>
<td>1.4 Mt of CO2e over the first 10 years of implementation</td>
<td>S (awareness, increasing capacity at municipal level)</td>
<td>Improved air quality, reduction in transport costs, avoided fuel consumption, BoP benefits. Develop local construction skills base, formalise and grow taxi industry</td>
</tr>
</tbody>
</table>

Note: FDI: foreign direct investment; BoP: balance of payments.

### Table 2. Enabling implementation.

<table>
<thead>
<tr>
<th>Descriptive criteria</th>
<th>Tax</th>
<th>NSSF</th>
<th>SARi</th>
<th>BRT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is there a problem with mandate?</td>
<td>⊗</td>
<td>⊗⊗</td>
<td>⊗</td>
<td>⊗</td>
</tr>
<tr>
<td>Is there relevant existing institutional capacity to implement?</td>
<td>⊗</td>
<td>⊗⊗</td>
<td>⊗⊗</td>
<td>⊗</td>
</tr>
<tr>
<td>Is there a supportive planning, policy and regulatory context for the MA?</td>
<td>⊗</td>
<td>⊗⊗ ⊗</td>
<td>⊗</td>
<td>⊗</td>
</tr>
<tr>
<td>Is it aligned with national priorities?</td>
<td>⊗</td>
<td>⊗</td>
<td>⊗</td>
<td>⊗</td>
</tr>
<tr>
<td>Has a financial structure for the MA been developed?</td>
<td>⊗</td>
<td>⊗</td>
<td>⊗</td>
<td>⊗</td>
</tr>
<tr>
<td>Is there local technical capacity to design the MA?</td>
<td>⊗</td>
<td>⊗</td>
<td>⊗</td>
<td>⊗</td>
</tr>
<tr>
<td>Capacity to technically operationalse MA</td>
<td>⊗</td>
<td>⊗</td>
<td>⊗</td>
<td>⊗</td>
</tr>
<tr>
<td>Vested interests</td>
<td>⊗</td>
<td>⊗</td>
<td>⊗⊗</td>
<td>⊗⊗ ⊗</td>
</tr>
<tr>
<td>Additional financing</td>
<td>⊗</td>
<td>⊗⊗</td>
<td>⊗⊗</td>
<td>⊗⊗</td>
</tr>
</tbody>
</table>
particularly relevant for the tax which itself generates revenue and does not require much financing to implement. Importantly however, these are still at a modelling phase, and the only implemented MA, the BRT, is still in deficit. Importantly, this criteria also does not consider whether the MAs are financially viable (captured in the ‘additional financing’ risk category).

Local capacity does exist to design the NSSF and SARi, but the BRT required external expertise, and the design of the tax may too. Interestingly, it appears that the MAs which are more unique to climate mitigation (SARi and the NSSF), and further from mainstream approaches (the BRT and tax), may struggle less with capacity issues, suggesting a high level of local innovation on the design of activities to mitigate emissions. These are also the MAs which are most advanced in their development as NAMAs.

Technical capacity to operationalise was a risk to the BRT, but it is not known to what extent this may be problematic for the remaining MAs. However, any new initiative (mitigation or other) inherently requires support. If the underlying area is well functioning (e.g. taxation), then this may raise the likelihood of the MA being successfully implemented. In turn this suggests that South Africa should prioritise MAs which are well aligned to the country’s strengths.

Therefore, aspects which are playing an important role in the development and implementation of some MAs, and may be able to be expanded to others, may include:

- Alignment of the MA with underlying areas of national strength in implementation and strong mandate, particularly to counteract the present bias against implementation overall
- Close alignment of the MA with the core business of the owner or implementer
- Exploiting the use of local development co-benefits which are likely to help achieve a mandate to implement. A tenuous finding is that MAs driven by non-climate factors may have a greater chance of implementation. This could possibly be translated as ‘where-ever possible drive through other avenues, or link closely to other motivators for the project’.

While challenges to MA development and implementation could be counted as:

- MAs struggle with typical project development blockages.
- Financing and vested interests are identified as large constraints to successful implementation.
- Technical capacity to design and operate MAs is required.
- A final constraint identified is the weakness of many state institutions which give effect to delivery.

Some of these challenges are likely to be best addressed domestically, while others will require international support. For example, financing and technological capacity are something that international support will be able to assist with, but countering vested interests is largely a domestic issue, and specific to each MA. Typical project development blockages, and the weakness of existing state institutions which give effect to delivery are more intractable issues, and it is less clear how the international community could assist in overcoming these.

5.3. NAMA-specific elements

The NAMA route currently appears to be one of the most likely mechanisms through which MAs could receive international assistance, and each example was considered against criteria which are considered important for NAMA suitability. The results are reflected in Table 3 (the star system is partially utilised here again).

It would appear from the table that it would be advantageous to promote both SARi and the NSSF as NAMAs, primarily due to the level of incremental financing required to implement them. In the case of the BRT, it is less easy to measure attributable emission reductions. It is not clear how the tax could be promoted as a NAMA, despite its anticipated significant contribution to South Africa meeting its Copenhagen Pledge.

