The National Climate Change Response Green Paper 2010

South Africa is the largest CO_2 emitter on the African continent, and the 12th largest emitter in the world. As such, the country has a moral responsibility to act swiftly and decisively on climate change. It cannot be underestimated how important the National Climate Change Response Policy (NCCRP) is in terms of driving this change forward. This policy cannot be weak, or lack detail and ambition, but must instead drive forward significant emissions reductions and the significant uptake of renewable energy and energy efficiency. Indeed, this policy must be the cornerstone of a "coordinated, coherent, efficient and effective response to the global challenge of climate change" (page 4).

1. Introduction

Overall, the document is well-contextualised, with good language around the urgency to act on climate change, and how South Africa needs an urgent transition from the present energy intensive economy to a low carbon, low risk economy. However, the document appears to be very preliminary, and in general just outlines key issues, and does not go into any detail on the actual question on how to deal with them. It lacks concrete targets and timelines, which are necessary to ensure appropriate climate action in our country. Though the NCCRP is intended to be 'mainstreamed' in all national planning regimes (page 6), and other policies, legislation and regulations need to be fully aligned with the NCCRP (page 30), in reality the NCCRP is too vague to allow for the kind of 'alignment' which would result in the concrete actions needed to protect the climate.

Long term goal

On page 4, reference is made to securing a binding, multi-lateral international agreement that will effectively limit the average global temperature increase "to at least below **2ºC** above pre-industrial levels". This reference to "at least **2ºC** above pre-industrial levels" continues throughout the document. Why is it that the South African government is not making reference to a long-term goal of limiting the average global temperature increase to **1.5ºC**, when this is the Africa Group position, of which South Africa is a committed member?

An increase in global temperature of even 1.5ºC could lead to irreversible impacts, and a goal of 2ºC risks triggering catastrophic runaway climate change with potentially huge negative economic impacts for South Africa and the rest of the African continent.

2. The South African Climate Change Response Objective

In this section, the first bullet point notes that South Africa has the climate change response objective of "making a fair contribution to the global effort". However, it has already been noted that South Africa is the highest emitter on the African continent, which means that the country

has a responsibility to act decisively on climate change. As such, to overcome the country's dirty past development pathway, Greenpeace Africa believes that South Africa needs to become a climate leader and must make a real effort to help *lead* the global effort to achieve the stabilization of greenhouse gas concentrations. The "fair contribution" language in bullet one should therefore be changed to "*taking a leadership role in the* global effort to achieve the stabilization of greenhouse gas…". The crisis posed by climate change requires real leaders – it is not enough to just do what each country considers 'fair' or 'enough'.

3. Principles

The principles section of the document is a comprehensive one. However, more detail should be added to the 'precautionary principle' bullet. In essence, the precautionary principle is one of the key reasons for South Africa (and the world) to act on climate change. One of the most important expressions of the precautionary principle is the Rio Declaration from the United Nations Conference on Environment and Development. Principle 15 of the Rio Declaration reads:

"In order to protect the environment, the precautionary approach shall be widely applied by States according to their abilities. Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation".

This definition should be much more closely incorporated into the definition on page 6.

In addition, while in general the principles of this document are sound, there is a major contradiction between the principles as laid out in section 3 of the document, and the rest of the document – where continuing with a Business as Usual (BAU) approach appears to be sanctioned. Principles such as the Precautionary Principle, the Polluter Pays Principle and the People-centred Approach call for a systematic change to how the SA society operates and produces its energy.

4. The South African Climate Change Response Policy

A key element that is missing in this section is the "massive/ambitious uptake of renewable energy". In reality, research conducted by the Institute for Sustainable Futures for Greenpeace Africa shows that there are massive associated job creation benefits from renewable energy[1].

[1] Rutovitz, J. 2010. South African energy sector jobs to 2030. Prepared for Greenpeace Africa by the Institute for Sustainable Futures, University of Technology, Sydney.

