



planning, monitoring & evaluation

Department:
Planning, Monitoring and Evaluation
REPUBLIC OF SOUTH AFRICA

SOCIO-ECONOMIC IMPACT ASSESSMENT SYSTEM (SEIAS)

FINAL IMPACT ASSESSMENT (PHASE 2)

CLIMATE CHANGE BILL

December 2017

The Final Impact Assessment - Climate Change Bill

The Final Impact Assessment provides a more detailed assessment of the proposed Climate Change Bill (Bill); and, identifies **(a)** mechanisms for monitoring, evaluation and modification; and, **(b)** a system for managing appeals that could emerge around the implementation process.

1. The problem Statement/ Theory of Change

1.1. Give a summary of the proposal, identifying the problem to be addressed and the root (causes) of the problem that will be addressed by the new rule.

a) Summary of the proposal (Summary Background of the proposed policy/bill/regulations/ other).

Background

The proposal is to introduce national climate change legislation in a form substantially as provided for in the Bill. The overarching premise for the proposal is South Africa's particular vulnerability to the impacts of climate change, the effects of which are already being experienced. Indications are that even with the implementation of appropriate mitigation and adaptation measures these impacts will increasingly be experienced across a number of sectors including water resources; agriculture and food production; forestry and fisheries; human health; energy generation; industry; human settlements and migration; disaster management; biodiversity and terrestrial ecosystems. Impacts will disproportionately affect the poor and most vulnerable groups; and, South Africa's ability to meet its development and economic growth goals, including job creation and poverty reduction.

Climate change is a global challenge requiring both international and domestic solutions. The global climate change response – in which South Africa participates - imposes obligations on developed and developing countries to mitigate greenhouse gas (GHG) emissions and adapt to climate change impacts. South Africa's international and domestic statement of climate change ambition is contained in its Nationally Determined Contribution (NDC) articulating: **(a)** under mitigation: a national GHG mitigation trajectory anticipating short-term increases in emissions, which peak by 2025 then plateau for a decade rapidly decline (in absolute terms) towards 2050; and, **(b)** under adaptation: development of a National Adaptation Plan; inclusion of climate change considerations into sub-national and cross-sector policy frameworks; building of

institutional capacity; an early warning, vulnerability and adaptation monitoring system; and, various assessments and frameworks.¹

National mitigation and adaptation objectives have - been guided *inter alia* by international agreements/negotiations; the Sustainable Development Goals; and, various domestic policies and plans, including: the *National Development Plan 2030* (NDP, 2010); and, the *National Climate Change Response White Paper* (NCCRP, 2011), the underlying objectives of which are mitigation, adaptation, job creation and poverty alleviation. The NCCRP identifies the current paucity of climate change-focused regulation as representing a fatal risk to achieving the NCCRP’s underlying objectives and supporting the country’s international climate change obligations; while acknowledging the need for dedicated climate change legislation. In particular, the following key policy outcomes require a legislative framework for successful implementation:

- the proposed post 2020 GHG mitigation system;
- the undertaking of risk and vulnerability assessments at various spheres of government namely local, provincial and national and the development of related responses;
- the need for alignment of policies that influence South Africa’s climate change response; and,
- the need for cross-sectoral co-ordination, policy development and decision-making in order to: meet South Africa’s adaptation goals under the NDC and facilitate resilience across sectors; sustainably escalate South Africa’s transition to a lower carbon economy; and, enable South Africa to monitor, track, report and manage this transition for the benefit of the country.

b) Problem/s and root causes that the proposal is trying to address

Identified Problem	Root causes
(i) The generation and release of GHG emissions in South Africa, together with emissions from other countries, contributes to global climate change. South Africa is particularly vulnerable to the impacts of climate change, requiring implementation of extensive	(i) Lack of mandates and duties within existing legislation to empower decision makers within Government to impose limits on GHG emissions within entities and across sectors in South Africa. (ii) Inadequate mandates and duties within existing legislation to direct

¹ Including a vulnerability assessment and adaptation needs framework; and, an adaptation communication, education and awareness framework.

Identified Problem	Root causes
<p>adaptations across a number of sectors. There is currently no enabling climate change legislation. To date, government has used policy measures to drive mitigation and adaptation behavioural and structural change. This approach is proving insufficient; and, the fundamental economic, environmental and social change required to achieve South Africa's climate change policy objectives and international obligations will be unachievable in the absence of climate change-specific legal obligations..</p>	<p>relevant sectors and spheres of government to plan for adaptive measures in response to the anticipated impacts of climate change on their respective spheres of competence. There is a related lack of minimum criteria for climate risk and vulnerability assessments across sectors and a lack of requirements for coherent adaptation interventions.</p> <p>(iii) Lack of coherent development, alignment and integration of climate change responses across sectors and spheres of government.</p>

1.2. Describe the intended outcomes of the proposal

The proposal seeks to achieve the following outcomes: **(a) under mitigation:** the reduction of GHG emissions as part of South Africa's fair contribution to international efforts to stabilize global GHG concentrations within a timeframe that enables economic, social and environmental development to proceed in a sustainable manner; and, **(b) under adaptation:** the effective management of inevitable climate change impacts through enhancing adaptive capacity, strengthening resilience and reducing vulnerability to climate change. The proposal anticipates achieving these outcomes via a co-ordinated and integrated response to climate change and its impacts by all spheres of government, in accordance with the principles of co-operative governance, whilst also facilitating government efforts to ensure an effective and co-ordinated response across all sectors of the economy.

