Fiscal Instruments to Support the Transition to a Low Carbon, Green Economy

Green Technologies: Drivers, Barriers and Gatekeepers Symposium (Academy of Science of South Africa)

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Introduction

- *Sustainable development is development that meets the needs of present generation without compromising the ability of future generations to meet their own needs* – Brundtland Commission 1987
- As part of the broader Environmental Fiscal Reform policy process, Government recognizes the role for market-based instruments to complement regulatory policy instruments and help address environmental concerns.
- In addition to environmental tax reforms, other fiscal policy tools that could contribute towards low carbon, sustainable development include:
  - Pollution charges
  - Removing environmentally-harmful subsidies
  - **Green subsidies**, and **subsidised loans** to reward good environmental performance
  - **Direct public expenditure on infrastructure**

National Environmental Policy Context

- South Africa faces several environmental challenges including excessive levels of greenhouse gas emissions and local air pollutants, deteriorating levels of water quality and quantity, increasing volumes of waste generation and land degradation and biodiversity loss.
- Government has developed important policy frameworks and strategies that seek to address these problems. These include:
  - **National Climate Change Response White Paper Policy:**
    - reduce emissions by 34 per cent by 2020 and 42 per cent by 2025 relative to a business as usual emissions trajectory.
  - **National Strategy for Sustainable Development and Action Plan** which identifies **5 strategic priorities**:
    - Enhancing systems for integrated planning and implementation
    - Sustaining our ecosystems and using natural resources efficiently
    - Towards a green economy
    - Building sustainable communities
    - Responding effectively to climate change

National Climate Change Response White Paper: Finance and Flagship Programmes

- **Financing National Climate Change Response Policy** and long term funding framework for climate change:
  - Mainstream climate change response into the fiscal and budgetary process and so integrate the climate change response programmes at national, provincial and local government and at development finance institutions and state-owned entities.
- **Near Term Priority Flagship Programmes for:**
  - Climate Change Response Public Works
  - Water Conservation and Demand Management
  - Renewable Energy
  - Energy Efficiency and Demand Side Management
  - Transport
  - Waste Management
  - Carbon Capture and Storage
  - Adaptation Research

Rio +20 Outcomes: Finance

- Calls on **all countries to prioritise sustainable development** in the **allocation of resources** in accordance with **national priorities and needs**, and recognises the **crucial importance** of **enhancing financial support** from all sources for sustainable development, in particular for developing countries.
- Recognises the **importance of international**, **regional** and **national financial mechanisms, including those accessible to subnational and local authorities, for the implementation of sustainable development programmes**, and call for their **strengthening and implementation**.
- New partnerships and innovative sources of financing can play a role in complementing sources of financing for sustainable development.
- Recognises the need for significant mobilisation of resources from a variety of sources and the effective use of financing.
- Recognises the fulfilment of all ODA commitments is crucial, and the need to improve development effectiveness, increase programme based approaches, use country systems for activities managed by the public sector, reduce transaction costs and improve mutual accountability, and transparency.

Environmental Policy Principles and Rationale for Government Intervention

PRINCIPLES:

- Polluter pays
- Precautionary principle
- Intergenerational equity

ENVIRONMENTALLY-RELATED MARKET FAILURES:

- **Provision of public goods**: Non rival and non-excludable in consumption.
- **Negative externalities:** Occurs when an individuals action has an impact on others and the costs of these impacts are not reflected in the price of a good or service. Can result in resource under-pricing and therefore overconsumption.
- **Information asymmetry:** Occurs when during a transaction, one party has better information than the other or information is costly to obtain. In new, rapidly changing markets, such as for green technologies, some participants will lag behind current information.
- **Imperfect competition:** a monopolistic or oligopolistic market structure where firms are price setters such that prices usually higher than under competitive conditions.
- **Research, development and technology innovation**: may not be possible for a firm to capture the full benefits of an innovation as the information can be readily passed on at a minimal cost.

