

CMA Leadership Letters 110 - 115

by Mark Dent

110. Absorptive capacity is imperative for IWRM implementation

Few would dispute that the implementation of integrated water resources management (IWRM) is crucial and that it is not going well in South Africa. In this letter I will argue that **absorptive capacity** is a key construct in our collective quest to implement IWRM.

The letter is structured around the following 4 questions

1. What is Absorptive Capacity?
2. Why is Absorptive Capacity imperative for IWRM implementation?
3. Who is likely to have the Absorptive Capacity in South Africa?
4. What are they going to do?

1. What is Absorptive Capacity?

Absorptive capacity is a set of organizational routines and processes, by which firms acquire, assimilate, transform and exploit knowledge to produce a dynamic organizational capability.

Strategic management and leadership scholars and practitioners have been studying absorptive capacity consciously since the construct was first introduced in 1990 by Cohen and Levinthal. In 2002 Zahra and George expanded the construct by articulating that it is not just about absorbing but also about translating the absorbed knowledge into wise, collective actions. They introduced two qualifiers namely **Potential** Absorptive Capacity & **Realised** Absorptive Capacity (highlighted in turquoise in Table 1)

Table 1 Elements of the absorptive capacity construct (Zahra and George (2002 : p 189)),

Dimensions /Capabilities	Components	Role & Importance
Acquisition	<ul style="list-style-type: none"> • Prior investments • Prior knowledge • Intensity • Speed • Direction 	<ul style="list-style-type: none"> • Scope of search • Perceptual schema • New connections • Speed of learning • Quality of learning
Assimilation	<ul style="list-style-type: none"> • Understanding 	<ul style="list-style-type: none"> • Interpretation • Comprehension • Learning
Transformation	<ul style="list-style-type: none"> • Internalisation • Conversion 	<ul style="list-style-type: none"> • Synergy • Re-codification • Bi-sociation
Exploitation	<ul style="list-style-type: none"> • Use 	<ul style="list-style-type: none"> • Core competencies

	• Implementation	• Harvesting resources
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Why is **understanding** seen as a separate and key component in Table 1? Morgan (2005) provides part of the answer.

"Efforts at analysis, i.e. focusing on the parts, lose the ability to highlight their emergent properties. Knowledge can come from analysis of the parts. But understanding comes from synthesis and a systems approach. There is a danger with emergence that people will begin to treat emergent properties as discrete elements or parts. That trends leads back to fragmentation and the loss of attention to the whole. But a full understanding of the whole escapes us. It will always be partial and subjective. It escapes at this point into mystery. Systems thinking is thus always struggling to balance mystery and mastery, between failing to understand anything of significance and claiming to understand everything." Morgan (2005; p12)

Note the place of **implementation** in Table 1. Twelve years after the 1998 NWA was enacted we now have enough evidence to show that IWRM implementation will not just happen because we have a good policy, laws & better knowledge of the science. Implementation is an outcome when people organize themselves and engage a dynamic of which **absorptive capacity** is one emergent phenomenon.

Zahra & George translate their Table 1 above into a diagram presented in Figure 1.

Model of Absorptive Capacity

Zahra & George (2002 : p 192)

