



ASSOCIATION OF CEMENTITIOUS MATERIAL PRODUCERS

NATIONAL CLIMATE CHANGE RESPONSE WHITE PAPER 2010 dated OCTOBER 2011

**Parliament
8 November 2011**

Dr Dhiraj Rama

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- Current climate change response status in the cement sector in RSA
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ASSOCIATION OF CEMENTITIOUS MATERIAL PRODUCERS

INTRODUCTION: Who is the ACMP?

The ACMP acts as an umbrella body for six South African clinker and cementitious material producer companies, specifically guiding and representing their interests in the fields of

- environmental stewardship,
- health and safety practices, and
- community and stakeholder interaction

All members produce cement in **compliance SABS standards**

The ACMP's member companies include:



❖ AfriSam: www.afrisam.com
❖ Lafarge South Africa: www.lafarge.com
❖ NPC-CIMPOR: www.cimpor.com
❖ Pretoria Portland Cement Company Ltd: www.ppc.com
❖ Cemlock(Gauteng) Pty Ltd
❖ I.D.M. Cement (Pty) Ltd: www.vibro.co.za



White Paper: Reflections

- **General:**
 - Provides a sound overview of the broad issues required to address climate change in South Africa
 - Mainstreaming climate change response into current regulatory and planning processes
- **Developmental objectives of South Africa:**
 - The ACMP endorses the key objective included in the White paper that encompasses the **economic, social and ecological pillars of sustainable development**
 - The development of sector or industry plans referred to in the White paper must thus place increased focus on the above factors and be reviewed accordingly
- **The Climate Change Response Flagship Programme:**
 - **Climate Change Response Public Works Flagship Programme:** Should there be ongoing concerns regarding approval of the IWMP for used tyres, there may be case for "Working for waste tyres"
 - **The Waste Management Flagship Programme:** The ACMP is disappointed that recovery of energy and materials from waste has not been referred to although the NWMS has embraced this as a key priority and Government has also developed appropriate legislation and policies to give effect to this .



White Paper: Reflections

Business and Industry

- **Role of Industry and Business:** Recognised that they have an important contribution to make
- **Partnering with stakeholders:** The government is committed to substantive engagement and, where appropriate, partnerships with stakeholders from industry, business, labour and civil society in a manner that enhances coordination
- **Industry plans and targets :** these plans must place appropriate focus on the developmental objectives of the country
- **Mitigation:**
 - Identifying desired sectoral mitigation contributions
 - However, it is disappointing that the approach on the White Paper on the trajectory does not reflect the approach in the draft of the White Paper, where it was reflected as work in progress while actual figures are presented as final version.
 - It is therefore proposed that the original approach contemplated in the draft that the determination of the final benchmark trajectory would form part of the carbon budgeting process should be followed
- **Transport:**
 - Disappointing to note that there been no emphasis that those sectors identified to report on GHG emissions will be supported
- **Carbon budget:** Introduced
- **Institutional arrangement:**
 - Inter-Ministerial Committee on Climate Change
 - Intergovernmental Committee on Climate Change: brings together the relevant national and provincial departments and organized local government



Key outputs

- ✓ Key Carbon emitters: 2 years to finalise “carbon budgets” to inform peak, plateau, decline aspirations
 - ❖ Government to actively consult with Industry to identify an optimal combination of mitigation measures at the least cost . This is viewed as tool to set targets
 - ❖ Manage developmental state objectives with climate change management strategy
- ✓ Mix of financial instruments such as carbon tax; emission trading schemes, incentives, etc considered
- ✓ Sectors and sub sectors: develop mitigation and low-carbon development strategies
- ✓ Government climate change response measurement and evaluation system: 2 years
- ✓ Introduction of “flagship” programmes



OVERVIEW

National White Paper supported by the ACMP

BUT

- The cement sector faces challenges in implementing its climate change strategies and recommends that the Climate change policy support enabling mechanisms.



ACMP ENVIRONMENTAL POLICY

ACMP ENVIRONMENTAL POLICY

The ACMP commits to transparent reporting of key environmental indicators and providing a sound knowledge management platform to members and relevant stakeholders with regards to environmental best practice.