1.3. Describe the groups that will benefit from the proposal, and the groups that will face the cost. These groups could be described by their role in the economy or in society. As a minimum, consider if there will be specific benefits or costs for the poorest households (earning R 7000 a month or less); for black people, youth or women; for small and emerging enterprise; and /or for rural development. Add more rows if required

Groups that will benefit	How will they benefit?
The Public	<ul style="list-style-type: none"> • Global climate models for South Africa suggest that there will be a significant benefit to the country if global GHG emissions are reduced, as compared to a scenario of unconstrained emissions. • Citizens of South Africa are particularly vulnerable to climate change because of its dependence on climate-sensitive economic sectors, high levels of poverty and the interrelated impacts between climate change and health. Early adaptive measures will decrease the exposure to or enhance adaptive capacity to respond to impacts associated with increased incidences of extreme, weather related events, particularly on the most vulnerable, such as poor and low-income households, women and children and rural farmers. Climate change will also have a considerable impact on sectors upon which poor and vulnerable persons are directly dependent including agriculture, biodiversity, ecosystems and water supplies. Early measures anticipated to be facilitated by the Bill's implementation will in turn seek to ameliorate indirect impacts such as rising food prices, levels of disease and illness; and, conflict over natural resources. • The Bill seeks to introduce measures which will empower citizens to respond to the potential impacts of climate change and related extreme events. Further, citizens will be prepared to plan for potential extreme events associated with climate change. • The considerable anticipated impact of climate change on South Africa's GDP, productivity, and unemployment can also be mitigated through early and coordinated mitigation measures and adaptation efforts. • Adaptation measures typically have a number of co-benefits unrelated to climate change, many of which target natural resources and agriculture in rural sectors. Examples include improvements in the efficiency of production, better access to modern technology and increased productivity, better local air quality and related health benefits, as well as better crop quality. This, in turn, will benefit rural farmers, vulnerable persons living in close proximity to large emitters, women, and households reliant on subsistence farming. • A transition to a lower carbon and climate resilient economy and society, as facilitated by the measures proposed in the Bill, will incentivise the creation of employment in lower carbon industries, providing a valuable catalyst to spur

Groups that will benefit	How will they benefit?
	demand for new training and skills in this sector.
Business and industry	<ul style="list-style-type: none"> • Certainty to business on South Africa’s commitment and means of transitioning to a lower carbon and climate resilient economy and society. • Certainty around the extent to which emitters will be required to contribute to the national effort to reduce GHGs. This enables business to plan and budget their investments in lower carbon and resource efficient technologies, well in advance, with an opportunity for the creation of new lower carbon industries and related employment opportunities. There is a growing body of evidence which demonstrates that a green economy can deliver economic benefits equal to or exceeding business as usual, particularly in relation to GDP and employment. • Shifts to renewable energy and energy efficiency (cleaner and lower cost energy options), and water conserving technologies are also cost saving measures and increase energy security for business and the wider economy. • Taking early action to facilitate a change towards a lower carbon and climate resilient economy and society may also protect the competitiveness of industry in future from the possibility of international carbon border tax adjustments. • Business will be able to anticipate potential impact of climate change to their operations and planning adaptation interventions by benefiting from among others early warning systems.
Government Departments and Agencies	<ul style="list-style-type: none"> • Significant cost savings for Government can be achieved by facilitating an early adaptive response to anticipated climate change impacts. • a transition to a lower carbon and climate resilient economy and society will provide employment opportunities and opportunities for skills development; • Fulfilment of South Africa’s international obligations and a demonstration of South Africa’s contribution to the global effort to reduce GHG emissions. • a fulfilment of Government’s duty to take “reasonable measures” in relation to climate change in realising the right to an environment not harmful to health and well-being in

Groups that will benefit	How will they benefit?
	<p>Section 24 of the Constitution.</p> <ul style="list-style-type: none"> • The legislative mechanisms will enable Government to obtain adequate and timely information relating to GHG emissions and adaptation measures which will facilitate accounting and reporting to the international community in terms of its international obligations. • A legislative framework will support requests by South Africa for access to international climate change funding mechanisms such as the Green Climate Fund and others. • Foster a collaborative approach by the three spheres of government local, provincial and national.

Groups that will bear the cost or lose	How will they incur the costs or lose?
Government Departments and Agencies	<ul style="list-style-type: none"> • Government (including relevant Sector Departments, Provinces and Municipalities) will likely need to carry the costs for planning (development of planning instruments); intervention programmes; capacity across the three spheres of government to enforce the legal framework; and undertaking the necessary studies and plans contemplated in the Climate Change Bill. Government can potentially rely on international funding to finance a portion of these costs. These plans may also create an additional administration burden and may require additional training to develop and implement. • DEA has already incurred costs in the development of climate change interventions, and further costs will be incurred to enhance the existing systems, planning instruments and to develop new interventions. There is already an extensive body of research and analysis upon which can be relied upon to reduce this cost and the DEA has also already obtained funding from a number of external resources to undertake these studies. • Human resources and capital will be required to develop and implement; and enforce the proposed Bill within the DEA and across the spheres of government. The required work is however already well underway and in most cases has already been budgeted for. Additional resources will be required to

Groups that will bear the cost or lose	How will they incur the costs or lose?
	fully enforce the Bill.
Business	<ul style="list-style-type: none"> • The proposed carbon budgets may have an impact on industry and the economy in the form of costs associated with upgrading or migrating to lower carbon technologies and processes and the profitability of carbon intensive operations. • It is possible that entities within certain industries could be disproportionately affected by climate change interventions. The design and phase-in period of the interventions such as targets, budgets and related flexibility mechanisms will be sensitive to these issues. • The relevant Sectoral, Provincial and Municipal climate change response implementation plans and related risk and vulnerability assessments require business to carry out specific assessments of climate risks associated with their operations.
The Public	<p>The development of climate change response implementation plans to foster adaptation, and sector emissions reduction plans are likely to impact on society, more broadly. The extent and nature of such impacts will depend on the sector and the proposed adaptation response or mitigation measures. For example, climate change response implementation plans for Municipalities may impose limitations upon development in areas considered highly vulnerable to climate change impacts, which in turn may influence developmental considerations for local society. The nature of such changes will primarily be informed by the type of mitigation or adaptation response required and the sphere or government or sector responsible for implementation.</p>

1.4. Describe the behaviour that must be changed, main mechanisms to achieve the necessary changes. These mechanisms may include modifications in decision making process systems; changes in procedures; educational work; sanctions; and or incentives. Also identify groups inside or outside government whose behaviour will have to change to implement the proposal. Add more rows if required.

