

Nutrient Management and Environmental Legislation – Where do we stand?

Carin Bosman

082 803 2384

WISA Nutrient Management Division

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ERWAT Auditorium, Hartbeesfontein

Topics for Discussion

- Nutrient Management – Management of
 - Sources and Causes
 - Receptors and Effects
- Legislative Context
 - Legal Requirements aimed at addressing Sources and Causes
 - Legal Requirements for aimed at addressing Receptors and Effects
- Practical Implications and Challenges
- Conclusion

Sources and Causes

Quo Vadis??



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Human Activity and water pollutants

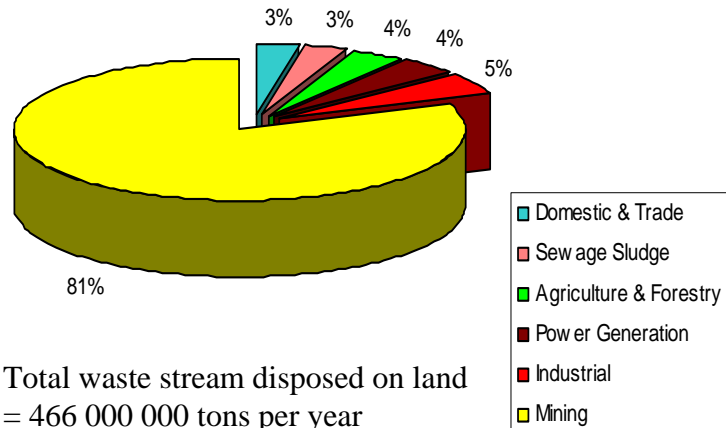
Human Activity	Main pollutants	Effects of pollution
Domestic waste disposal Concentrated habitation & untreated sewage disposal inadequate sanitation	Nitrates Phosphates Pathogens	Pathogens cause typhoid, cholera, gastro-enteritis, nutrients cause eutrification
Industrial waste water discharge	Heavy metals Organics	Human disease/death eutrification Aquatic organisms
Mining waste water discharge	Heavy metals Salts	Erosion Salination eutrification
Fossil fuel burning for power, heating and transport	Carcinogens Organics	Human disease / death Aquatic organisms
Agriculture	Nutrients Pesticides Fertilisers Silt and salt	Eutrification, Erosion , sedimentation and loss of storage volume in dams Salination

Primary Sources and Causes of Nutrient Overload

- Oxygen, Phosphate, Nitrogen...
- EVERYWHERE:
 - Urban effluent and run-off
 - Sewage and Sanitation
 - Littering and waste handling
 - Stormwater and greywater
 - Agricultural practices – over-fertilisation
 - Explosives from Mining Activities - high nitrate composition
 - Waste disposal on land

SA Profile: Waste disposed on Land

Fractions of waste generated in SA (DEAT 1998)



Receptors and Effects

Stormwater Pollution as a result of Inappropriate Waste Storage



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Effects of Eutrophication



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Effects of Nutrient Overloads

- Unpleasant Odours & Tastes
- Filters on pumps and machinery clog
- Large fluctuations in pH.
- Deoxygenation due to decomposition endangers fish
- Increased costs of operating water treatment plants.
- Poor aesthetics spoil recreation and tourism.
- Poisoning of humans & livestock
- Skin irritation in humans

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Effects of Water Pollution resulting from Mining on Socio-economics

- Human Diseases and Deaths
- Economic losses to:
 - society
 - industry
 - tourism
- Surface and groundwater pollution
- Soil pollution and Loss of land
- Resource depletion and loss
- Legal liabilities
- Enormous long term financial burdens



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Water Pollution due to Nutrient Overload

- Human use of land is intricately linked to water use
- If land-use causes water pollution, then land-use is not sustainable
- If available water cannot support land-use, water-use is not sustainable....
- A Long term Social Problem?