The members are all committed to:

- Continuously improve and promote environmental best practice.
- Pollution prevention
- Continuously reviewing environmental impacts in order to minimise environmental degradation
- Comply with environmental legislation and other requirements to which the ACMP subscribes
- Implement effective waste and energy management principles
- Utilisation of all resources in an optimal and responsible manner
- Effective and transparent communication to all stakeholders

This environmental policy demonstrates our members commitment to environmental stewardship.



ACMP CLIMATE CHANGE POLICY STATEMENT:

All members of the ACMP recognize that climate change poses a real global threat to sustainable development that requires a global response. An effective global solution requires action from all countries that must be aligned with agreed global and national objectives.

As a result all ACMP members aim to pro-actively adopt and/or develop mitigation and adaptation strategies to manage greenhouse gas emissions while incorporating national development goals.

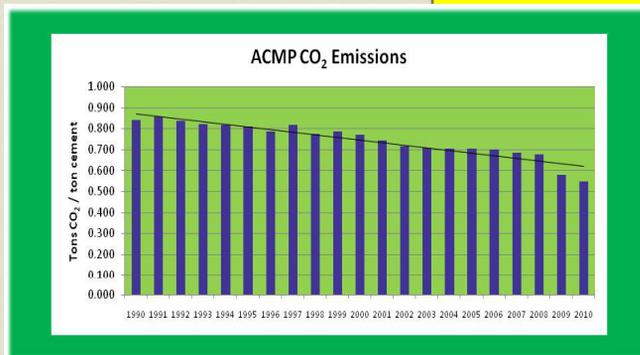
ACMP members will achieve this objective by:

- Engaging with relevant stakeholders and supporting the development of national initiatives to manage Greenhouse gases
- Reporting and monitoring of CO₂ emissions from the local cement manufacturing sector using globally accepted reporting protocols
- Establishing business and operational plans to manage CO₂ emitted
- Establishing sector specific benchmarks for operational efficiency
- Ongoing review of strategies, best practices and continuous improvement



GHG emission trends: 1990 - 2010

Less limestone (extenders used)
Less coal
Less electricity



Carbon Emissions Reduction Levers

Impacts of the four levers for carbon emissions reductions:

1. Thermal & Electric Efficiency

- ❖ Deployment of new technologies in new cement plants & retrofit of energy efficiency equipment

2. Alternative Fuels

- ❖ Less use of carbon-intensive fossil fuels and more AFR & Biomass

3. Clinker Substitution

- ❖ substituting carbon-intensive with other lower carbon materials with cementitious properties

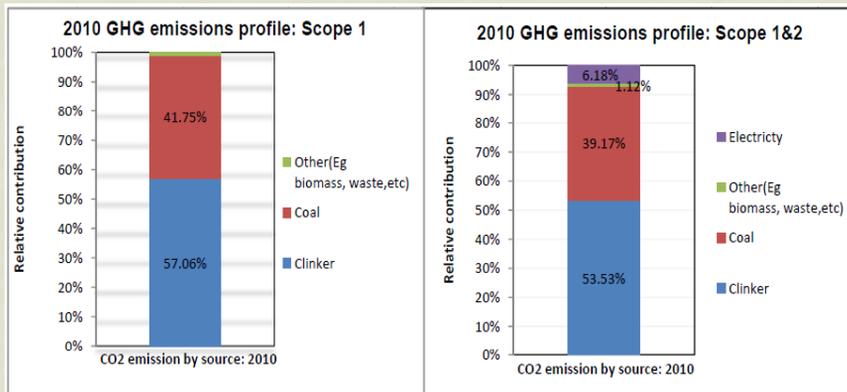
4. Carbon capture and storage (CCS) – capturing CO₂