Groups inside Government	Behaviour that must be changed (Current Behaviour)	Main mechanism to achieve the necessary changes
Government	Limited/weaker institutional	○ Requirements for cross

<p>Departments and Agencies</p>	<p>coherence to foster co-operative governance for climate change.</p>	<p>departmental and sectoral integration of climate change considerations into planning, policy and decision making.</p> <ul style="list-style-type: none"> ○ Development of institutional mechanisms such as the Ministerial Climate Change Committee and the Provincial Climate Change Committee (including Municipal representatives). ○ Assistance provided in development of relevant climate response plans by Sectors Departments, Provinces and Municipalities under the Bill. Institutionalizing the implementation of the developed plans into all spheres of government.
<p>Government Departments and Agencies</p>	<p>Failure to take into account and plan for mitigation and adaptation measures across sectors and spheres of Government.</p>	<ul style="list-style-type: none"> ○ Duty to align and harmonise policies, plans and decisions to ensure the risks of climate change impacts and related vulnerabilities are taken into account and give effect to national adaptation and mitigation objectives. ○ Duty to develop a climate change response implementation plan across relevant sectors and spheres of government, as well as sector emissions reductions plans as a way of mainstreaming climate change adaptation and mitigation responses into decision making and planning processes. Assistance provided in development of the relevant policies and plans. ○ Duty to develop climate change needs and response assessment and a national adaptation strategy to guide a coordinated governance

		<p>response pursuant to the requirements of the Bill.</p> <ul style="list-style-type: none"> ○ Duty to ensure mainstreaming of climate change in all planning and implementation interventions, and understanding that climate change is not a stand alone item. ○ Duty to ensure that relevant sector departments annually reports to Cabinet on the progress made in implementing their climate change policies and plans.
Business	<p>Reliance on fossil fuels and high energy consumption patterns and a failure to internalise the costs associated with emissions.</p> <p>Failure to take the potential impacts of climate change into account in business development planning.</p>	<ul style="list-style-type: none"> ○ Development of carbon budgets, sectoral emissions targets and related mitigation plans to facilitate a transition away from high carbon consumption patterns and processes; ○ Adoption of new investment behaviour and sustainable production patterns facilitated through a suite of incentives and disincentives including the proposed carbon tax, standards, government procurement programmes, research into new technologies and investment incentives, and similar initiatives, supported by relevant regulations and plans developed under the Bill.

1.5. Report on consultations on the proposal with the affected government agencies, business and other groupings. What do they see as the main benefits, costs and risks? Do they support or oppose the proposal? What amendments do they propose? And have these amendments been incorporated in your proposal.

A more detailed summary of consultations is provided overleaf, however, for convenience the following were the key/ overarching issues that arose during consultations and how these were deal with:

(a) Issue: requests for further specificity and clarity regarding the interventions to be implemented such as sectoral emission targets and carbon budgets. **Response:** regulations and

technical guidelines (still to be drafted) are intended to house the type of detail and content which the commentators sought to have addressed in the Bill, however certain issues were addressed by way of amendments or amplifications to the existing text.²

² The DEA has recently published a policy document on the post 2020 mitigation system which provides also some of the clarity requested by stakeholders in their provision of commentary on the Bill.

(b) Issue: requests for clarification on institutional design, with particular reference to the role of Provinces and Municipalities and the design and mandate of institutional structures. Response: the relevant chapter setting out these functions and related obligations was re-written.

(c) Issue: commentators also raised concerns over definition of the term “sectors” and the Bill’s proposed management thereof. Response: a further definition of the term was proposed (mindful that the system is based on the Intergovernmental Panel on Climate Change’s conceptual notions of “sector”); and, further clarity on the intended meaning of the term was provided in the Bill’s use of the term “functional areas”.

Table summarising the outcome of stakeholder consultations held on the Bill: ³

Affected Stakeholders	What do they see as main benefits, costs and risks?	Do they support or oppose the proposal?	What amendments do they propose?	Have these amendments been incorporated in your proposal?
1. Government Departments and Agencies: Intergovernmental Committee on Climate Change (MINTEC Working Group 10) and National Committee on Climate Change; Written comments from representatives of the DEA; DMR; DIRCO; the Gauteng Department of	<p><u>Benefits</u> were seen to be the implementation of South Africa’s climate change response policy objectives.</p> <p><u>Costs</u>: included a discussion about the costs incurred by Sector Departments, Provinces and Municipalities in developing and implementing the required climate change response and implementation plans.</p>	Support	<p>Government comments focused on the institutional designs of government structures created by the Bill. A particular focus was on the role of Provinces and Municipalities.</p> <p>Requests were made for greater clarity in the Bill about the relationship between carbon budgets and sectoral emissions targets and modalities for their design and implementation as well as</p>	<p>Pursuant to extensive engagement with government departments, the chapter relating to the role of Municipalities and Provinces was re-written to accommodate or clarify the roles.</p> <p>The revisions to the Bill sought to bring greater clarity to the provisions relating to GHG emissions and removals, and further details will be in the relevant regulations. Additional clarity is contained in the DEA’s Post 2020 mitigation design document since the level of this information cannot be included in</p>

³ A 113-page draft *Comments and Responses Report* was developed to address each of the comments made, which has been broadly summarized in the above table.

Affected Stakeholders	What do they see as main <u>benefits, costs and risks?</u>	Do they <u>support or oppose</u> the proposal?	What <u>amendments</u> do they propose?	Have these amendments been <u>incorporated</u> in your proposal?
<p>Agriculture and Rural Development, the Mpumalanga Department of Economic Development, Environment and Tourism; and Eskom Holdings SOC Ltd</p>	<p><u>Identified risks:</u> included the lack of capacity in the Provinces and Municipalities to develop and implement plans, the possibility of litigation by industry against government regarding the carbon budgets.</p>		<p>clarity regarding interrelationship with the carbon tax.</p> <p>Requests were made to</p>	<p>the Bill.</p> <p>Interrelationship with carbon tax: During the first phase of the carbon tax, companies participating in the carbon budgeting process will qualify for an additional tax-free allowance of 5 per cent. The DEA and the National Treasury will ensure that the carbon tax is aligned and integrated with the proposed carbon budget system, post 2020. A study assessing the principles and approach to the alignment of the two instruments and the interface options for possible integration of the instruments has been completed under the World Bank Partnership for Market Readiness project. The National Treasury and the DEA have commenced discussions on the most appropriate interface option and a methodological approach is expected to be finalised by the end of 2017 or early 2018.</p> <p>In relation to the regulatory</p>