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Legislative Context

The Role of Legislation

- Potential pollution problems concern both public health and resources, which are public goods, but the risk of pollution often arises from otherwise legitimate activities within society.
- The control of potential pollution impacts is therefore a regulatory requirement, since society must be protected from pollution by government action.
- The tools and options for the control of potential pollution impacts is constantly evolving:

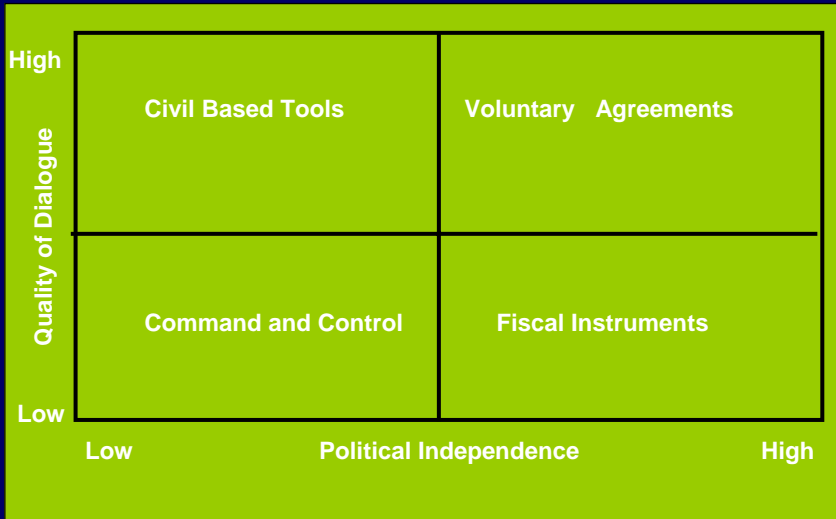
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Policy Options for Environmental Governance:

- Command and control
 - E.g. Effluent and emission standards in permits
- Market-based instruments
 - E.g. Pollution taxes and tradable permits
- Social instruments (Civil instruments)
 - E.g. Eco-labeling, performance reporting, technical assistance
- Industry co-regulation / self-regulation (Agreements)
 - E.g. ISO 14001 series and industry covenants

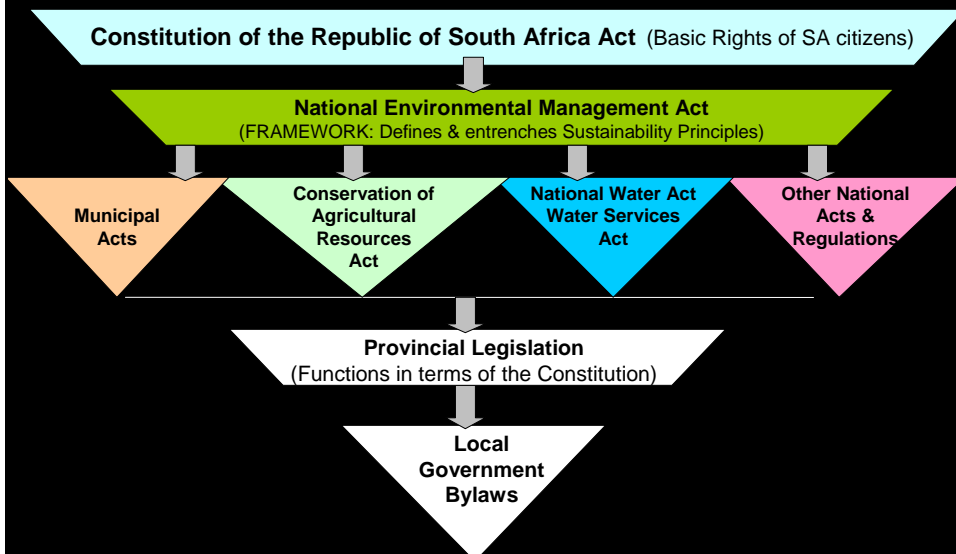
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Governance Relationships and Instruments



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Hierarchy of South African Environmental Legislation



Constitution of the RSA – Section 24

Everyone has the right -

- to an environment that is **not harmful** to their health or well-being; and
- to have the environment **protected**, for the benefit of present and future generations, through reasonable legislative and other measures that –
 - **prevent pollution** and ecological degradation;
 - promote conservation; and
 - secure ecologically **sustainable development and use** of natural resources while promoting justifiable **economic** and **social** development

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Implications of s24 of the Constitution

- The right of "EVERYONE" = PEOPLE
- Pollution is harmful and must be prevented
- Sustainability must be promoted
- A polluting action can never be sustainable and vice versa
- Legislative and other measures must be **reasonable**, and must clearly distinguish between
sustainability and pollution

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Some Specific Principles for Sustainable IEM in NEMA s2

- The Polluter Pays
 - Duty of Care and Pollution Prevention
 - Accountability and Liability
- Consideration of alternatives to select the Best Practicable Environmental Option (BPEO)
- Within the Carrying Capacity of Resources
 - The Concept of Pollution
- A Precautionary Approach (Risk Averse and Cautious)
- Participatory Principles
 - Transparency and Democracy
 - Environmental Awareness and Education

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Is our legislative regime effective?

