

Reducing Greenhouse Gas Emissions Carbon Tax & Energy Policy

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National Climate Change Response White Paper (1)

- South Africa is a relatively significant contributor (1%) to global climate change with significant GHG emission levels from its energy-intensive, fossil-fuel powered economy .(page 8)
- The Polluter Pays Principle (page 11)
Those responsible for harming the environment paying the costs of remedying pollution and environmental degradation and supporting any consequent adaptive response that may be required.
- Strategic Priorities (pages 13 & 14)
 - Facilitated behaviour change
Prioritise the use of incentives and disincentives, including regulatory, economic and fiscal measures, to promote behaviour change towards a lower-carbon society and economy

National Climate Change Response White Paper (2)

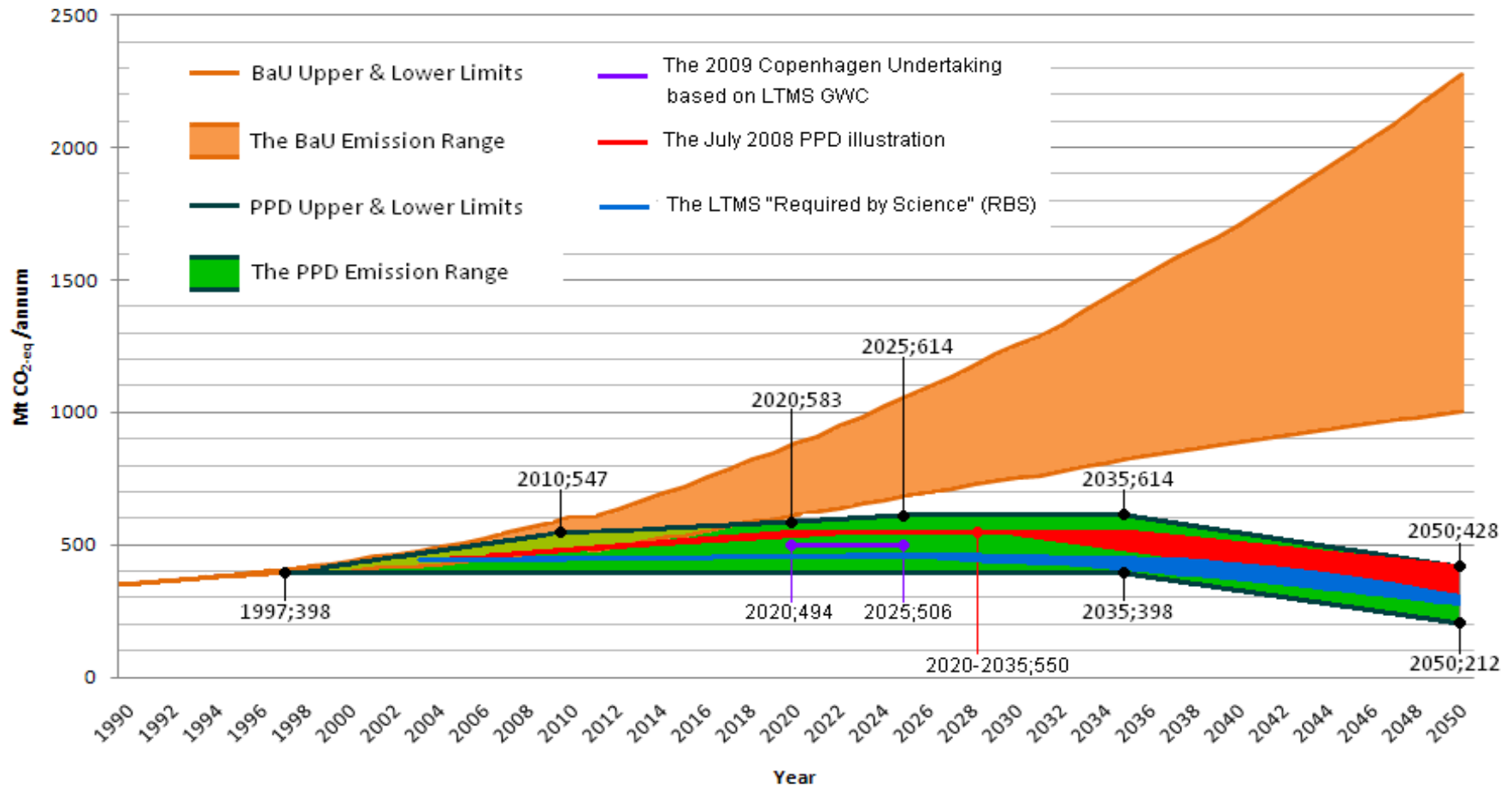
- Mitigation potential (Energy & Transport) (page 26)
 - energy efficiency, demand management, less emission-intensive energy mix, (e.g. renewable energy)
... with the consequent economic benefits of improved efficiency and competitiveness as well as incentivising economic growth in sectors with lower energy (and emissions) intensity .
 - A mix of economic instruments, including market based instruments such as carbon taxes and emissions trading schemes, and incentives, complemented by appropriate regulatory policy measures are essential to driving and facilitating mitigation efforts and creating incentives for mitigation actions across a wide range of key economic sectors.
 - Carbon capture and storage