Affected Stakeholders	What do they see as main <u>benefits, costs and risks?</u>	Do they <u>support or oppose</u> the proposal?	What <u>amendments</u> do they propose?	Have these amendments been <u>incorporated</u> in your proposal?
			<p>consider imposing a greater or equal regulatory burden on the public and industry to address climate change. Suggestions were made to amend the timelines proposed for integration, clarity in various definitions, textual clarifications as to “how” departments should work together and the role of MECs. There were also proposals to render language less discretionary (i.e. “must” instead of “may”) and to have greater detail for the prescribed contents of plans. Requests for more specificity on the type of adaptation responses that require coordination between specific sectors and/ or departments and more detail on role and</p>	<p>burden, it was felt that a balance had been achieved between imposing a regulatory burden on the state taking actions through the sectoral emissions targets and climate change response and implementation plans, mindful of the burden carried by industry in relation to carbon budgets.</p> <p>Many of the proposals to change the language of the Bill, including timelines, definitions and additional details regarding the content of plans and the role of relevant actors, as well as detail for adaptation mandates were addressed in the Bill, or because of their detailed nature, will be addressed in regulations or related policy documents.</p>

Affected Stakeholders	What do they see as main <u>benefits, costs and risks?</u>	Do they <u>support or oppose</u> the proposal?	What <u>amendments</u> do they propose?	Have these amendments been <u>incorporated</u> in your proposal?
			responsibilities.	
<p>2. Business:</p> <p>Business Unity South Africa (BUSA) and the Chemical and Allied Industries Association (CAIA)</p>	<p><u>Benefit:</u> The main benefit to industry was noted to be the creation of certainty regarding government climate change policy.</p> <p><u>Risk:</u> BUSA noted that the wide and in their view vague empowering provisions in the Bill created a risk of unconstitutionality and potential legal attack. In their view the lack of alignment with the carbon budgets and the carbon tax was also a risk.</p> <p><u>Cost:</u> this issue was not expressly addressed in the comments but was raised indirectly in relation to the criminalisation of carbon budgets and alignment with the tax and related</p>	<p>Supportive, subject to amendment.</p> <p>BUSA believes that a number of issues identified in existing policy “require legislation for implementation”.</p>	<p>Requests for additional clarity to existing provisions to render them clearer, more “meaningful”, and more specific, particularly in relation to enabling provisions.</p> <p>Request for textual amendments to better align existing government policy with the wording of the Bill, particularly the design of the mitigation system.</p> <p>Requests made to elaborate on the architecture of the carbon budget system and incorporate additional elements contemplated in existing policy papers.</p> <p>Request for amendments to align the carbon tax with the carbon budgets and proposed sanctions in the</p>	<p>Where relevant and necessary the text has been amplified to provide additional clarity. However not all suggested amendments were included as they were contrary or incompatible with the objectives of the Bill or were more appropriately dealt with in terms of policy.</p> <p>The alignment of carbon budgets with the carbon tax is currently under discussion with National Treasury (see comments in the row above). The Bill could not specifically make reference to the carbon offsets and trading but makes provision for regulations to accommodate incentives and disincentives to encourage a change in behaviour towards the generation of greenhouse gasses amongst all sectors of society</p> <p>The chapter prescribing institutional arrangements has</p>

Affected Stakeholders	What do they see as main <u>benefits, costs and risks?</u>	Do they <u>support or oppose</u> the proposal?	What <u>amendments</u> do they propose?	Have these amendments been <u>incorporated</u> in your proposal?
	<p>cost implications this would have on business.</p>		<p>Bill. Request to introduce provisions with carbon offsets and trading. Request to decriminalise the provision relating to carbon budgets.</p> <p>Concerns were raised about the appropriateness of the Minister prescribing how climate change considerations should be taken into account (as an alternative guidelines were proposed) and whether it would be better for adaptation considerations to rather be incorporated into relevant sector legislation.</p> <p>There was concern regarding duplication under the National Environmental Management Air Quality Act 2004 (NEMAQA).</p>	<p>subsequently been re-written. In its current form the relevant sectors will determine the most appropriate actions to responds to climate change and retain their discretion.</p> <p>In relation to duplication with NEMAQA, the intention is for the Climate Change Bill to replace the existing climate change related regime under NEMAQA. Once developed, the Regulations already promulgated under the NEMAQA to regulate climate change will be repealed and be promulgated under the Climate Change Bill.</p> <p>In relation to Municipal, Provincial and Sector response plans, the relevant chapter was re-written however the fundamental requirements remain as it is considered necessary in order to adequately mainstream climate change within these sectors and spheres. Schedule 2 (containing</p>

Affected Stakeholders	What do they see as main <u>benefits, costs and risks?</u>	Do they <u>support or oppose</u> the proposal?	What <u>amendments</u> do they propose?	Have these amendments been <u>incorporated</u> in your proposal?
			<p>Requests to emphasise the role of Municipal and Sector adaptation responses. A request to include additional vulnerable sectors in the Bill and expand the provisions regarding the gathering of data.</p> <p>Unsupportive of the chapter which required sector, Municipal and Provincial response plans and rather other laws should be amended to mainstream climate change in these spheres and sectors. Schedule 2 (which made proposed amendments to other sectoral laws) was supported but it should be pursued as a separate process. Amendments to Schedule 1 were also</p>	<p>other relevant sector laws to be amended) was, however, removed.</p> <p>Schedule 1 (Functional Areas) was retained with amendments to adopt a thematic approach to mandates, to ensure that both adaptation and mitigation are included in the plans.</p>

Affected Stakeholders	What do they see as main <u>benefits, costs and risks?</u>	Do they <u>support or oppose</u> the proposal?	What <u>amendments</u> do they propose?	Have these amendments been <u>incorporated</u> in your proposal?
			proposed.	
3. Organised Labour: Alternative Information and Development Centre (AIDC)	Benefit: Labour, as represented through the AIDC, were generally supportive of the Climate Change Bill	Supportive	<p>There was a request to include a concept of a “just transition” to a low carbon and climate resilient economy with additional detail concerning the creation of additional jobs and Department of Labour oversight.</p> <p>Request for certain Departments to prepare “just transition plans” to address negative short-term impacts on employment and social welfare and shifts in skills and training requirements and reporting requirements by the Department of Labour coupled with a duty to make provision for workers in carbon intensive industries.</p>	The concept of a “just transition” was included in the Bill. The request to require “just transition plans” or duties on the Department of Labour was not pursued. The required content of the Sector Department plans contemplated by the Bill should be determined by the relevant Department.