- ❖ before is released into the atmosphere storing securely
 - Long-Term

Externality: Transport



GHG Source profile in the cement sector

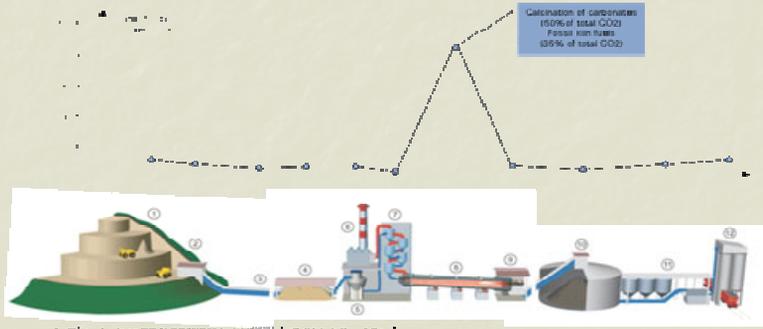


GHG data is available to inform the development of sectoral mitigation and low-carbon development strategies but research is required to inform least cost mitigation options



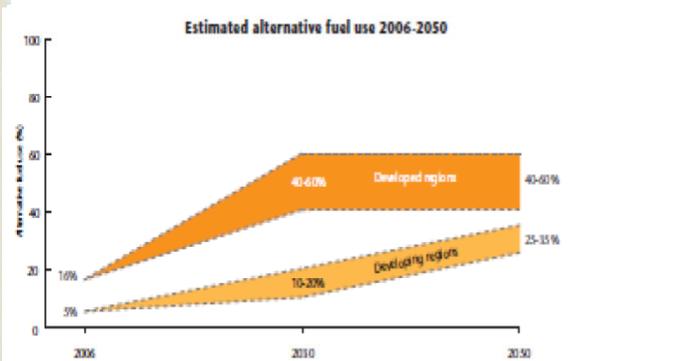
Cement manufacturing process

GHG emissions along the Cement Production Process



INTERNATIONAL EXPERIENCE

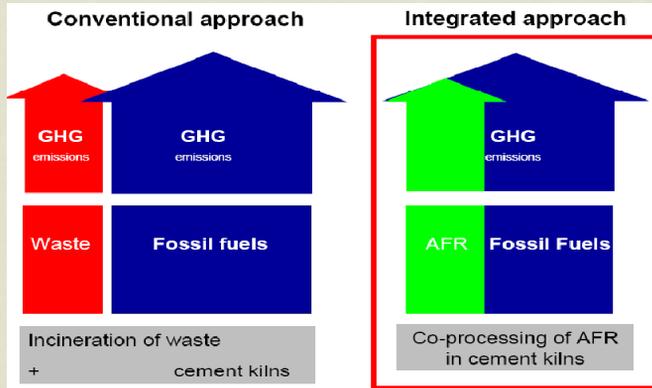
Worldwide Estimated Alternative Fuel Use 2006-2050



SA has an opportunity and potential to use significant Afs in the future

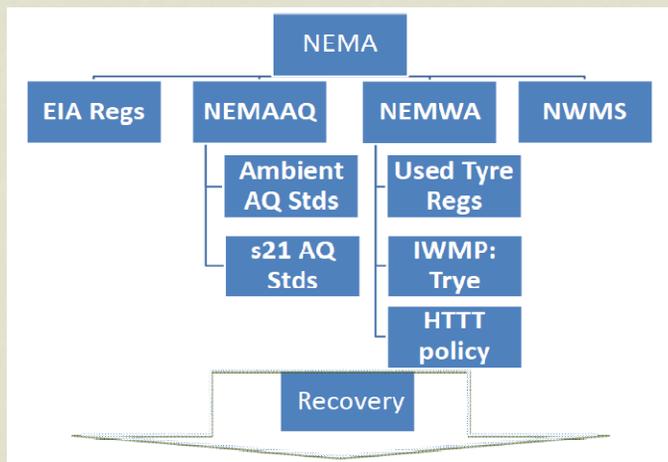
Source: Cembureau: World Business Council for Sustainable Development, 2006

Benefits of co-processing: save fossil fuel and avoid incinerator emissions



Source: Cembureau: World Business Council for Sustainable Development, 2006

Comprehensive regulatory regime in place to support implementation



BARRIERS: Regulatory delay: Eg. Waste Tyre Regulations

13 February 2009 : Waste Tyre Regulations -13 February 2009 (GN149).

24 July 2009 : Department's high temperature thermal treatment policy -24 July 2009

5th April 2010 : Tyre waste management plan - 5th April 2010 -to date not been approved