National Climate Change Response White Paper (3)

- Managing response measures (page 29)
 -, South Africa may be economically vulnerable to measures taken both internationally and nationally, to reduce GHG emissions.*
 - ... trade barriers, a shift in consumer preferences and a shift in investor priorities.*
- South Africa (SA) committed to curb GHG emissions by 34% by 2020 and 42% by 2025 below the BAU trajectory (subject to provision of adequate financial, technological and capacity-building support)
- SA's has aspired to its emissions peaking between 2020 and 2025, remaining stable between 2025 and 2035 for a decade and declining in absolute terms from around 2035 (PPD)

GHG emissions: Peak, Plateau and Decline Trajectory

The desired South African climate change mitigation outcome - the "Peak, Plateau and Decline" (PPD) greenhouse gas emission trajectory – comparison with other popularised conceptions of PPD



Carbon Pricing and Energy Policy

- Carbon Tax as a proposed carbon pricing mechanism
- There is need for a complementary use of carbon pricing and low carbon energy policies on the path to a low carbon economy as on their own they might fail to sufficiently incentivise the least-cost decarbonisation.
- Energy policies - the Integrated Resource Plan (IRP, 2010) prescribes the energy mix for the country, Renewable Energy & Energy Efficiency Programmes aim to incentivise uptake of low carbon energy generation and enhancement of energy efficiency measures

Proposed carbon tax design features (1)

- a carbon tax at R120 (\$13 or €10) per ton of CO₂e above the suggested thresholds with annual increases of 10 per cent until 2019/20 is proposed as from 1 January 2015.
- A basic tax-free threshold of 60 per cent is proposed.
- Additional tax-free allowance for process emission (10%)
- Additional relief for trade-exposed sectors (max 10%)
- Carbon offsetting allowed to reduce carbon tax liability (max 5% or 10%)
- The overall tax-free allowance for an entity will be capped at 90 per cent of actual verified emissions. Tax-free thresholds will be reduced during the second phase (2020 to 2025) and may be replaced with absolute emission thresholds thereafter. Alignment with the proposed carbon budgets (?) as per the National Climate Change Response White Paper (2011).

Proposed carbon tax design features (2)

- A formula is proposed to adjust the basic (60%) percentage tax-free threshold to take into account efforts already made by firms to reduce their emissions and to encourage firms to invest in low-carbon alternatives. The basic percentage threshold below which the tax will not be payable may be adjusted using a carbon emissions intensity factor for output compared to an agreed sector benchmark. A formula is proposed to calculate a factor Z, which will then be used to adjust (increase or decrease) the basic percentage tax-free threshold as described below:
- $Z = Y / X$
 - X is the average measured and verified carbon intensity of the output of a firm.
 - Y is the agreed benchmark carbon intensity for the sector.
- The adjustment to the tax-free threshold is then determined by multiplying the 60 percentage threshold by Z.

Revenue recycling

- In general, “full” earmarking of specific tax revenue streams are not in line with sound fiscal management practices. However, the efficient recycling of revenue is important.
- Revenue recycling mechanisms for structural adjustment:
 - “soft” earmarking (on budget allocations): Independent Power Producers programme to incentivise renewable energy uptake, Electricity Demand Side Management programme, enhanced free basic energy / electricity programme, Carbon Capture and Storage rebate
 - tax shifting: reducing or not increasing other taxes (potential phasing-down of the electricity levy)
 - a range of environmental tax incentives, including Energy efficiency savings tax allowance

Energy sector & carbon pricing

- Pricing energy appropriately is important to ensure that the external costs of climate change and other environmental damages are reflected in the price of energy and that the relative prices between carbon intensive and low carbon technologies are correctly reflected.
- The current regulatory framework for determining the prices of liquid fuels (petrol, diesel, paraffin and gas) does not allow for a pass-through – either in full or in part – of the carbon tax imposed at refinery level. The electricity sector is however able to pass on the carbon tax to final consumers.
- Some consideration hence must be given to the pass through mechanism of the carbon tax to ensure that appropriate incentives are maintained for changes in both production and consumption patterns.
- The tax will nevertheless influence future investment decisions and reduce the price-cost differentials between fossil fuel-based electricity, nuclear energy and renewable energy.