While prioritisation of mitigation options that will allow South Africa to peak, plateau and decline its emissions is commendable, unfortunately the dates listed in this document are inconsistent with what is required by science – this must be amended. An increase in global temperature by 2℃ risks triggering catastrophic runaway climate c hange; instead, global emissions need to peak as soon as possible, and return to well below current levels in order to limit the global temperature increase to less than 1.5℃. South Afri ca is not exempt from this. A plateau in emissions for 10-15 years is absolutely not in line with what is required by science. As the reality of climate change continues to outstrip research findings, it is becoming clear that reaching the 'tipping point' is a far more immediate threat than originally thought, and the window of opportunity for avoiding runaway climate change is rapidly closing for good. Climate change is a crisis, and has potentially catastrophic impacts for South Africa, the African continent and the planet. Although we welcome the governments' commitment to peak, plateau and decline emissions – this is not something that can be delayed.

In addition – deviation from BAU by 42% in 2025 is a commendable goal. However, the legitimacy of the goal hinges on how 'Business As Usual', and the deviation away from that, is defined. It still remains unclear exactly how the South African government is defining BAU and what is included in this definition, and what is not. This policy needs to be much clearer about how 'business as usual' is defined, and how the emission reduction trajectory will be achieved. In addition, it should not only mention emissions reductions compared to BAU, but should also identify concrete and absolute target reductions.

On page 7 (and again in the section on industry and mitigation), note is taken of perceived/potential border tax adjustments, and in order to avert this threat the Green Paper makes mention of response measures for carbon intensive industries. For South Africa's climate change strategy to make special mention of high carbon sectors as if they are to be protected is unacceptable – this is a very dangerous way of looking at how industry in South Africa needs to evolve in the face of the climate change crisis. In reality, industries should be supported to move to less carbon intensive forms of production, but they should not be protected, and the timeframes should not be overly long – industries in South Africa need to adapt to a carbon constrained world. In reality, polluting industries in South Africa need to be held accountable fortheir major contribution to emissions, as demanded by the 'Polluter Pays Principle' defined in section 3 – and if this policy document does not do this, no other policy document will.

5. Policy approaches and actions

Section 5.2 Key Adaptation Sector – Agriculture

While Greenpeace welcomes the inclusion of agriculture in the National Climate Change Response Green Paper, more emphasis needs to be given to the importance of ecological farming in ensuring food security, mitigating and adapting to climate change, and sustainably

managing South Africa's natural resources. This depends heavily on participatory and enabling strategies to be developed with inclusion of small scale farmers, including their traditional and local knowledge. We strongly recommend the incorporation of the findings from the International Assessment on Agricultural Knowledge, Science and Technology for Development (IAASTD[2]).

Agriculture contributes significantly to greenhouse gas (GHG) emissions. Agricultural soil and livestock directly emit large amounts of potent greenhouse gasses. Agriculture's indirect emissions include fossil fuel use in farm operations, the production of agrochemicals and the conversion of land to agriculture. The total global contribution of agriculture, considering all direct and indirect emissions, is between 8.5 – 16.5 Pg CO_2-eq, which represents between 17 and 32% of all global human-induced GHG emissions, including land use changes[3].

The implementation of industrial concepts of economies of scale into agriculture has not only failed to fulfil the goals of 'feeding the world' in a sustainable way, it is also among the greatest risks of an uncertain future of climate change and other global environmental threats. Both wild and domesticated diversity of plants and animals, as well as the cultural and traditional diversity of agricultural practices and solutions is probably the single most important insurance against future large scale failures in the context of a changing climate.[4]

The solution to the environmental problems caused by today's agricultural methods lies in a shift to farming practices which could provide large-scale carbon sinks, and offer options for mitigation of climate change: improved cropland management, grazing-land management, and restoration of organic soils as carbon sinks. Humane livestock production methods can contribute to a significant decrease in greenhouse gas emissions from the livestock sector[5].

Agricultural research, development, trade and financial support should be directed towards ecological farming practices that mitigate greenhouse gas emissions from agriculture (for example by increasing carbon sinks) and enhance the resilience and adaptation capacity of agricultural systems (for instance, by increasing biodiversity in farming and water-holding capacity of soils). Special research emphasis should be placed on reducing the reliance of agriculture and the food chain on fossil fuels (for agrochemicals, machinery, transport and distribution).