July 2011: Second Tyre waste management plan gazetted for comment

August 2011: **Status of first plan unknown.**

November 2011: **Status of first and second plan unknown.**

This example clearly demonstrates the role of Government to ensure appropriate supply chains to manage efficient response to climate change

Consequence:

- **the unnecessary use of coal, a rapidly depleting resource:**
 - The cement producers unable to avoid CO₂ emissions attributed to coal. Approximately 13 million waste tyres generated annually (=225,000 tons).
- Implementation would have
 - **promoted sustainable development principles** (reduce use of natural resources)
 - **avoided adverse impact on ambient air quality** through burning of tyres and consequences to public health
- **Further example of delays is the lengthy period required by Authorities to authorize the EIA's for co-processing of AFR and**

GHG MITIGATION OPPORTUNITIES

CO ₂ DRIVERS	INTERVENTIONS	Effect	Status
Clinker: Calcinations of raw material	Extenders	●●	😊
	Other industrial by - products	●●	😊
Energy: Electricity consumption	Technology and energy efficiency	●	😊
	Work process	●	😊
Energy: Coal	Work process	●●●	😊
Energy: AFR	Government decision making	●●●	Govt?

The Cement Manufacturing Process



Recommendation 1

Development of NAMA for the cement sector

Challenges:

➤ Use of AFRs:

- ❖ Implementing international best practice in the context of delays in regulatory decision making (Eg. Approval of draft waste tyre management plan

➤ Review of the Waste Act:

- ❖ Waste definition: **unintended consequences:**
 - ❖ A number of materials conventionally used internationally and locally with consequences to GHG emission reduction now potentially and intriguingly renders cement as waste in RSA due to unclear definitions in the Waste Act,
 - ❖ International and local business risk: cement classified as waste
 - ❖ Discourages use of slags / fly ash / boiler ash/ synthetic gypsum etc resources: main contributors to GHG mitigation
- ❖ **Improve supply chains of alternate fuels and resources:**
 - ❖ Role of Government to ensure appropriate **supply chains** to manage efficient response to climate change commitment



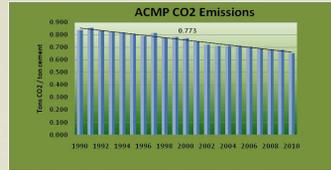
Review of the Waste Act: another example

❖ Improve supply chains of alternate fuels and resources:

- ❖ Role of Government to ensure appropriate **supply chains** to manage efficient response to climate change commitment



Recommendation 2: Carbon Budgets and trajectory



Recognition of previous and current effort:

The sector and industry plans, and Carbon Budgets must include recognition for the contributions made to date by various sectors to reducing greenhouse gas emissions.

In the case of the cement sector, the ACMP as signatory to the Energy Accord have *made significant strides towards implementing energy efficiency resulting in little* opportunities for further efficiency interventions.

Furthermore South Africa is an international leader in terms of producing extended cement. South African *emission levels per ton for cement* are thus much lower than international averages



Recommendation 3: ADEQUATE CONSULTATION WITH KEY SECTORS

Public participation and engagement:

The ACMP welcomes the timeframes set for implementation and recommends that there be sufficient opportunity for engagement

Government to actively consult with Industry to identify an optimal combination of mitigation measures at the least cost to finalise "carbon budgets" to inform peak, plateau, decline aspirations both sectorally and nationally.

Example of previous experience:

- The approach in the White Paper on the trajectory does not reflect the approach in the draft of the White Paper, where the trajectory was presented as a departure point for further work through the carbon budgeting process.
- It is therefore proposed that the original approach contemplated in the draft that the determination of the final benchmark trajectory would form part of the carbon budgeting process should be followed



Recommendation 4: ENABLING ENVIRONMENT

Improved understanding of legislative barriers that are counter-productive to GHG reduction



Recommendation 5: Economic instruments for a low carbon economy

- **Benchmarking economic instruments:**
 - **Socio-economic impact assessment:**
 - BRIC countries
 - Energy mix
 - Economic growth goals and targets
 - **Efficacy of incentives vs taxes**
 - Carbon tax at present is not a good solution as it would severely impact on the cost of doing business with consequences to the public
 - use of a combination of different economic interventions
 - **Benchmarking emissions:**
 - absolute vs specific values
 - **Carbon pricing:** Establishing a realistic price on carbon is a key factor to cost effective climate action
 - **Accurately price carbon:** Encourage the pro-active adoption of low carbon technologies
 - **Fiscal policy:** The relationship between the GHG trajectory, carbon pricing, and carbon budgets must be urgently clarified and the baseline year confirmed unambiguously