The level of incremental costs is very difficult to determine for the BRT, and potentially too for other areas where infrastructure is going to be delivered anyway. For the other three examples, the incremental costs are likely to be

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Tax</th>
<th>NSSF</th>
<th>SARi</th>
<th>BRT</th>
</tr>
</thead>
<tbody>
<tr>
<td>What is the level of incremental cost required to implement?</td>
<td>0</td>
<td>ZAR 5 billion</td>
<td>ZAR 74 billion adjusted unclear</td>
<td>Phase 1A – Implementation costs are ZAR 4.6 billion, Operational ZAR 375 million between 2010 and 2014</td>
</tr>
<tr>
<td>What is the full development cost?</td>
<td>–</td>
<td>ZAR 10 million</td>
<td>unclear</td>
<td></td>
</tr>
<tr>
<td>Is this MA being designed to receive climate funding?</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Can the emissions be monitored, reported and verified?</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Do we have the capacity to monitor, report and verify emissions?</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
</tr>
</tbody>
</table>
available. Estimating the costs up to the point of implementation is anticipated to be less complex than estimating the full cost of implementation.

SARI and the NSSF have been specifically designed in order to receive climate funding, while the tax and the BRT have not. This may be due to the underlying nature of the MAs themselves or the fact that the more mitigation specific and innovative the MA is, the more likely it will have mitigation financing as a focus.

All of the four examples will be able to provide information that would be needed for MRV of actions, although this may be difficult for the tax due to the way it is proposed to be levied (on fossil fuels as an indirect proxy). The nature of the MRV is very project specific, and it must be designed in a way that is appropriate and enabling. The level of detail on financing suggests that these MAs would also be able to quantify the financial support required for implementation.

As a cautionary note, just because it may be easy to develop a NAMA in a particular area, this does not necessarily mean that it is the right thing for South Africa to do. South African should focus first on developing MAs that are inline with their national development priorities and domestic capacity, and secondly on whether they then fit an emerging international support mechanism.

6. Findings and conclusion
A consideration of South Africa’s mitigation context and policy approach to MAs reveals a range of approaches to implementing and finding support for individual MAs and broader enabling activities. However, there are many diverse MA activities under way, and the policy context is evolving. MAs currently under development experience a range of challenges, only some of which are likely to be able to be addressed with international support. Implications for the developing NAMA mechanism could be drawn from this.

In order to gain additional understanding of MAs in South Africa, a bottom-up analysis of four examples of activities to mitigate emissions were analysed according to a set of criteria developed for the purposes of this analysis. Probably most significantly, each MA considered was found to be very different, suggesting that the remaining MA population may be equally diverse. If this is confirmed, it would imply that caution should be exercised in seeking standardisation of MAs and by implication, NAMAs. The case study approach, while limited in the extent to which its findings can be generalised, does shed some light on understanding MA from a bottom-up South African perspective.

Arriving at a definition of an MA proved difficult, and was resolved. A number of questions arose which may be worth taking up in future work.

The only MA of the four examples considered in the paper which had been (partially) implemented at the time of writing, the BRT, was not driven by mitigation concerns at all, but rather by the availability of funding for the 2010 FIFA Soccer World Cup. A number of factors appear to be constraining MA implementation, including the availability of financing, vested interests, and a weakness of state institutions. Some of these are able to be addressed through international support, while others are inherently domestic issues that could possibly be countered by aligning MAs with current areas of implementation strength within South Africa, focusing on a broader set of national development priorities and avoiding MAs that fall across more than one government department. A unified understanding of MA, and a plan or series of plans to implement MAs would clearly be beneficial, and all the more so if the mandates for action are linked to actual projects and programmes that directly deliver emission reductions.

With regard to receiving international support, certain MAs appear more appropriate for development as NAMAs, because they clearly require significant financing and because they lend themselves to MRV. It is important that MAs drive the development of NAMAs, not the other way round, as this may lead to problems with implementation if the NAMAs are not aligned with areas of implementation strength in the country.

Further work is required to verify these findings, and to expand on them. At this point, it is hoped that they will catalyse discussion within the MAPS programme and beyond regarding approaches to, implementation of and support for MAs.

The study also raised a number of areas for further research. Analysis of a broader set of MAs, particularly including a greater variety of types, could enrich the working definition suggested here and aid implementation. Each criterion used in the analysis could also be significantly further defined, most usefully in conjunction with an interrogation of a broader set of MAs. The role of the private sector in South African MAs could be further explored. Finally, an analysis of additional implemented MAs, where available, would strengthen the findings.

Notes
1. The MAPS programme is a collaboration between a number of developing countries, promoting best practice in mitigation action planning or scenarios development. The MAPS programme seeks to achieve this by support to in-country processes informed by research. It seeks to share and deepen the leanings through collaboration between Southern experts supporting government programmes: http://www.mapsprogramme.org
2. While sustainable energy interventions are encouraged in the National Housing Code (2009), there is no corresponding budget allocated to finance these.
3. Including GS small-scale PoA registration, and continued work on large-scale methodologies which incorporate a ‘suppressed demand’ approach to crediting, and simplified monitoring requirements.
4. Further details of the development of the criteria is available in the full report: Tyler, Boyd, Coetzee, and Winkler (2011).

5. Further details of the development of the criteria is available in the full report: Tyler, Boyd, Coetzee, and Winkler (2011).

References