Affected Stakeholders	What do they see as main <u>benefits, costs and risks?</u>	Do they <u>support or oppose</u> the proposal?	What <u>amendments</u> do they propose?	Have these amendments been <u>incorporated</u> in your proposal?
<p>4. Civil Society:</p> <p>Alternative Information and Development Centre (AIDC); SACAN; World Wildlife Fund (WWF); Project 90 by 2030</p>	<p><u>Benefit:</u> NGOs were widely supportive of a Climate Change Bill as a means of facilitating adaptation and mitigation activities in the country to strengthen resilience and make a fair contribution to global mitigation efforts.</p> <p><u>Risk:</u> Risk of job losses, potentially inadequate mitigation and adaptation responses, lack of adequate alignment between sectors and spheres of government.</p> <p><u>Costs:</u> Not raised directly but queries were raised regarding how the relative “costs and benefits“ of the sectoral emissions targets would be accurately assessed in order to achieve the objectives of</p>	<p>Supportive</p>	<p>In general the comments were primarily textual with a view to expanding on existing definitions and concepts or clarifying their content and strengthening the robustness of the mitigation system design.</p> <p>Several comments wished for greater detail and specificity in the Bill on the structure and design of the Sectoral Emissions Targets and Carbon Budgets and related monitoring and reporting. They were unresponsive of the carbon tax as a compliance mechanism for exceeding the carbon budget and supportive of fines and imprisonment for exceeding a budget.</p> <p>There was a request to include a concept of a “just</p>	<p>Many commentators raised the issue of what a “sector” was defined to mean. Attempts to narrow and clarify the definition were made in subsequent drafts, mindful that the mitigation system is based on conceptual notions of sectors and IPCC sector categories. Clarity to the concept of sector was also provided in the list of “functional areas” attached to the Bill.</p> <p>In relation to Carbon Budgets and Sectoral Emissions Targets it was felt that such detail would be accommodated more appropriately in the form of regulations, but where relevant additional specificity was included. The interface of the carbon budget and carbon tax is under discussion with Treasury (see earlier comments on this).</p> <p>The inclusion of the concept of a “just transition” was also included in the Bill. The additional proposals</p>

Affected Stakeholders	What do they see as main <u>benefits, costs and risks?</u>	Do they <u>support or oppose</u> the proposal?	What <u>amendments</u> do they propose?	Have these amendments been <u>incorporated</u> in your proposal?
	the Bill.		<p>transition” to a low carbon and climate resilient economy with additional detail concerning the creation of additional jobs and Department of Labour oversight.</p> <p>Request for mandatory provisions in the Bill, and less discretionary provisions.</p> <p>Request for absolute prohibitions on certain infrastructure and planning which is not climate resilient and low carbon.</p> <p>Request for the Bill to be developed by the Presidency and not the DEA.</p> <p>Provisions are required to avoid liabilities being transferred to the state.</p> <p>Request to have a methodology for</p>	<p>regarding the Department of Labour were not supported.</p> <p>Certain provisions in the Bill were made mandatory. The request to have absolute prohibitions on certain infrastructure/planning was also not accepted.</p> <p>The request to have the Presidency develop the Bill was not accepted.</p> <p>Provisions regarding the transfer of liabilities were not included.</p> <p>It was not considered possible to develop a methodology for assessing the costs and benefits of a sectoral emission target.</p> <p>In relation to fiscal incentives and guidance for fiscal support it was felt that this was more appropriately dealt with in policy (for example the draft Adaptation Strategy already address this issue).</p>

Affected Stakeholders	What do they see as main <u>benefits, costs and risks?</u>	Do they <u>support or oppose</u> the proposal?	What <u>amendments</u> do they propose?	Have these amendments been <u>incorporated</u> in your proposal?
			<p>determining the costs and benefits of sectoral emission targets.</p> <p>Many NGOs requested additional incentives and guidance for fiscal support to be included in the Bill.</p>	
5. The Public	<p>More detailed public participation will be undertaken as part of the Parliamentary public participation process at which point commentary from the wider public will be elicited.</p> <p>Benefit: The Portfolio Committee on Environment is widely supportive of a Climate Change Bill as a means of facilitating adaptation and mitigation activities in the country to strengthen resilience and make a fair</p>			

Affected Stakeholders	What do they see as main <u>benefits, costs and risks?</u>	Do they <u>support</u> or <u>oppose</u> the proposal?	What <u>amendments</u> do they propose?	Have these amendments been <u>incorporated</u> in your proposal?
	contribution to global mitigation efforts. The Committee has called for the development of the Bill on several occasions.			
6. Other groupings	N/A			

1.6. Describe possible disputes arising out of the implementation of the proposal, and system for settling and appealing them. How onerous will it likely be for members of the public to lodge a complaint and how burdensome and expeditious is the proposed dispute-settlement procedure?

Disputes may arise between the Minister of Environmental Affairs and GHG emitting companies in relation to the quantum of prescribed targets such as carbon budgets. Consequently, the Bill:

- envisages a stakeholder engagement process in the future development of the national threshold which will determine the allocations of carbon budgets to companies. The Department also undertakes a stakeholder engagement process when developing methodologies for interventions such as the carbon budgets and sectoral targets; and
- provides for appeals and 5 yearly reviews. An appeal lodged will be dealt with in terms of section 43 of the National Environmental Management Act, 1998 and any regulation developed in terms section 43 of the National Environmental.

It is anticipated that civil society may challenge the adequacy of the national GHG emissions mitigation trajectory; while the private sector might consider it to be too restrictive. As a result, the trajectory needs to be based on the best available scientific evidence (a requirement in the Bill), and the process for determining the trajectory would incorporate comments and submissions during the consultation and public participation phase.

The Bill provides for consultation and public participation requirements every time the Minister or MEC exercises a power – these mechanisms will mitigate the potential for dispute in relation to, for example, the content of the emissions thresholds applicable to carbon budgets, the extent of the national emissions trajectory, and any other exercise of power under the Bill by the MEC or Minister.