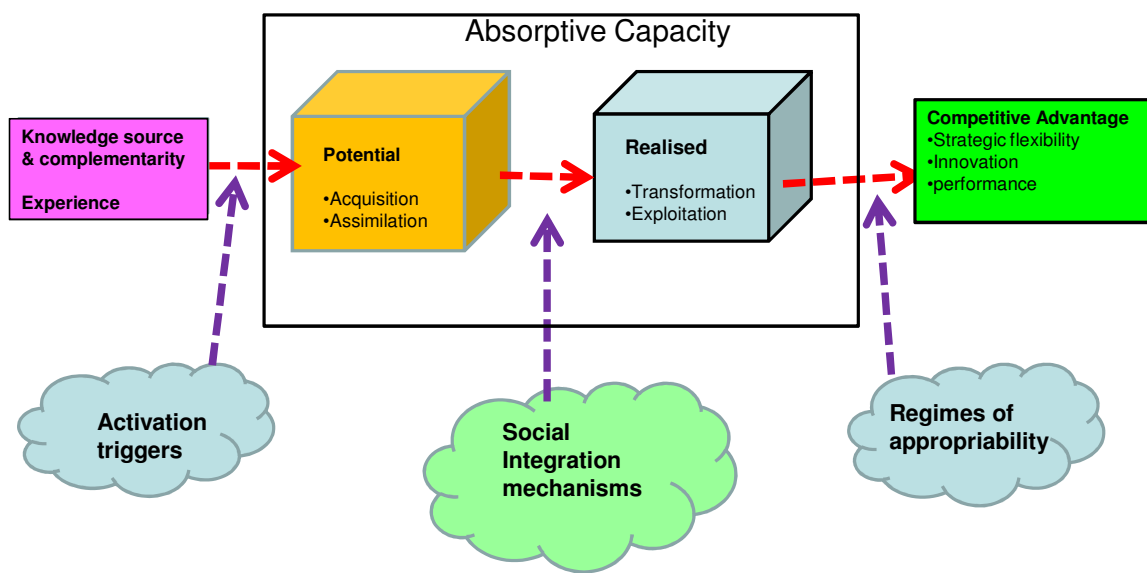


Figure 1 Model of Absorptive capacity (Zahra & George (2002; p 192))

The "*Social Integration Mechanisms*" are of particular interest in this diagram. These will be discussed in the answer to my 4th question.

2. Why is Absorptive Capacity imperative for IWRM implementation?

In some circles one still hears suggestions that IWRM is a concept that is not appropriate for South and southern Africa. To be blunt, this is nonsense. There is wide spread recognition for the IWRM imperative, as these extracts from UN sources indicate.

"The traditional fragmented approach is no longer viable and a more holistic and coordinated approach to water management is essential. This is the rationale for the Integrated Water Resources Management (IWRM) approach that has been accepted internationally as the way forward for efficient, equitable and sustainable development and management of the world's limited water resources".

<http://www.undp.org/water/priorityareas/resource.html>

"At the 4th World Water Forum in Mexico (2006) it was reported that out of 95 countries examined, 74 percent either had IWRM strategies in place or had initiated processes for the formulation of such strategies".

UNESCO (2009) Pg 4.

IWRM involves complex socio-economic & socio-ecological processes that require healthy interaction from a full range of stakeholders, each of whom only have an element of knowledge on part of the complex systems involved. It is not necessary to dwell on the mountains of evidence that indicate that IWRM does not happen simply because stakeholders are knowledgeable. The social integration processes must be engaged continuously, transparently and honestly to absorb knowledge and translated it into realised IWRM capacity.

3. Who is likely to have the Absorptive Capacity in South Africa?

Let me start with the negative. No single individual, organization, sector, government department, scientific discipline will have the required absorptive capacity on their own. This must surely be evident by now and so let us stop working in fragmented isolation. As the Dinokeng Scenarios made so clear "*Government, Business & Civil Society must Walk Together*".

I have written often in these CMA Leadership Letters of the migration of knowledgeable people first articulated by DWA/UNESCO/WMO (1998). I have also stressed that the 1997 National Water Policy and the 1998 National Water Act provide a good framework for bringing the dispersed water related skills back into integrated focus. The diagrams below will illustrate my reading of the situation in a nutshell. It must be stressed that DWA has oversight on the multi-sector stakeholder engagement process and takes the final decision based on reasoned, triple bottom line compliant options, generated from transparent multi-stakeholder processes that are also within the bounds set by the National

Water Resources Strategy (NWRS). The crucial position and role of sector advisors in this process is illustrated in Figure 2.