RECOMMENDATION 6: National planning initiatives

EXTERNALITIES TO BE ADDRESSED:

Governance framework

- Ensure progress towards implementation:
 - National Strategy on Sustainable development
 - Government actions/governance mechanisms:

Enhance efficient regulatory processes:

- Examples: Efficient permitting, compliance monitoring and enforcement of legislations such as the Air Quality Act and the Water Act.

Improving capacity and capability of the government departments to ensure efficient service delivery and alignment to current regulatory requirements (example Water use and discharge; agriculture management, etc).

Management of risk: Avoid unintended consequences:

- Socio economic state of RSA: **All mitigation and adaptation plans must be reviewed in the context of the developmental goals of South Africa and take into account the sustainable development**
- Trade barriers



National planning initiatives: IMPLICATIONS TO OTHER STRATEGIC PRIORITIES

➤ National Disaster Management Council

In this context it is important that the use of alternate fuels and resources be rolled out urgently. This would provide some level of preparedness during emergencies as the cement sector may play a critical role in the management of possible public health concerns.

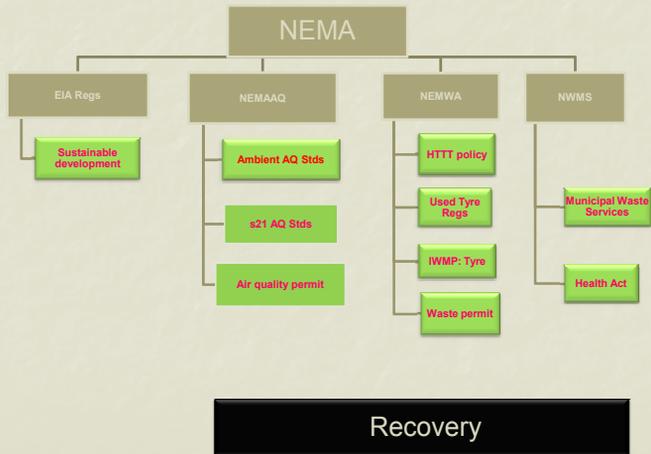
➤ Integrated planning

Prioritise the mainstreaming of climate change considerations and responses into all relevant sectors, national, provincial and local planning regimes such as, but not limited to, the Industrial Policy Action Plan, Integrated Resource Plan for Electricity Generation, Provincial Growth and Development Plans, and Integrated Development Plans (IDP).

The IDP must include sound waste management practice which would encompass waste recovery of selected materials such as used tyres in cement kilns.



REGULATORY FUNDAMENTALS IN PLACE



RECOMMENDATION 7: CEMENT QUALITY

- Cement production :
 - ❖ Production capacity not to be compromised to meet lower emission levels
- Cement quality:
 - ❖ Not to be compromised

Recommendation 8: Review of FLAGSHIP Programme

- **Public Works Flagship Programme:** Should there be ongoing concerns regarding approval of the IWMP for used tyres, there may be case for **"Working for waste tyres"**
- **Waste Management Flagship Programme:** The ACMP is disappointed that **recovery of energy and materials from waste** has not been referred to although the NWMS has embraced this as a key priority and Government has also developed appropriate legislation and policies to give effect to this.
- **Transport Flagship Programme:** The importance of and transport sector to the economy as a whole must be amplified. There must be increased emphasis on commitment to transport of goods by rail. This focus area is at present important to ensure ease of business. Currently many businesses rely on road freight due to its access and reliability. Furthermore, the planned rail re-capitalisation programme is considered an important component of this Flagship Programme in so far as it will facilitate both passenger modal shifts and the shift of freight from road to rail: disappointing –enabler to industry and sector specific . **It is recommended that those sectors identified to report on GHG and energy emissions be prioritised for rail transport support.** Cement producers have specific needs regarding both infrastructure and service level agreements will have a significant positive impact on managing its carbon footprint. **Role of Government to ensure appropriate supply chains to manage efficient response to climate change commitment to transport of goods by rail** (sectoral approach to be encouraged)
- **Energy Flagship Programme :** The use of alternate fuels and resources must be considered as a new flagship programme. In the case of the cement sector this especially needs to focus on the **replacement of clinker by other cementitious materials** already being produced by other industry sectors including, Granulated Blast furnace Slag and Fly Ash to name but a few. The use of **biomass alternatives** to coal as a fuel needs to be provided for in government policies in a more streamlined fashion.