Legislation and Nutrient Management – Current Status

Tools in the legislation for Nutrient Management

- Controlled by:
 - Standards
 - Authorisations:
 - Permits
 - Licenses
 - Economic measures
- Liability: civil, criminal, financial

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Environment and National Government

- National Government
 - power to pass legislation wrt any matter; including a matter within a functional area listed in Schedule 4, but excluding a matter within a functional area listed in Schedule 5 (Constitution section 44)
 - Matters relating to the environment NOT listed in Schedules 4 and 5 include:
 - Inland water resources,
 - Marine Environment,
 - Minerals,
 - Energy Resources, etc

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National Legislation controlling nutrient sources to protect human health & safety

- Hazardous Substances Act 15 of 1973 & Regulations
- Occupational Health and Safety Act 85 of 1993 & Regulations (Asbestos, Lead, MSDS, etc)
- Mine Health and Safety Act 29 of 1996
- Fertilisers, Farm Feeds, Agricultural Remedies and Stock Remedies Act 36 of 1947 and Regulations
- Health Act 63 of 1977 and Regulations
- Animal Protection Act 71 of 1962, Animal Diseases Act 35 of 1984 and Abattoir Hygiene Act 121 of 1992
- etc

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Some more National Legislation Related to Nutrient Management

- Legislation controlling the transportation of substances and waste
 - Hazardous Substances Act 15 of 1973 and Regulations
 - National Road Traffic Act 93 of 1996 and Regulations
 - Basel Convention
- Legislation aimed at the prevention of littering
 - Advertising on Roads and Ribbon Development Act 21 of 1940
 - South African National Roads Agency Limited and National Roads Act 7 of 1998
 - Environment Conservation Act 73 of 1989 and Regulations

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National Legislation protecting environmental components and resources from the effects of eutrophication

- National Water Act 36 of 1998 and Regulations
- Environment Conservation Act 73 of 1989 (s20) and Regulations / Directions
- Atmospheric Pollution Prevention Act 45 of 1965 and Regulations
- Forests Act 122 of 1984
- Conservation of Agricultural Resources Act 43 of 1983
- Dumping at Sea Control Act 73 of 1980
- Electricity Act 41 of 1987
- etc

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Provinces

- A province may pass legislation for any matter within its boundaries with regard to its functional areas listed in –
 - schedule 4 (areas of concurrent national and provincial legislative competence); and
 - schedule 5 (areas of exclusive provincial legislative competence).

Section 104(1)(b)

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Constitution and Local Government

- Section 152: The objects of local government are:
 - (b) to ensure the provision of services to communities in a sustainable manner;
 - (c) to promote social and economic development;
 - (d) to promote a safe and healthy environment.
 - involving communities and community organisations in its matters.

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Local Government Responsibilities

- Constitution section 156:
 - executive authority in respect of, and has the right to administer the local government matters listed in Part B of Schedule 4 and Part B of Schedule 5.
- The Role of Local Government
 - The services provided by Local Government often carries the risk of causing pollution.
 - Local Government must however also protect its citizens against the risk of pollution.
 - Local Government is therefore the most important role-player in ensuring sustainable environmental management.

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Schedule 4 and 5 responsibilities

Schedule 4: CONCURRENT NATIONAL AND PROVINCIAL LEGISLATIVE COMPETENCE	Schedule 5: FUNCTIONAL AREAS OF EXCLUSIVE PROVINCIAL LEGISLATIVE COMPETENCE
Part A	Part A
Administration of indigenous forests; Agriculture; Animal control and diseases Cultural matters; Disaster management Environment; Health services Housing, Pollution control; Regional planning and development Soil conservation; Urban and rural development	Abattoirs Provincial planning Provincial cultural matters
Part B - local government matters	Part B - local government matters
Air pollution; Building regulations Electricity and gas reticulation Municipal planning; Municipal health services; Stormwater management systems in built-up areas; Water and sanitation services limited to potable water supply systems and domestic waste-water and sewage disposal systems	Cemeteries, funeral parlours and crematoria; Cleansing; Control of public nuisances; Facilities for the accommodation, care and burial of animals; Municipal abattoirs; Noise pollution; Refuse removal, refuse dumps and solid waste disposal

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Local Government...