Research and development investments and government support should exclude unsustainable input-intensive industrial agriculture as well as genetically engineered crops, which are not a

[2] Science and Technology for Development. 2008. International Assessment of Agricultural Knowledge www.agassessment.org
[3] Greenpeace. 2008. Cool Farming: Climate Impacts of agriculture and mitigation potential.
[4] Greenpeace. 2009. Agriculture at a Crossroads: Food For Survival.
[5] Dr Michael C Appleby. 2008. Eating our Future: The environmental impact of industrial animal agriculture. WSPA.

solution in either adapting or mitigating climate change but supporting unsustainable industrial farming practices.

This Green Paper should encourage the internalisation of environmental externalities, including policies rewarding ecosystem services and imposing taxes on carbon emissions, agrochemical use and water pollution.

Special attention must be given to the knowledge, capacity and needs of small farmers, especially women.

More emphasis should also be given to preparedness for climate change impacts, e.g. fodder storage, crop storage out or above flood zone and the inclusion of comprehensive preparedness plans for farmer and agriculture actors.

Section 5.4 Key Mitigation Sector - Energy

Page 13, paragraph 3 refers to coal, which is "abundantly available". However, the abundance of South African coal is actually in doubt, and according to Hartnady[6] (2010) South Africa may be facing 'peak coal' (whereby half of the country's estimated 23 gigatonnes of coal have been exploited) in 2020 and there is the real potential that South Africa's coal reserves have been over-estimated. As such, an estimated 'abundance' of coal is no reason or excuse at all to continue to exploit dirty coal, or consider carbon capture and storage (CCS) technology.

In paragraph 5.4, page 13, it is stated that a nuclear energy roll out is one of the key elements that would result in the largest emission reductions. However there are a number of problems with this statement:

Nuclear energy is a dangerous waste of time and undermines climate protection by diverting valuable resources away from the clean energy and energy efficiency measures. A choice for building new nuclear capacity in South Africa will also block the development of renewable technologies in the longer term, by locking the country's electricity system into the old, centralised generation programme. On top of that, nuclear energy is a risky investment. The costs of nuclear energy are highly underestimated in the current Draft IRP2010. The negative learning curves of nuclear energy are in stark contrast with the trends for renewable energy economics; their learning curves are steep and promising. Moreover, renewable technologies do not suffer from the inherent and unsolved problems of nuclear energy, such as issues related to safety, proliferation and long-lived, dangerous radioactive waste. Combined with the environmental and health risks associated with these problems, they also make nuclear energy an economic liability.

[6] Hartnady, C.J.H. 2010. South Africa's falling coal reserves. South African Journal of Science.

Greenpeace believes a choice for more nuclear power would be a fatal mistake for the energy future of South Africa. No decision has been taken to expand South Africa's nuclear capacity, and it is pre-emptive (and frankly worrying) that this policy discusses nuclear energy as if it is a *fait accompli.* In fact, concentrated solar power (CSP) is much more commercially viable/implementable than nuclear, and it has the capacity to produce baseload power as is confirmed on page 13 of the NCCRP document. As such the government should be focusing on the rapid further development of this non-risky technology **instead** of nuclear energy.

In addition, in paragraph 5.4 it is stated that "a further key concern is the impact of this on job creation and destruction and the resultant effects on incomes". In fact, research completed by the Institute for Sustainable Futures in 2010 indicates that if large scale renewable energy were implemented in South Africa immediately, there would be a net increase of 78 000 *direct* jobs by 2030, with thousands of additional *indirect* jobs[7]. Indeed, the coal industry is a sunset industry, and has been steadily losing jobs around the world for the last 20 years.

We do commend that notice is being taken of CSP's potential to provide baseload power. This is a real step forward. The fact that CSP can a) provide baseload power and b) is expected to improve its competitiveness dramatically over the next **five** years – this negates the need for nuclear investment and new coal-fired power stations after Medupi.