Integrated Resource Plan for Electricity (IRP, 2010) (for the period 2010 to 2030)

-to determine the long-term electricity demand and detail how this demand should be met in terms of generating capacity, type, timing and costs.
-all long-term plans should be considered as indicative rather than “cast in concrete” plans.
- The Systems Operations and Planning Division of Eskom has been mandated by the Department of Energy (DoE) to produce the integrated resource plan for electricity in consultation with the DoE and NERSA.
- Base case CO₂ emissions increase to a level of 381 million tons by 2030.
- Emissions limits of 220 & 275 millions tons and a carbon tax modeled.
- Base case result in an emission rate of 0.84 CO₂ tons/MWh (R789bn – direct cost). The “low carbon” scenario in 0.48 CO₂ tons/MWh (R1 250bn). The Revised Balance Scenario provides for an emission rate of 0.59 CO₂ tons/ MWh (R856 bn – direct cost).

Integrated Resource Plan for Electricity (IRP, 2010) (for the period 2010 to 2030)

- The carbon tax price curve does not include the cost of the actual tax itself, only the impact of the generation choice driven by the carbon tax.
- Emissions from coal imported to be excluded from domestic emissions accounting?

Revised Balance Scenario:

- Coal: Medupi 4 332 MW, Kusile 4 338 MW, Ingula 1 332 MW & return to service of Grootvlei and Komati
- Wind farm Sere power station, 100 MW
- Renewable Energy power purchase, Wind, Solar, CSP – 11 000 MW
- OCGT – peaking 1 020 to 5 750 MW,
- CCGT – LNG: 1 891 MW by 2019,
- Nuclear commencing in 2023 with 9 600 MW by 2030
- Hydro – imported 3 349 MW from 2020
- Own generation and co-generation – 1 253 MW
- Energy efficiency demand side management (EE-DSM) – 1 617 MW

Energy Efficiency Policies

- Energy Efficiency Strategy for South Africa, introduced in 2005, set aspirational targets for sector energy efficiency improvements as well as outlined several energy efficiency policy measures to be introduced.
- A national energy intensity reduction target of 12% by 2015 for all users of energy has been set. Additional energy efficiency improvement targets of 15% by 2015 for industry; mining; power generation; transport; and commercial & public buildings; and 10% for residential sector were set.
- Key policy measures include:
 - Energy Efficiency and Demand Side Management Programme
 - Energy Efficiency Tax Incentive
 - Revised National Building Regulations
 - Adoption of Energy Management System Standards (ISO 50 001)
 - Public Transport Programme

Concluding remarks

- A carbon tax that is implemented gradually and complemented by effective and efficient revenue recycling can contribute to significant emissions reductions,
- A carbon tax will be introduced as part of a package of interventions to ensure that the primary objective of GHG mitigation is achieved,
- Minimise potential adverse impacts on low-income households and industry competitiveness

Thank you

Any Questions?

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Existing Environmentally Related Fiscal Measures

Taxes

- **General fuel levy** applied to petrol, diesel (a component ?)
- **Electricity generation tax** applied to non-renewable based electricity generation (3.5c/kWh)
- **Motor vehicle emissions tax** – purchase tax of R90 (R75) gCO₂/km for each emission exceeding 120gCO₂/km (passenger vehicles) and double cabs subject to tax of R125 (R100) for emissions exceeding 175gCO₂/km
- **Incandescent globe tax** of R4 (R3) per globe

Tax Incentives

- **Tax exemption for revenues earned from CERs** (CDM projects) – Dec 2020
- **Accelerated depreciation allowances** for renewable electricity generation and biofuels production (50:30:20)
- **R&D tax incentives (including green technologies)** - 150 per cent income tax deduction for R&D expenses
- Tax incentives for **biodiversity conservation**
- **Energy efficiency savings tax allowance** (in process ...)

Electricity generation levy = 3.5c/kwh

- The levy was implemented on 1 July 2009 on the production / generation of electricity from non-renewables including coal, petroleum-based fuels, natural gas and nuclear. The objectives were:
 - Complement demand side management efforts
 - As a first step towards developing a carbon tax to achieve long term climate change objectives
- Electricity generated from renewables and qualifying cogeneration are excluded from the levy
- Now also incorporate provision for the funding of energy savings measures such as the SWH, previously included in the electricity tariff and funding to rehabilitate some of the roads that were damaged due to the large volumes of coal trucks in one of the Provinces.
- To ensure the effective pricing of carbon and facilitate the structural change currently taking place in the energy sector, a gradual phasing-down and restructuring of the current electricity levy will be considered