- Primary duty = sustainable service delivery
 - LA as the Regulated: Provide services in compliance with national and provincial legislation.
 - LA as the Regulator: Govern and regulate its citizens to ensure sustainable compliance with the above.
- Influence other spheres of government to facilitate the delivery of these services...

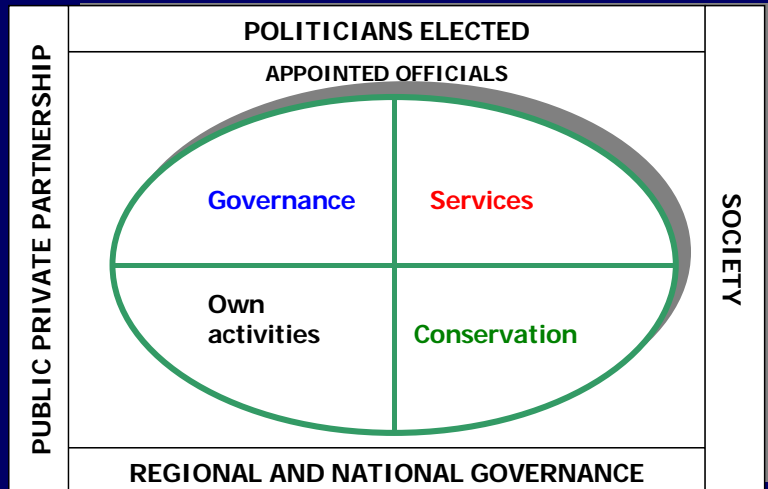
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Practical Implications and Challenges

Potential Conflict??

- Definition of environment is wide, and include all systems, resources, etc
 - Environment, however, has joint national and provincial competencies
- BUT
- Some components of the "Environment" are managed only on national level, e.g. the water resource, minerals etc
 - These discrepancies negates harmonisation and integration – no IEM
 - This SPECIFICALLY applies to Nutrient Management...

Areas of environmental influence on local government



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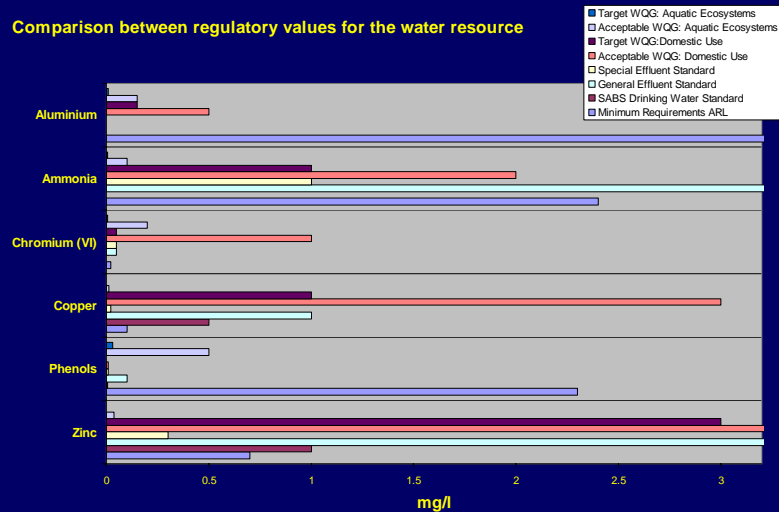
Some more Causes for Nutrient Management Problems

- Fragmented Legislation
- Institutional constraints and “Silo approach”
- Low priority – Lack of Political will
- Lack of resources: financial, human, physical
- Lack of enforcement
- Lack of knowledge
- Lack of proper data on waste generation and disposal, discharge or emission
- Inappropriate decisions on technology
- Inappropriate standards

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Inappropriate Standards??

Comparison between regulatory values for the water resource



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Challenges

- Command and Control Bias in Legislation
- Fragmented governance regime due to nature of constituents causing eutrication
- Provision for overarching Nutrient Management Strategies lacking in legislative arrangements
- Insufficient financial provision...
 - Diffuse Pollution Sources not adequately addressed
- Uninformed Public
- Priorities at local government level not focused on waste and water management

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Conclusion

Conclusions

- Enabling legislation required that will specifically focus on a National Initiative to address Nutrient Management Issues
- Utilisation of incentive based Fiscal Instruments, eg subsidisation, to address backlog problems – Waste Discharge Charge System??
- Utilisation of Agreements to facilitate improvement in Nutrient Management
- Move away from 'silo-approaches'... we need each other to succeed!!

Thank you!



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