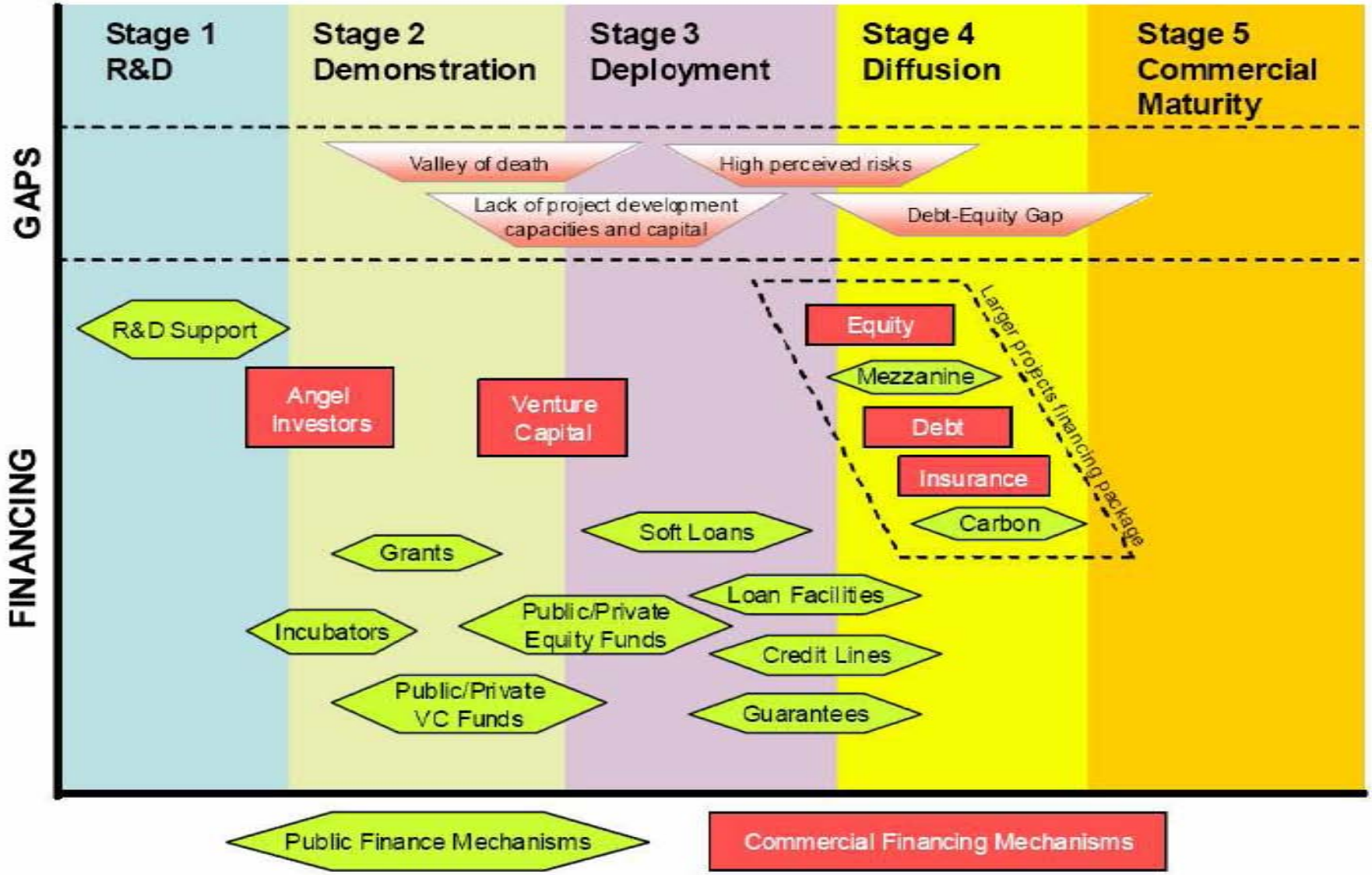
Policy Instruments to Support Sustainable Development – Sustainable production and consumption patterns