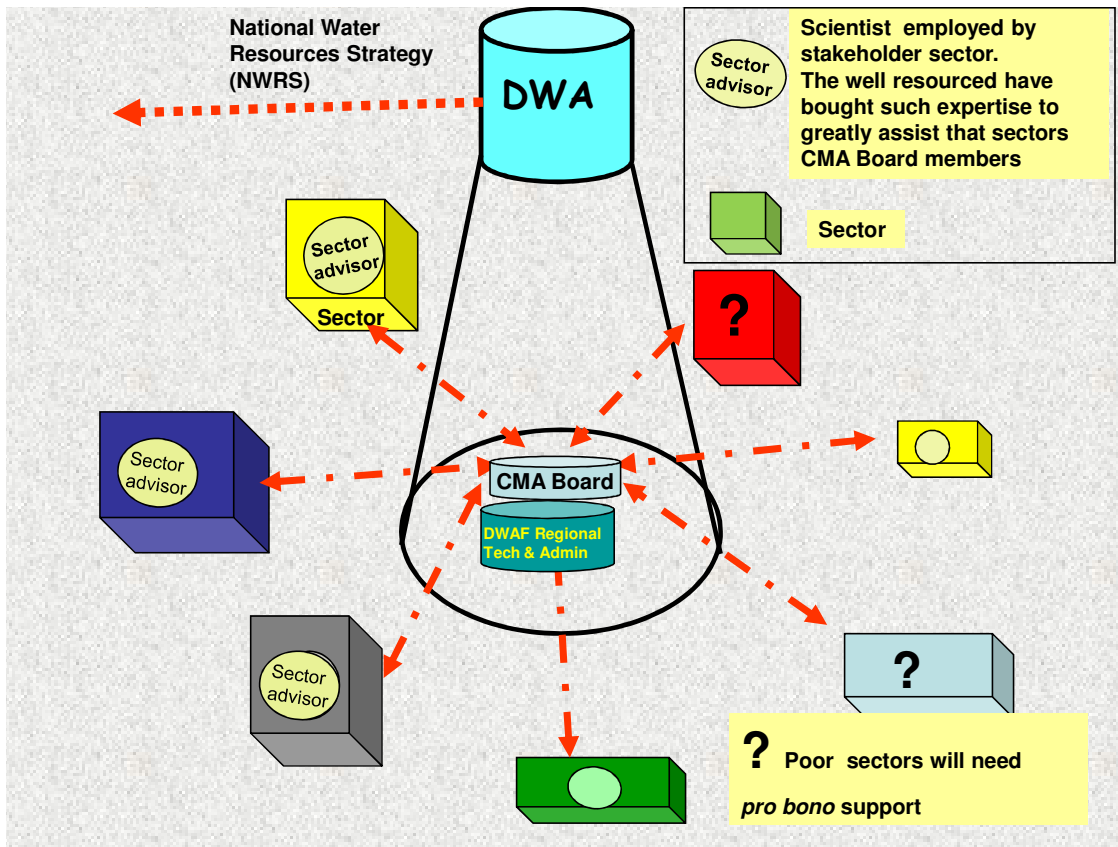


Figure 2 DWA in a position of oversight on the multi-sector stakeholder engagement process that is administratively supported by paid CMA staff and overseen by a Governing Board.

The next illustration and text depicts the likely self-organising dynamic involving stakeholder sector advisors. There are already strong tangible signs of this unfolding process. Not the least of these signs has been the migration of skills to the major sectors and the increased use of consultants by these sectors to perform water related work that is crucial both to their resource needs and their corporate social responsibility imperatives. There are also tangible signs that these advisors are coming into contact with one another more frequently and on water issues of increasing gravity. A new transformational dynamic in the intellectual underpinning of South Africa's emerging CMAs is also emerging to offer us hope and direction. The visionaries who created our 1997 National Water Policy and 1998 National Water Act must be beginning to smile.