Demand-side management and energy efficiency are indeed crucially important in terms of reducing South Africa's emissions. However, effective and binding targets need to be set for demand-side management and energy efficiency if the country is to see the full benefits of these strategies. Voluntary demand-side management and energy efficiency measures will never achieve the real potential benefits. In addition, the final paragraph on page 13 discusses the need for "rapid implementation of the renewable energy support mechanisms" – however this is unnecessarily vague. It is crucial that deadlines/targets are set for these energy support mechanisms to be implemented.

5.4.1. Greenpeace welcomes the integration of a climate constraint into the IEP and IRP. However, clear targets and timelines need to be set.

5.4.2. While it is commendable that the IRP and its future iterations would be modelled so as to take account of the peak, plateau and decline trajectory, as mentioned earlier in this submission, the plateau period is far too long and this should be re-assessed. This point mentions "the implementation of far reaching energy efficiency measures" – this is overly vague, and it is crucial that this policy gives both targets (i.e. percentages/numbers) and

[7] Rutovitz, J. 2010. South African energy sector jobs to 2030. Prepared for Greenpeace Africa by the Institute for Sustainable Futures, University of Technology, Sydney.

deadlines (i.e. timelines) for energy efficiency, but also for renewable energy implementation.

5.4.5 This point mentions CCS as one of the key components of emissions reductions. In fact, CCS should not be included in this document at all, because it only offers false hope for effective emissions reduction. In reality, as an experimental technology still under development, CCS is not projected to become viable in the next 10-20 years. Which means that if it even works at all, CCS would deliver far too little, far too late to prevent catastrophic climate change. In addition, this point mentions "the transition to a low carbon economy" – however to just mention this transition is not enough. What is actually needed is a *just transition* to a low carbon, low risk economy, and this should be guided by a *low carbon development plan*. The NCCRP must lay the basis for this plan by spelling out a detailed process to lead to the development of such a plan, which would allow the fundamental transformation of the South African economy. Such a plan should enable a set of Nationally Appropriate Mitigation Actions (NAMAs), with concrete targets and timelines. It must also provide for the means to evaluate a national registry of these NAMAs.

5.4.7 The words "review and scale up" are vague, and do not offer any timelines. In reality, the 10,000 GWh 2013 renewable energy target is not nearly ambitious enough, and as such, will not promote competitiveness for the renewable energy industry, nor will it be enough to effectively respond to climate change. It is crucial that a timeline is included and that the scaling up of the renewable energy target is in line with a much larger overall increase in renewable energy – a minimum of 36% of South Africa's electricity could technically come from renewable energy by 2030, and that is the **absolute minimum** of what the South African government should be aiming for[8].

5.4.9 This paragraph in the Green Paper is extremely premature and should be excluded from the White Paper. It presupposes that nuclear energy will be chosen to become a future cornerstone of South Africa's electricity generation. No official decision has yet been taken to develop a nuclear power station fleet with a potential of up to 10 GWh by 2035, nor has an official decision been taken for the first reactors to be commissioned from 2022. Indeed, nuclear energy is not a solution to climate change, will cost far too much, and is an exceptionally environmentally risky practice. Greenpeace urges the department to carefully evaluate the risks of nuclear energy, and to remove it in the next iteration of this document.

[8] Greenpeace International, European Renewable Energy Council. 2008. Energy [R]evolution. A sustainable South Africa energy outlook. A full copy of the report can be downloaded at: http://www.energyblueprint.info/1005.0.html

5.4.10 Although Greenpeace welcomes the development of renewable energy policy, legal and regulatory frameworks that allow for differentiated but specific targets, parameters and tariffs for all renewable energy technology options – a clear timeline should be included in this document, which incorporates the urgency for the country to develop, and implement clean energy options.

5.4.12 It is very disturbing that the National Climate Change Response Green Paper emphasises the investment in 'new and clean coal technologies'. There is no such thing as 'clean coal'. The burning of coal is one of the biggest contributors to climate change, and coal is a dirty fossil fuel that can no longer be depended upon in a carbon constrained world trying to mitigate the impacts of climate change. This point appears to be implicitly giving the mandate for public investment in coal technologies, and this should be unreservedly removed. Instead, emphasis should be given to ensuring no further coal expansion, and the rigorous application of stringent efficiency and emissions standards for existing coal plants.