2. Impact Assessment

2.1. Describe the costs and benefits of implementing the proposal to the groups identified in point 1.5 above, using the following chart. Add more rows if required

Group	Implementation costs	Cost of changing behaviour	Costs/benefits from achieving desired outcome	Comments
Government Departments and Agencies	<p>Development of climate change response and implementation plans required under the Bill by spheres and sectors of Government.</p> <p>Development of a National Adaptation Strategy and the National Framework by the DEA</p>	<p>Education and capacity building within Government on the provisions of this Bill and how to mainstream climate change considerations into policy, planning and decision making.</p> <p>Development of Institutional Mechanisms to, amongst other, facilitate the mainstreaming of climate change considerations into decision making. The creation of the Ministerial Committee is likely to be low since there is already an Inter-Ministerial Committee on Climate</p>	<p>Transition to a lower carbon and climate resilient society in South Africa is promoted, enhanced and supported which will result in:</p> <ul style="list-style-type: none"> - a contribution to a low carbon economy and better technological penetration. -enhanced policy co-ordination, among key sectors for emissions reduction and adaptation. - reduced costs in adaptation responses through early adaptive measures and considerable savings on GDP losses. <p>Implementation of sector</p>	<p>Economic modelling undertaken in 2014 anticipated that the impacts of climate change on GDP expected. losses over the next 35 years would be highly variable, with ranges between R 217 billion and R 651 billion with a median loss of R 259 billion.⁴ The purpose of the Bill is to mitigate and adapt to climate change impacts and in turn to reduce associated GDP losses. The considerable variability in the range of expected GDP losses as a reference scenario, also</p>

⁴ DEA, 2014: The Economics of Adaptation to Future Climates, as cited in South Africa's Draft Third National Communication under the United Nations Framework Convention on Climate Change, March 2017, 23 (National Communication). This report used an integrated modelling framework to estimate the potential impacts of multiple climate futures on water supply and demand for different sectors, irrigated and dry-land crop impacts, and road infrastructure costs under a wide range of potential climate futures. The range of R217 billion to R651 billion was based on a what was referenced as the "Total Scenario" which only took into account climate change impacts experienced on transport networks, water available for irrigation and yield impacts on dry-land agriculture. The modelling takes into account endogenous adaptation (i.e. market related responses to climate change impacts), but does not model the avoided or mitigated financial losses as a result of policy or legislative adaptation interventions.

Group	Implementation costs	Cost of changing behaviour	Costs/benefits from achieving desired outcome	Comments
		<p>Change created under the NCCRP. Similarly the Provincial Committee on Climate Change is not likely to incur significant costs.</p>	<p>emission targets and measures contemplated in Sector Emission Reduction Plans, may have negative impacts on high GHG emitting sectors of the economy, but this will be offset by medium to long-term benefits of producing products using cleaner technologies.</p>	<p>suggests there would be a wide range in any cost benefit analysis of the anticipated benefits of the interventions in the Bill (and related policy measures) as compared to the reference scenario.</p>
Business	<p>Compliance with GHG mitigation requirements and interventions, requiring changes to production processes or new technologies.</p> <p>Costs associated with developing a GHG mitigation plan. A similar plan is already required under existing regulations and so the transitional cost of amending and updating these plans is likely to be low.</p> <p>Costs of phasing out</p>	<p>Costs incurred by high emitters in changing consumption and production patterns by changing to new technologies, production processes and energy sources to reduce GHG emissions. These costs cannot be quantified at this stage and will be differ from industry to industry.</p> <p>Regulations may also be developed under the Bill which will require Business to reflect the carbon footprint of the product on the label and related labelling standards.</p>	<p>High emitting industries may be less profitable or productive which may impact the economy in the short term, with positive impacts in the medium to long term, but this is offset against the much higher costs of responding and adapting to climate change.</p> <p>Improved competitiveness in the longer term.</p> <p>Reduced risk of boarder tax adjustments/product standards or requirements for product labelling imposed by other countries in the future.</p>	<p>Certain industries may not be able to reduce their emissions, and this will be considered when allocating carbon budgets. Net impact will largely depend on the thresholds set in the carbon budgets, the ability to transition to a lower carbon Economy, availability and cost of new technology and international developments.</p>

Group	Implementation costs	Cost of changing behaviour	Costs/benefits from achieving desired outcome	Comments
	synthetic GHGs.		<p>Potential growth in employment in lower carbon sectors of the economy and a contribution towards GDP growth in this sector.</p> <p>A reduction in the risk of climate change to existing business (e.g. disruption in supply chains and water availability) by reducing climate change impacts.</p>	
Labour	N/A	<p>-Time taken to build the necessary capacities to re-skill and train (this is a continuous process).</p> <p>The move to a lower carbon economy may result in the need to train and upskill employees currently trained in high carbon technologies in order to facilitate a transition to a low carbon economy</p>	<p>Transformation to low carbon jobs and workers in high emitting industries may lose jobs. Other lower carbon industries could however create more jobs in medium to longer term.</p> <p>Transferred knowledge and skills associated with the transition to a low carbon and climate resilient economy.</p> <p>Skilling and capacitation of the workforce towards new skills.</p> <p>Better efficiencies that can be</p>	<p>Net effect on employment depends on how producers adjust, and in particular on the ability to diversify investment away from emissions-intensive activities.</p>

Group	Implementation costs	Cost of changing behaviour	Costs/benefits from achieving desired outcome	Comments
			achieved.	
Civil Society	None	None	Benefits are the same as for Government.	
The Public	Potential costs in complying with the contents of relevant Municipal, Provincial or Sectoral plans. Related costs will be informed by contents of the plans in responding to and mitigating climate change.	Potential costs in changing behaviour to using lower carbon goods and services. In the longer term these may be more cost competitive (for example the decreasing cost of renewable energy).	Potential for higher cost for energy and transport depending on the quantum of the sectoral emissions targets. Benefits are the same as for Government.	The impact on the public will depend on the ability for energy and transport sectors and the extent to which the costs of compliance imposed on them are passed through from business to consumers, and the costs of technology.

2.2. Describe the changes required in budgets and staffing in government in order to implement the proposal. Identify where additional resources would be required for implementation. It is assumed that existing staff are fully employed and cannot simply absorb extra work without relinquishing other tasks.

In relation to institutions, the Inter-Ministerial Committee on Climate Change will not require additional start-up funding. This is not the case, however, for the proposed Provincial Climate Change Committees which have yet to be established. Government will require additional expertise in climate change, and related financial support to develop and implement the Bill's anticipated plans and reports. Government is unlikely to require additional human resources as in most cases a different approach to existing practices.

Certain spheres and sectors may, however, require further funding to develop climate change response needs assessments and related response and implementation plans. At a Municipal level, there is a diversity of capacity in staffing and it would be necessary to mainstream climate change related skills and proficiency within existing staff by provide training and capacity building, for example in the form of refresher courses to electrical engineers and town planners. Provincial and Municipal officials will require training on the content and implementation of plans, which can be provided as part of the existing capacity support which is provided to Municipalities. Such support will be enhanced upon promulgation of the Bill.