Regulatory Instruments	Economic Instruments	Research and education instruments	Cooperation instruments	Information instruments
Norms and standards	**Environmental taxes**	Research and development	Technology transfer	Consumer advice services
Environmental liability	**Fees and user charges**	Education and training	Voluntary agreements	Sustainability reporting
Environmental control and enforcement	Removing environmentally harmful subsidies			Environmental quality targets and environmental monitoring
	Environmental financing			Eco labelling
	Subsidies			Information centres
	Tradable certificates / permits			

Technology-Related Market Failures (Source: World Bank)

- **Inventions and discoveries have public good characteristics.** Firms under-invest in research and development because of the fear that their competitors will benefit.
- **Public promotion of new technologies**, beyond support for research, can be justified by consideration of dynamic increasing returns generated by learning-by-doing, learning-by-using and network externalities. Successful innovation is a long, arduous process.
  - The average period for taking a new energy technology to market – to traverse the "valley of death" as it is often called – is 20 to 30 years (Lee, Iliev and Preston, 2009). In such an environment, early-movers generate spill-over effects which are of benefit to society but cannot be privately appropriated.
- In the case of renewable energy, **policy risk is unavoidable**. Given that no renewable energy technology has yet reached price parity in its production costs with coal-fired electricity, a profitable return on the development of these technologies may be dependent on many years of government subsidy.
  - Technology-based policies can help reduce policy risk by providing support upfront (e.g., through capital subsidies) rather than over time and/or by embedding support that is provided over time into legally binding contracts (e.g., through feed-in tariffs).
- **Capital market failures**. Research has shown that a combination of large upfront costs and high risk profiles can make renewable energy demonstration projects unsuitable for both venture capital and commercial financing and therefore leave them with inadequate market financing.

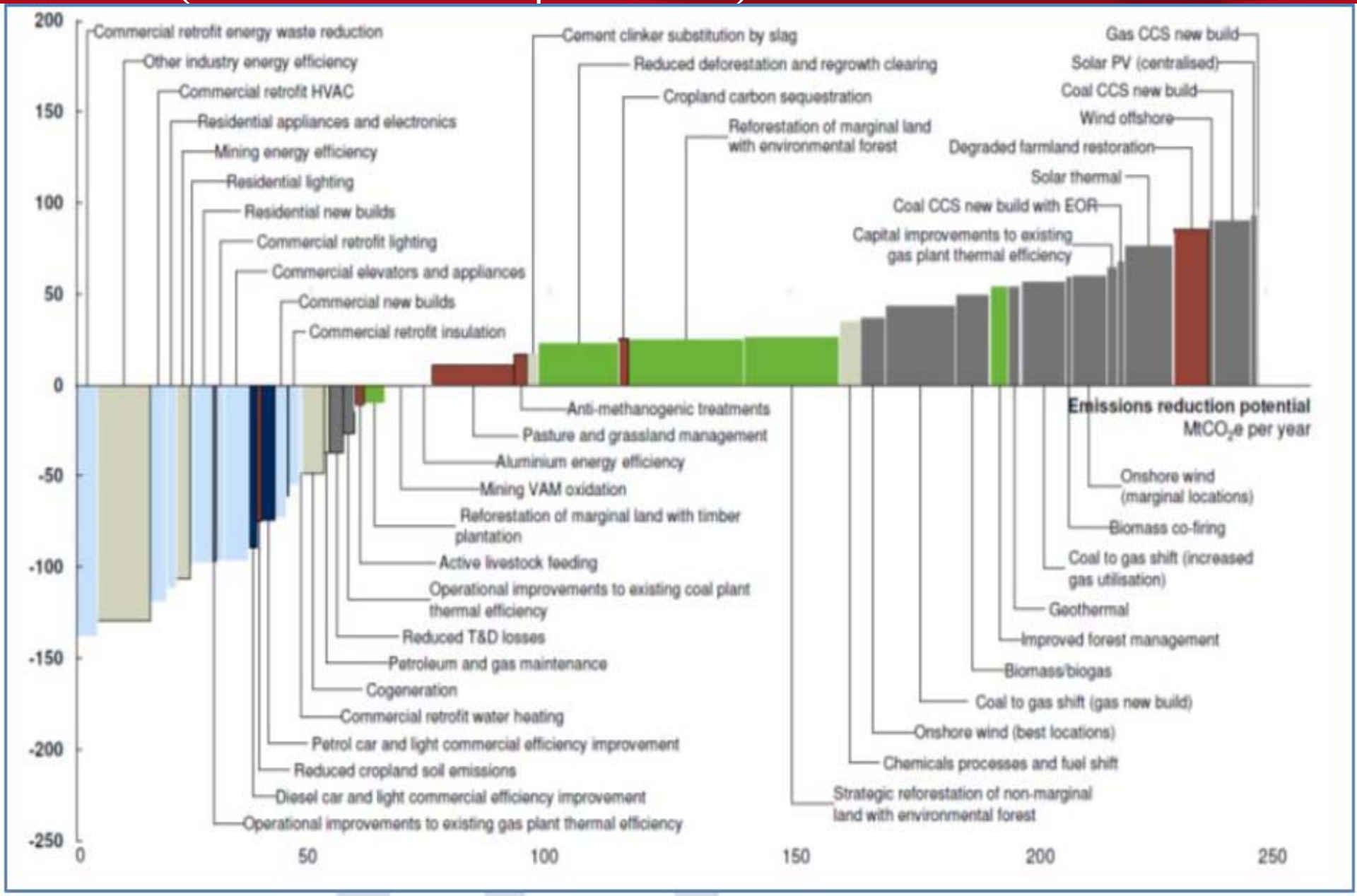
Project financing options to support low carbon, environmentally cleaner technology development