5.4.13 Although Greenpeace welcomes ambitious and mandatory targets for energy efficiency and in other sub-national sectors, this document is once again very vague in terms of timelines, and setting up a process for how and when such targets would be attained. In addition, 'scaled up' should be quantified.

5.4.15 Developing and implementing mandatory appliance labelling is crucial to encourage the evolution of industry towards energy efficiency. However, this should not only be limited to household appliances, and any sort of efficiency labelling should also include the phase out of the least efficient technologies. The benchmark for 'efficiency' should also be increased periodically.

5.4.22 It is unclear how the department would define 'low carbon technologies' – a definition of this should be included in this document. In addition, it is unclear *how* the South African government would promote the development and implementation of appropriate standards and guidelines – this should be more clearly spelt out in the document.

5.4.23 The development of a legislative, policy and regulatory framework to support CCS is pre-emptive and should be removed from the document. Research on this technology is ongoing, and a framework to support CCS implies that a) it is already working and b) it is a suitable mitigation technique for climate change. In fact, CCS is far from being implemented, and its use will only continue to lock South Africa's future into dirty energy.

Section 5.5: Key Mitigation Sector – Industry

In paragraph 5.5 (page 16), reference is made to the fact that significant reductions in the process emissions associated with the coal to liquid conversion process "will only be achieved

through the use of technology that is still under development and potentially very expensive such as carbon capture and storage". Therefore, where it is impossible to achieve significant reductions in the process emissions, the nature of the industry itself should be re-evaluated and re-assessed. Sasol's Secunda plant is the largest point source of CO_2 emissions **in the world**. This situation cannot remain as it is, and South Africa should be looking to phase out coal from its economy.

5.5.2 The first sentence has something missing – it ends with "and" .

5.5.4 Although it is important that the South African government considers all measures to reduce emissions, including carbon taxes – the question remains as to what the tax would actually be funding. Greenpeace strongly urges the government to ring-fence the money coming from carbon taxes to go towards renewable energy development as a transitional mechanism to support the implementation of renewable energy for the next 20 years. In addition, a deadline for the implementation of the tax should be included, and the final part of the sentence should read: "including process emissions from the coal to liquid fuel process *at source*". It is crucial that the money generated from the taxation of dirty industry in South Africa is redirected in order to generate the appropriate finance for low carbon development and the unilateral implementation of those negative and zero-cost ("no regret") measures that can be achieved without external assistance. This would allow the South African government to gather resources from within the country to act on climate change for medium cost projects while the climate negotiations are still ongoing, and before the process delivers funding for high cost projects. It should be noted however, that given South Africa's level of economic development, emissions per capita and carbon intensity, the country must increase its domestic effort to finance its own actions.

5.5.6 Again, support for the implementation of CCS is mentioned in this paragraph. All references to CCS should be removed from this document, due to the doubts raised in the introduction of this section regarding the costs and ongoing development of this technology.

5.5.7 This sentence should end: "with sufficient time and development space for a *just* economic transition, *given the urgent imperative to act to avoid catastrophic climate change*".

The section on Mining and Mineral Resources is based on a continuation of BAU in this sector. However, based on the principles defined in section 3 on page 5, action should be taken to reduce the harmful impacts of this carbon-intensive industry. In addition, mitigation measures in other parts of the world are likely to impact this sector. Therefore, the NCCRP should not assume that the Mining and Mineral Resources sector remains the centre of the economy.

9. Monitoring, Evaluation and Review

It is crucial that this section is strengthened, as this is one of the most critical elements of ensuring an effective response to climate change. This section must include sectoral benchmarking and targets (not set by the sectors themselves).

Key recommendations:

Agricultural research, development, trade and financial support should be directed towards ecological farming practices that mitigate greenhouse gas emissions from agriculture (for example by increasing carbon sinks) and enhance the resilience and adaptation capacity of agricultural systems (for instance, by increasing biodiversity in farming and water-holding capacity of soils). Special research emphasis should be placed on reducing the reliance of agriculture and the food chain on fossil fuels (for agrochemicals, machinery, transport and distribution).