In relation to mitigation, it is also envisaged that a new human resource capacity will be created within Government with responsibility for supporting the development and implementation of sectoral emissions targets and carbon budgets. This capacity would likely also provide capacity building support to relevant sector departments when developing their sectoral emissions reduction plans. In addition, it would process mitigation plans submitted by industry and the annual progress reports.

2.3. Describe how the proposal minimises implementation and compliance costs.

The mitigation system relies and builds on existing systems which currently regulate GHG emissions. Funds have already been committed for staffing and for the design and implementation of the climate change systems.

Government is already making use of existing external funding mechanisms to support the implementation of adaptation and mitigation related policy, planning and implementation

measures. Government will continue to capitalize on potential sources of financial support, including bilateral and multilateral funders, such as the Green Climate Fund, the Adaptation Fund, carbon markets and REDD+ mechanisms to reduce implementation and compliance costs. The Department has already submitted a summary of some of the required financial support necessary for its mitigation and adaptation responses, to the international community as part of its NDC. Having a Climate Change Bill promulgated into law will also assist with providing the necessary policy and legislative certainty to potential funders and investors of South Africa's commitment to the appropriate application of such funds as part of its climate change response. Improved intra-governmental planning, as promoted by the Bill, will also avoid longer term costs in delaying adaptation measures, with a subsequent decrease in potential litigation and required resources (time and finance). There are likely to be a number of co-benefits from these institutions which will be able to assess and provide guidance on achieving synergies between mitigation and adaptation opportunities.

In relation to mitigation and adaptation, the design of the Mitigation System and the proposed adaptation design is intended to be evidence based, but also sensitive to domestic limitations and subject to review. To this end the Bill proposes a number of mechanisms to ensure that compliance costs are minimized, including:

- Design of future national GHG emissions mitigation trajectory taking into account developmental and economic considerations;
- Design of SETs taking into account relevant costs and benefits with the potential for these to be reviewed and revised, as required, including via the application of adjustment factors based on a criteria matrix which considers emissions projections, mitigation potential and associated costs.
- Carbon budgets will be introduced over three successive five-year periods to create certainty and an enabling long term investment in low carbon measures. As part of the Mitigation System design, it has been proposed that the carbon budget incorporate various flexibility mechanisms, considers emissions projections, achievement, mitigation potential and associated costs
- National adaptation strategy, Risk and Vulnerability assessment to be reviewed over a period of 5 years.

3. Managing Risk

3.1. Describe the main risks to the achievement of the desired ends of the policy/bill/regulations/other and/ or to the national priorities (aims) that could arise from adoption of the proposal. Also describe the measures taken to manage the identified risks. Add more rows if necessary.

Identified Risk	Mitigation Measures
<p>Inadequate capacity (human, institutional and financial) for coordination and development and implementation of adaptation and mitigation responses at sectoral and all spheres of government.</p>	<p>Collaborative capacity building programmes for officials at different spheres of government.</p> <p>Mainstream climate change in all spheres of government as a cross-cutting issue is important, and therefore should be addressed by all sectors of the economy. Awareness raising and capacity training for individuals within Government on how to implement the Bill.</p>
<p>The provisions in the Bill relating to climate change response implementation plans and sector emissions reduction plans are inconsistently or inadequately implemented.</p>	<p>Development templates and guidelines to ensure consistency between the content of the proposed plans.</p>
<p>Legal challenge to the Bill by private sector interests who may contest the quantum allocation of certain targets.</p>	<p>Extensive public commenting period for the contents of the Bill, as well as related plans and policies including the all other interventions currently under development such as the Mitigation System design reports, transparency in the information and research underpinning those interventions.</p>
<p>Alignment with carbon tax beyond 2020</p>	<p>Consultations on the best method to align the two instruments is currently underway between National Treasury and the Department, and this will be finalised in early 2018.</p>
<p>Sectoral emissions targets and carbon budgets lead to slower economic growth as a result of a drop in output of high emitting industries, as well as potential job losses in high emitting sectors.</p>	<p>The development of interventions such as the National Employment Vulnerability Assessment (NEVA) and Sector Job Resilience Plans (SJRPs) are currently underway (led by the Department of Economic Development) to address the just transition and ensure that there is minimum impact on jobs as the country transitions to a lower carbon economy.</p> <p>All other interventions proposed are also followed by socio-economic impact assessments to ensure little</p>

Identified Risk	Mitigation Measures
	<p>negative impact on the economy.</p> <p>The Bill also empowers the Minister to review the national goal upwards or downward to respond to national issues/context. Ensure effective implementation of flexibility mechanisms and support to industries during the transition. Develop and support existing incentives to facilitate a transition towards a low carbon economy, and the promotion of green jobs.</p>
Resistance to change.	Education, training and awareness on climate change to encourage behavioural change.
Lack of coherence and guidance for climate change planning and implementation.	<p>Adaptation: Development of guiding framework and reliance on the guidance already contained in the National Adaptation Strategy. A draft of the national Strategy has already been published which aims to serve as a common reference point for climate change adaptation efforts and to guide stronger coherence and coordination on climate change adaptation between different institutions and levels of government.</p> <p>Mitigation: Development of the Mitigation System. The System includes many different institutions, instruments, activities and role players - an attempt was made to simplify the design and reliance on existing institutions and structures to implement it as far as possible. A number of new tools and processes would also be required to operationalise the Mitigation System and these are defined in the System to aid the implementation of measures to reduce GHG emissions.</p>

3.2. Describe the mechanisms included in your proposal for monitoring implementation, evaluating the outcomes, and modifying the implementation process if required. Estimate the minimum amount of time it would take from the start of the implementation process to identify a major problem and remedy it.

The Bill contemplates the development of regulations for monitoring the achievement of its requirements and objectives. It is envisaged that these regulations will then regulate the existing national climate change response monitoring and evaluation system. This system currently includes the greenhouse gas inventory, the biennial update report to the UNFCCC, and an annual report on climate change responses, addressing progress on both emission reduction and adaptation.

The Bill also contains a number of review mechanisms including reporting to Cabinet and the Presidency. For example, the Minister of Environmental Affairs must collate, compile and synthesise information relevant to the achievement of the national adaptation objectives and the objectives of the Bill, and thereafter publish a synthesis Adaptation Report, for consideration by Cabinet, and a Synthesis Report on Climate Change Adaptation to be used in the Republic’s national and international reporting processes. There is also a duty for Sectoral Emissions Targets to be included in the government planning cycles and their implementation must be monitored and reported on by the Presidency. This is coupled with a duty upon Ministers to report annually on the progress achieved on the implementation of the sectoral emissions reduction plan. The Minister of Environmental Affairs then is obliged to collate this information and submit a synthesis report on progress to Cabinet. Similarly there are monitoring and reporting obligations imposed on entities which are subject to a carbon budget, which must include an evaluation of progress in emissions reductions and an explanation of why compliance was not achieved, in the event of an exceedance.