Bridging the funding gap between emissions intensive and low carbon, environmentally cleaner technologies

- ***Environmentally – related taxes*** that internalise externalities and also provides a revenue source.
- ***Subsidies for the provision of public goods*** - critical infrastructure in the energy, transport, water sectors (high upfront capital costs)
- ***Subsidies to encourage research and development*** of low carbon, environmentally cleaner technologies and promoting cleaner production practices
- ***Tax incentives*** for R&D and capital investments
- ***Environmental financing policies to derisk projects*** – possible guarantees, concessional loans
- ***Public private partnerships*** for demonstration plants and facilities
- ***Accessing carbon market finance*** – CDM and new market mechanisms
- ***International funding*** – Green Climate Fund, other environmentally related funding accessible through the Global Environment Facility, Strategic Climate Change Fund, Bilateral and multilateral funding

What could be financed? Marginal Abatement Cost Curve (Source: NBI Report 2013)



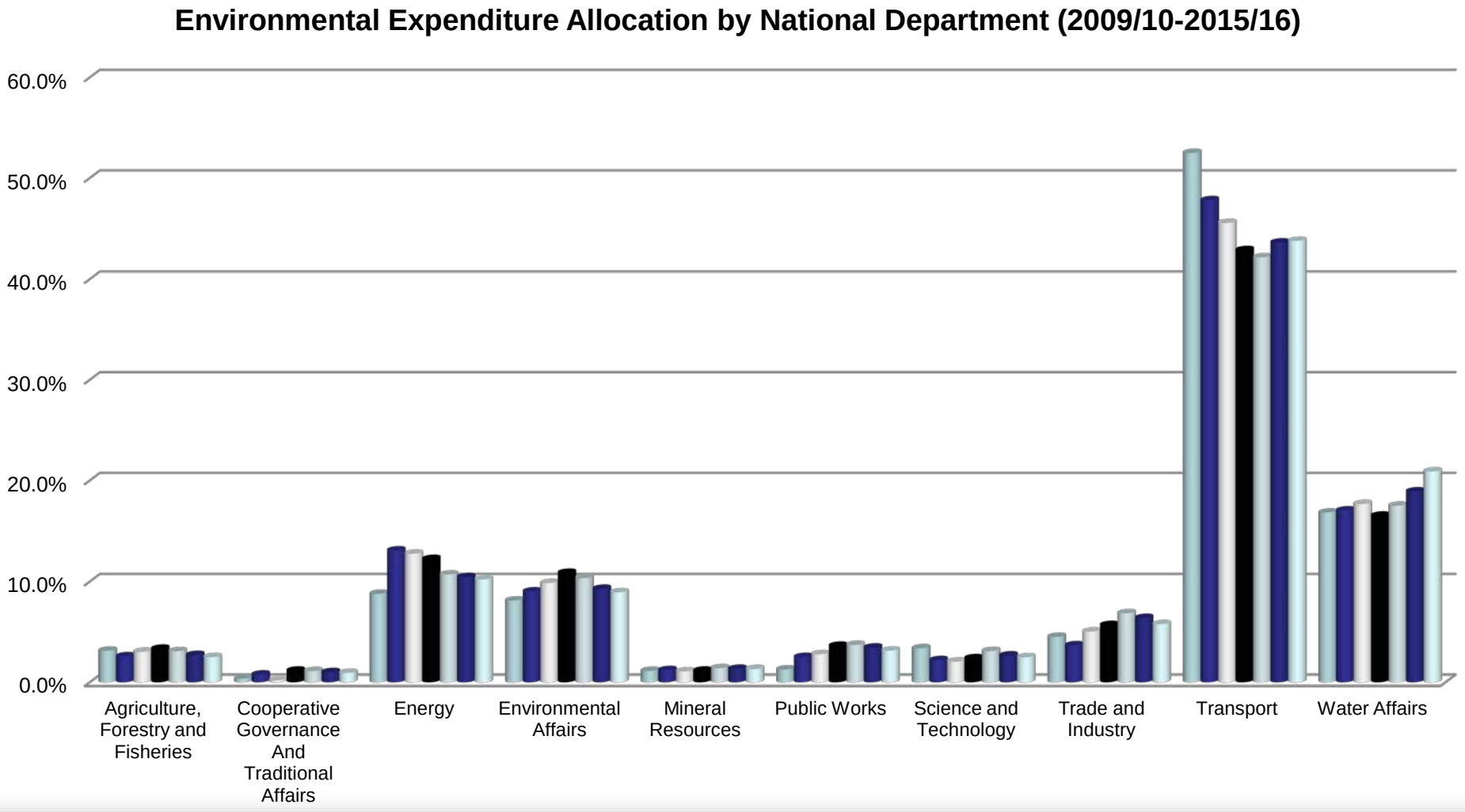
Current Climate Change and Environmentally Related Programmes funded on Budget

Sector	Initiative
Energy	• Electricity Demand Side Management Programme (Eskom and Municipalities) – mainly solar water geysers • Integrated national electrification programme • Clean Energy • Designated National Authority – Clean Development Mechanism • Manufacturing Competitiveness Enhancement Programme – grant for upgrading projects to encourage energy efficiency and cleaner production practices
Transport	• Public transport infrastructure and systems grant
Water and sanitation	• Regional bulk infrastructure grant • Municipal drought relief grant
Environment – natural resource management	• *Working for Water* – clearing alien invasive species • *Working for coasts* – Promotes clean-up, rehabilitation and security of coastal environments and ecosystems • *LandCare* – community based programme focusing on conservation and rehabilitation of soil, water and vegetation • *Working on Fire* – focuses on integrated fire management of veld and wildfires • *Green Fund* – grant funding to support green economy programmes
Biodiversity	• Biodiversity conservation and management (South African National Parks, South African national Biodiversity Institute and Isimangaliso Wetland Park Authority)
Disaster management	• Municipal disaster grant • Provincial disaster grant (Includes allocations from Depts of Transport, Human Settlements, COGTA)

National environmentally-related programmes
Estimates based on Budget 2012 Data (ENE Publication)