Recommendation 9: Institutional arrangements

Institutional arrangements

The ACMP appreciates that various governance structures have been established

It is recommended that the

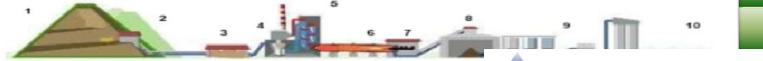
- IGCCC will also ensure ease of doing business and facilitate efficient decision making with regards to EIA and other related policy matters.
- Actively engage with key sectors to ensure facilitating implementation of sectoral mitigation strategies



CONCLUSION: GHG MITIGATION OPPORTUNITIES

CO ₂ DRIVERS	INTERVENTIONS	Effect	Status
Clinker: Calcinations of raw material	Extenders	●●	😊
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	Work process	●	😊
Energy: Coal	Work process	●●●	😊
Energy: AFR	Government decision making	●●●	Govt?

The Cement Manufacturing Process



CONCLUSION

THE ACMP FULLY SUPPORTS THE NATIONAL POLICY TO ADDRESS THE GLOBAL CHALLENGE

CARBON CONTENT OF CEMENT: BETTER THAN WORLD AVERAGE: an example...

FURNACES, KILNS, OVENS & DRYERS

...out that the company has been implementing measures to reduce water consumption, which include reusing and recycling water and reducing any wastage, long before recent warnings of a potential water crisis in South Africa.

However, as with all Afrisam's environmental strategies, it is constantly streamlining existing solutions and examining new possibilities," she says. The company also uses a series of by-products from other industries, such as the energy, chemicals and steel industries, to extend the cement's production and, in so doing, significantly reduce the carbon dioxide (CO₂) emissions associated with its cement products.

To reduce diesel consumption, Afrisam has improved operational efficiencies on mines by designing the shortest haul routes to successfully decrease CO₂ emissions in the process.

Probably one of the most well-known environmental initiatives by the company is its Eco Build

Cement, launched to industry acclaim in May 2008. This product halved the global average carbon footprint for cement without compromising on the quality required by the South African Bureau of Standards for cement in this strength class.

"The cement is extended by using slag, which has a far lower carbon footprint than CO₂-intensive clinker," Moogas explains. Afrisam is also introducing Eco Readybond Concrete. In 2010, the company was accredited with the Platinum Green Mining Award in the environmental category for this initiative and for its CO₂ reductions over the years. "Since 2000, the company has invested over R1-billion to decrease its emissions," she continues.

Since 2009, Afrisam has been implementing a CO₂ measurement system on all its cement products, assessing the ongoing carbon footprint of all 40 ready-mix operations and six aggregate plants. This was a world first in the industry, says

Moogas. "Particulate emissions are decreased by using bag house filters, with the plant at Dudfield being the first in the industry to implement this solution. These filters will also be installed at Elise in the near future," she explains.

Rehabilitation of land affected by Afrisam's mining activities is not just a legal requirement, but also a moral obligation, states Moogas. "In many cases, alternative uses are found for the land, such as turning it into reservoirs, dams, or picnic and recreational facilities or integrating the land into various commercial or community facilities."

With this intent, Afrisam has established a Rehabilitation Trust Fund to ensure that future rehabilitation projects are adequately funded.

In one exceptional case, when the company discovered significant archaeological and palaeontological finds at the quarry near Serfdomskop, in Clarens, it took the business decision to cease all



Eco CEMENT Afrisam's Eco Build Cement contains half the global average carbon footprint for cement as defined by the World Resources Institute and the World Business Council for Sustainable Development.

mining operations there in the interest of preserving human heritage.