Research and development investments and government support should exclude unsustainable input-intensive industrial agriculture as well as genetically engineered crops, which are not a solution in either adapting or mitigating climate change but supporting unsustainable industrial farming practices.

The South African Government policy should encourage the internalization of environmental externalities, including policies rewarding ecosystem services and imposing taxes on carbon emissions, agrochemical use and water pollution.

Special attention must be given to the knowledge, capacity and needs of small farmers, especially women.

More emphasis should be given to preparedness for climate change impacts, e.g. fodder storage, crop storage out or above flood zone and the inclusion of comprehensive preparedness plans for farmer and agriculture actors.

This Green Paper notes that the climate science community shall work together to improve projections of climate variability, climate change and their impacts, key vulnerabilities in affected sectors and communities, and exploration of appropriate mitigation and adaptation responses and their implementation, including in the area of technology research and development, and its implementation. It is therefore recommended that as part of this policy, a network of scientists that are mandated with constantly monitoring climate science/impacts is created.

It is crucial that there is alignment between this Climate Change Response Policy, the Integrated Resource Plan (IRP) and the Integrated Energy Plan (IEP). Indeed, the alignment between the IRP, IEP and the NCCRP is non-negotiable, and it is the IRP and IEP that should be informed by the NCCRP, not the other way around.

This Green Paper suffers from being overly vague particularly when it comes to targets. It is recommended that further work is done to ensure that much stronger detail/solid targets, with timelines are incorporated into this document. South Africa cannot afford to continue to wait for the further elaboration of policies and plans – this Green Paper provides the crucial opportunity for concrete plans and targets to be articulated, with timelines and deadlines and must clearly outline who is responsible for implementation.

Instead of planning to import renewable technology (such as solar panels), it is recommended that the South African government begins to seriously plan and facilitate the development of a local (South African) industry for renewable energy. This would mean that job creation would not be limited to service and maintenance in the renewable energy, but would also include the manufacturing industry. Creating a strong manufacturing base will be significant for South Africa's economic development, and that should be explicitly mentioned in this document.

A low carbon development plan - as *encouraged* by the Cancun Outcome - with clear timelines and targets should be developed by the department. This policy represents a framework for South Africa's transition to a low carbon economy, but it is crucial that a concrete action plan is developed based on this policy – and this plan should be developed with urgency, clear timelines and an outline of which department/s must be responsible for implementation.

The 'scaled up' energy efficiency and renewable energy targets should be inscribed into effective national legislation to ensure its implementation. This should be explicitly discussed in this document.

Any sort of efficiency labelling should also include the phase out of the least efficient technologies. The benchmark for 'efficiency' should also be increased periodically.

Greenpeace strongly recommends that this document considers the opportunities represented by using renewable energy to change to a more decentralised electricity system.

Nuclear energy undermines climate change protection by diverting resources away from a clean energy future, and as such should be removed from this document entirely.

All references to the unproven technology of CCS should be removed from the document – and the money that is being channelled to CCS should instead be channelled into proven, renewable technology. CCS is a risky, expensive and potentially dangerous waste of time, which (if it works at all) will deliver too little, too late to stop climate change. Instead, the resources that are being invested in CCS should rather go into proven renewable energy technologies, and CCS should be removed from this document entirely.

Conclusion

Effective action to combat climate change requires leadership. It requires that the South African government takes responsibility for the carbon intensive nature of the South African economy, and the unacceptably high level of emissions, and works together with the people of South Africa to ensure an urgent and just transition to a low carbon economy. Global emissions must peak by 2015, and start declining rapidly thereafter, reaching as close to zero as possible by mid-century to avoid catastrophic climate change – it is crucial that South Africa takes a leadership role in working to achieve this goal both within the country itself, and within the multilateral United Nations Framework Convention on Climate Change negotiations.

Climate chaos can and must be prevented, but it requires nothing less than an ambitious and urgent emergency plan for the planet, this country, and our future. By contrast, locking South Africa into a future of expensive and dirty energy will lead to a global climate crisis that the African continent will simply be unable to survive intact.