PROGRAMME	SUB-SUBPROGRAMME	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16
Fisheries	Marine Resources Management	16 394	14 242	14 715	15 930	16 727	17 564	18 372
Forestry	Natural Resources Management	389 776	241 516	445 569	758 154	662 320	631 901	660 968
Disaster Response Management	Municipal Disaster Grant	60 800	0	470 000	330 000	350 000	371 000	388 066
	Provincial Disaster Grant	0	214 926	305 000	180 000	190 000	201 400	210 664
Clean Energy	Climate change and Designated National Authority	2 785	2 873	3 491	3 378	4 493	4 758	5 013
	Energy Efficiency	178 897	230 427	288 856	205 124	230 247	231 833	242 557
	Renewable Energy	84 760	114 690	185 148	1 044 815	1 706 653	2 007 047	7 421
Electrification and Energy Programme Management	Intergrated National Electrification Programme	2 542 934	2 763 146	3 265 496	3 133 551	3 410 667	3 706 630	3 877 302
Biodiversity and Conservation	Biodiversity and Conservation Management	3 420	7 069	5 900	5 780	6 124	6 505	6 804
	Biodiversity Management	18 392	25 860	32 151	48 747	50 088	53 071	55 512
	iSimangaliso Wetland Park Authority	20 736	21 365	25 847	26 837	28 410	30 099	31 484
	South African National Biodiversity Institute	138 886	147 830	205 387	189 412	199 824	213 572	223 396
	South African National Parks	184 384	190 218	157 490	167 521	175 582	183 907	192 367
	Transfrontier Conservation and Protected Areas	21 034	29 632	45 577	48 070	51 333	54 443	56 947
Chemicals and Waste Management	Chemicals and Waste Management	0	0	0	0	0	0	0
Environmental Programmes	Green Fund	0	0	0	300 000	500 000	0	0
	Working for Water	501 308	675 679	966 188	1 113 206	1 208 896	1 472 693	1 540 437
	Working on Fire	123 659	213 764	303 339	383 538	415 793	534 741	559 339
Legal, Authorisations, Compliance and Enforcement	Buyisa-e-Bag	29 385	23 500	30 500	0	0	0	0
	Environmental Quality and Protection Management	8 489	3 486	5 431	5 642	6 007	6 366	6 659
	Environmental Impact Management	37 106	41 223	44 669	46 944	49 833	52 867	55 299
	Pollution and Waste Management	27 887	29 235	44 435	50 592	53 531	56 670	59 277
Oceans and Coasts	Integrated Coastal Management	31 228	47 284	45 879	46 201	51 321	54 400	56 902
	Oceans and Coastal Research	69 182	49 476	47 072	50 107	54 575	57 933	60 598
	Oceans and Coasts Management	11 900	15 400	20 414	22 277	24 000	25 440	26 610
	Oceans Conservation	0	0	6 396	6 762	6 961	7 379	7 718
Total		**4 503 342**	**5 102 841**	**6 964 950**	**8 182 588**	**9 453 385**	**9 982 219**	**8 349 712**

Preliminary Scan: National Environmental Expenditure Allocations



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Domestic Environmental Financing Mechanisms

- Several **dedicated environmental financing mechanisms** can also be identified.
  - Green Fund
  - Drylands Fund (implemented by the DBSA)
  - National Implementing Entity for the Global Adaptation Fund (South African National Biodiversity Institute)
- **Objectives of instruments**:
  - Provide support for environmentally-cleaner projects and programmes in line with policy priorities in a coherent manner
  - Mobilise financial resources including public, private and other sources of funding

Key design considerations for environmental funding mechanisms

- **Expenditures should be targeted to meet environmental priorities** and promote projects with large environmental benefits relative to their costs.
- **Environmental Funds should :**
  - **play a catalytic role in financing**, offering no more support for projects than is necessary and adapt to changing economic conditions.
  - **be used in conjunction with, and reinforce,** other environmental policy instruments, such as **regulations or economic instruments.**
  - develop an **overall financing strategy**, follow clear and explicit operating procedures for evaluating and selecting projects, and adopt effective monitoring and evaluation practices.
  - **not compete with emerging financial markets** but should leverage financing from private sector enterprises and financial institutions for environmental investments.
  - **ensure transparency** and should **be accountable to government, parliaments and public** for their actions.