Energy Efficiency Savings Tax Incentive

- Aimed at helping to address climate change related challenges through improvement in energy use and address energy security concerns
- The value of the incentive (i.e. a tax deduction) is 45 cents per kwh saved
- Taxpayers that can prove EES from implementing an energy efficiency measures can claim the allowance
- Only accredited measurement and verification professional can verify the EES
- The South African National Energy Development Institute (SANEDI), a government agency, is responsible for endorsing and issuing EES certificates
- The taxpayer baseline is adjusted annually with the amount of EES claimed
- The legislation is already in place and the Regulations to effect the incentive await publication
- The EES incentive will run until January 2020
- It is complementary mechanism (i.e. carrot) in anticipation of the implementation of the proposed carbon tax. Some of the carbon tax revenue will be recycled through this EES Tax Incentive

Budget 2012: Proposed carbon tax design features: (3)

Table C.13 Proposed emissions thresholds for sectors

Sector	Basic tax free threshold (%) below which no carbon tax will be payable during the first phase (2013 to 2019)	Maximum Additional allowance trade exposure	Additional allowance for “process” emissions	Total	Maximum offset percentage
Electricity	60%	-	-	60%	10%
Petroleum (coal to liquid)	60%	10%	10%	80%	5%
Petroleum – oil refinery	60%	10%	10%	80%	5%
Iron and steel	60%	10%	10%	80%	5%
Aluminium	60%	10%	10%	80%	5%
Cement	60%	10%	10%	80%	5%
Glass & ceramics	60%	10%	10%	80%	5%
Chemicals	60%	10%	10%	80%	5%
Pulp & paper	60%	10%	0%	70%	10%
Sugar	60%	10%	0%	70%	10%
Agriculture, forestry and land use	60%	-	40%	100%	0%
Waste	60%	-	40%	100%	0%
Fugitive emissions: coal	60%	10%	10%	80%	5%
Other	60%	10%	-	70%	10%

MYPD3 – Electricity prices

NERSA - Allowed: Rand million	2013/14	2013/15	2013/16	2013/17	2013/18	TOTAL	
Return	23,477	26,511	26,436	27,657	33,667	137,748	
Primary energy costs	51,067	54,966	56,779	62,060	68,620	293,492	
Independent Power Producers	2,686	5,108	14,826	19,269	23,018	64,907	
Depreciation	25,733	27,481	28,564	28,911	29,197	139,886	
Integrated Demand Management - EE & SWH	1,455	953	819	712	1,244	5,183	
Operating costs	45,519	48,565	52,908	57,769	60,576	265,337	
Total Allowable Revenues	149,937	163,584	180,332	196,378	216,322	906,553	
Eskom - Requested: Rand million	2013/14	2013/15	2013/16	2013/17	2013/18	TOTAL	
Return	7,271	14,643	31,187	51,878	81,885	186,864	
Primary energy costs	62,328	65,368	69,657	75,330	82,266	354,949	
Independent Power Producers	5,189	13,302	18,043	20,143	21,042	77,719	
Depreciation	30,792	34,631	37,076	39,669	43,218	185,386	
Integrated Demand Management - EE & SWH	2,941	2,709	1,862	1,966	3,612	13,090	
Operating costs	44,875	48,952	54,934	59,346	61,478	269,585	
Total Allowable Revenues	153,396	179,605	212,759	248,332	293,501	1,087,593	
NERSA - ESKOM: Rand million	2013/14	2013/15	2013/16	2013/17	2013/18	TOTAL	
Return	16,206	11,868	(4,751)	(24,221)	(48,218)	(49,116)	-26%
Primary energy costs	(11,261)	(10,402)	(12,878)	(13,270)	(13,646)	(61,457)	-17%
Independent Power Producers	(2,503)	(8,194)	(3,217)	(874)	1,976	(12,812)	-16%
Depreciation	(5,059)	(7,150)	(8,512)	(10,758)	(14,021)	(45,500)	-25%
Integrated Demand Management - EE & SWH	(1,486)	(1,756)	(1,043)	(1,254)	(2,368)	(7,907)	-60%
Operating costs	644	(387)	(2,026)	(1,577)	(902)	(4,248)	-2%
Total Allowable Revenues	(3,459)	(16,021)	(32,427)	(51,954)	(77,179)	(181,040)	-17%

MYPD3 – Electricity prices

	2013/14	2013/15	2013/16	2013/17	2013/18
Allowed revenues from tariffs based sales - Rmn	142,746	155,477	171,838	189,396	209,025
Forecast sales to tariff customers: (GWh)	217,890	219,744	224,877	229,495	234,519
Standard average price (c/kWh)	65.51	70.75	76.41	82.53	89.13
Percentage price increase (%)	8%	8%	8%	8%	8%
Total expected revenues from aa customers -Rmn	149,937	163,584	180,332	196,378	216,322