4. Summary

4.1 Summarise the impact of the proposal on the main national priorities

National Priority	Impact
Social Cohesion	The proposals set out in the Climate Change Bill serve as a critical defence against climate change impacts, by reducing the vulnerability of South Africa’s food, water, health, ecosystems and human settlements to the impacts of a changing climate and in turn fostering social cohesion. The poor and most vulnerable with likely benefit the most from these interventions which will include creation of lower carbon industries, thereby reducing inequality and fostering social cohesion.
Security (Safety, Financial, Food, Energy and etc.)	Climate change poses potential international security risks, for example due to natural disasters and slow onset events associated with climate change, including through forced domestic and regional migration and competition over water and other natural resources. The Bill seeks to reduce the potential for such conflict by avoiding and adapting to climate change impacts. Low carbon energy alternatives broaden the country’s energy mix hence improving the country’s energy security.
Economic Growth	The implementation of measures proposed in the Bill may have a marginal effect on GDP and come at a financial cost to high emitting industries but the overall objectives achieved by the Bill will be the avoidance of the much higher costs (and related negative GDP Impacts) associated with climate change and

	<p>related adaptation measures. Phasing in of the budgets will reduce this impact.</p> <p>The Bill will support South Africa’s ability to mobilise private sector and international finance to fund climate change measures.</p> <p>It will ensure South Africa remains globally competitive and reduce the risk of carbon boarder tax adjustments.</p>
Economic Inclusion (Job Creation and Equality)	The Bill will serve to foster a transition to a lower carbon economy and in doing so will facilitate the development of employment opportunities in this sector and the upskilling and training in low carbon technologies. Over time, the shift to less energy intensive industries should promote job creation, as these producers are generally also more labour intensive. The poor are also the most vulnerable to climate change so introducing measures to mitigate and adapt to it will also serve to foster equality.
Environmental Sustainability	Early adaptive responses are critical to reducing the impacts of climate change on water, biodiversity and ecosystems both in the short, medium and longer term. The proposals in the Climate Change Bill seek to foster resilience in these sectors and enhance adaptive capacity ultimately reducing the severity, costs and indirect consequences of climate change.

4.2 Identify the social and economic groups that would benefit most and that would bear the most cost. Add more rows if required.

Main Beneficiaries	Main Cost bearers
<p>Government Departments and Agencies:</p> <p>The Bill will enhance the ability of all sector departments and spheres of government to respond to climate change in an integrated and co-ordinated manner, thereby avoiding conflicting policy decisions and directives and optimising departmental, provincial and municipal functions.</p>	<p>Industry with high GHG emissions, which will have to bear the costs of developing new technologies and process or reducing outputs to comply with GHG emission thresholds.</p> <p>Sectors with sectoral emissions reduction target will also likely incur costs in transitioning towards a green economy and engaging new technologies and process which are less carbon intensive.</p> <p>In some cases, there will be no cost, and it will be about doing business unusual.</p>

<p>The Public:</p> <p>The mechanisms proposed in the Bill will benefit all sectors of society (in particularly women and poorest households) as well as the economy, by reducing the impacts of climate change and costs associated with adaptation, harnessing co-benefits, and realizing new opportunities for growth and employment which arise as a result of a transition to a low carbon economy. It will also serve to minimize the considerable impacts on GDP associated with climate change.</p>	<p>Government will bear the costs of developing and implement the relevant plans and may also incur costs in creating the relevant administrative capacity to develop the plans and reporting mechanisms contemplated in the Bill. Costs can potentially be financed by the international community.</p> <p>Government will bear the costs of capacity building and training within all spheres of government on the mainstreaming of climate change into relevant plans and policies.</p> <p>Government will also bear the costs of creating conducive environment for investments in low carbon technologies</p>
<p>Business:</p> <p>A low carbon Economy can deliver economic benefits equal to or exceeding business as usual, particularly in relation to GDP and employment. Early action may/will protect the competitiveness of industry in future from the possibility of international carbon border tax adjustments.</p>	

4.3 In conclusion, summarise what should be done to reduce the costs, maximise the benefits, and mitigate the risks associated with the policy/bill/regulations/other. Note supplementary measures (such as educational campaigns or provision of financing) as well as amendments to the draft itself, if appropriate. Add more lines if required.

The DEA will use existing human capital and financial resources to implement the institutional mechanisms proposed in the Bill in relation to which it has responsibility, including the adaptation strategy and objectives, and the mitigation system, carbon budgets, GHG emissions trajectory and sectoral emissions targets. However, all spheres of Government will need to refine their plans and policies to facilitate climate resilience and a transition to a low carbon economy and climate resilient society.

Additional resources will be required across government, but mostly it is government departments which bear a large responsibility for implementing the plans on a day to day basis. The need for such additional resources was also anticipated in the SEIA for the Paris Agreement, which was ratified in 2016 by South Africa. For example, additional funding will be required for

developing climate change response implementation plans within Sectors as well as Provinces and Municipalities. Support will be required in order to finance the development of sectoral emissions targets and sectoral emissions reduction plans within relevant sectors. Again, financing from international institutions may be available to partially or fully finance such plans and several sectors already have similar plans in place.

Additional measures to mitigate risks associated with the Bill include:

- Education, training and awareness on climate change to encourage behavioural change;
- The development of guidelines and templates to assist spheres of government and sectors in developing plans;
- Consultation with Treasury which is currently underway, on alignment of the Carbon Budgets and Carbon Tax;
- Regular review of the emissions trajectory and quantum of the sectoral emissions targets and carbon budgets during the mandated review period to adjust them to meet our international obligations and to take national objectives and goals into account.

4.4 Please identify areas where additional research would improve understanding of the costs, benefits and/ or risks of the policy/bill/regulations/other

Ongoing research into the economic and social costs and benefits of implementing the adaptation and mitigation measures proposed in the Bill, as the instruments evolve and are implemented and revised over time.

For the purpose of building SEIAS body of knowledge please complete the following:

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