Source: OECD, 1995a

Green Fund

- Green fund is allocated **R1.1 bn** (R300m in 2012/13, R500m in 2013/14 & R300mil in 2015/16)
- The **DBSA is the implementing agency** of the fund and operates and reports on the objectives of the fund to the **Management Committee**.
- **3 policy funding windows:**
  - Low carbon economy
  - Green cities and towns
  - Environmental and Natural Resource Management
- The key **objectives of the Fund** are:
  - Promote innovative high impact green programmes and projects
  - Strengthen institutional and technical capacity to mainstream green and climate issues into the economy
  - Reinforce climate change response through green interventions
  - Build an evidence base for the expansion of the green economy
  - Attract additional resources to support South Africa's green economy development

Cities Support Programme

- Developed by the National Treasury in collaboration with other government line departments aimed at providing strategic support to local government.
- 4 key components of programme: Core city governance integrated strategic, participatory planning and financing; Human settlements support (access to land and services); Public transport support (mobility and urban efficiency) and Climate resilience and sustainability support (resilient infrastructure and systems
- For the **Climate resilience component**, the green fund has been established with the Green Cities window
  - Assist cities to scale up their climate adaptation and mitigation interventions especially to leverage available global funds and to access global experience and expertise in climate change mitigation and adaptation interventions
  - Will focus on mainstreaming climate resilience issues across major infrastructure sectors managed at city level such as water and sanitation, electricity distribution, solid waste management, storm water drainage and public transport.

Concluding remarks

- As a complimentary measure to environmental taxes and regulatory instruments, international and domestic financial support for low carbon, sustainable programmes has an important role to play in facilitating the transition of the South African economy and unlocking green investments.
- To date, the **majority of fiscal support** has been **channelled** towards the **energy, transport** and **water sectors** across different spheres of government and aligned with priority sectors identified in the National Climate Change Response White Paper and Sustainable Development Action Plan.
- Given the cross cutting nature of environment and climate change impacts across different sectors, consideration should be given to **building on existing dedicated financing mechanisms and institutions**, that can leverage additional, innovative financial resources and enhance the effectiveness of these instruments.
- Together, an appropriate and certain regulatory policy framework complemented by adequately targeted financial support can help to unlock investments in green technologies.

THANK YOU.

Example: Snapshot of South Africa's policy response to Environmental issues

Regulatory instruments	Environmentally-related taxes	Subsidies / tax incentives	Information instruments
• Reduce emissions by **34% by 2020 and 42% by 2025** relative to business as usual • Air quality standards • **Renewable energy strategy and the IRP** • **Biofuels industrial strategy –** 2 per cent blend of biofuels into national road transport fuel pool • Building standards, vehicle emission standards, solar water heating target and waste recycling (National Development Plan 2011)	• **Proposed carbon tax** • **Electricity generation levy (3,5c/kWh)** – renewables and cogenerated electricity exempted • **CO_2 based purchase tax on new motor vehicles** (R75gCO_2 for each gram emitted above 120gCO_2/km) • General fuel levy, biodiesel fuel tax concession • Incandescent globe tax • **Plastic bag levy**	**Tax incentives** • **Depreciation allowances** for renewable electricity generation and biofuels production (50:30:20 percent over 3 years) • **Proposed energy efficiency savings tax incentives** • **Research and development tax incentives** • **Tax exemption for income earned from the sale of CERs (CDM)** **Fiscal support:** • **Green Fund** • Public transport infrastructure • Demand side management and energy efficiency (solar water heaters)	• Vehicle fuel economy and CO_2 emissions labelling scheme • Energy efficiency appliance labelling