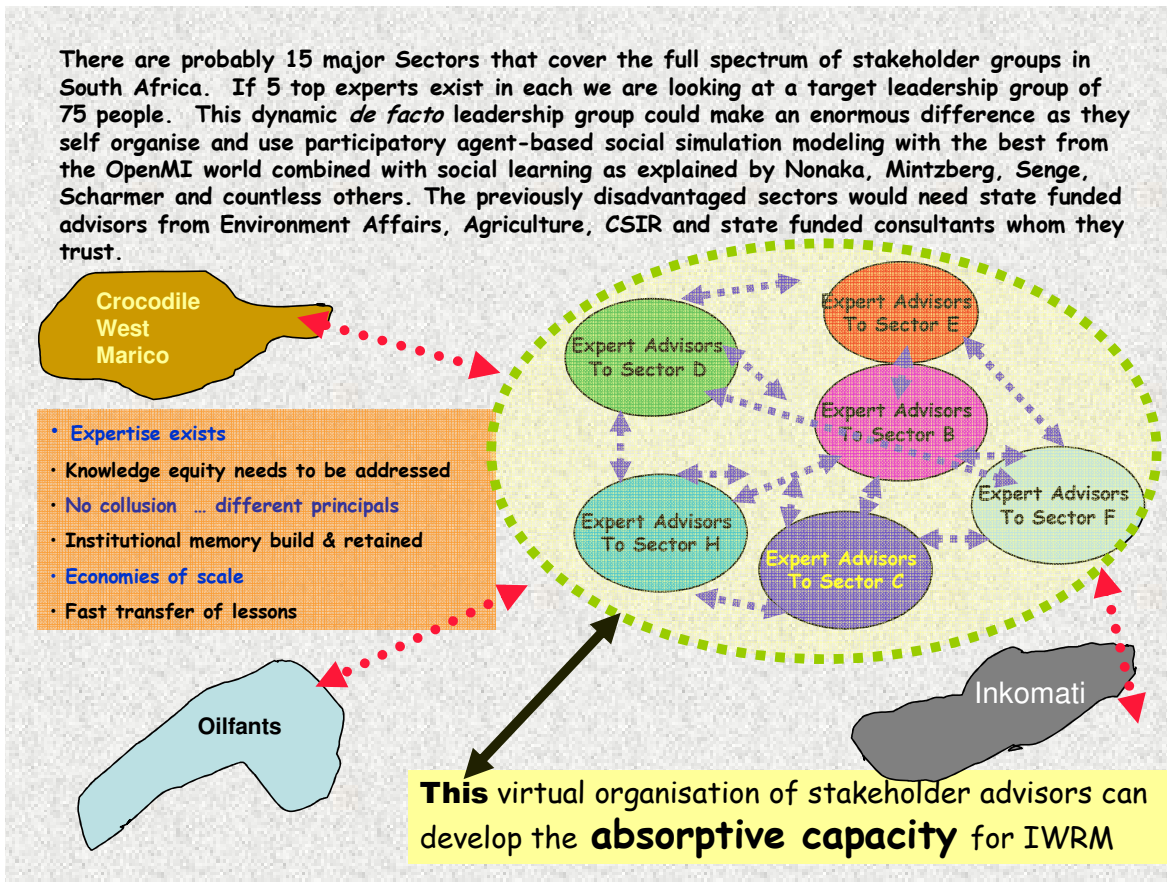


Figure 3 The *de facto*, virtual network organization of Stakeholder Sector advisors who are already in place in a number of Sectors that span the country.

Where does this virtual, self-organising, network of advisors fit into the big picture? I have illustrated, in Figure 4, my understanding of the situation and also indicated that it is this grouping that collectively has the **potential and realisable absorptive capacity** to contribute significantly to progress on IWRM. Elements of this emerging network are already demonstrating their ability to network into their own sector and to be a key communication channel between their sector as a whole and their sector's CMA Board member. They are also getting increasing opportunities to engage across sectors at the specialist advisor level. I am on a Water Research Commission project reference group that is looking, *inter alia*, at aspects of this key dynamic. The reference group is comprised primarily of these specialist advisors to major stakeholder sectors including the Development Bank of SA, Chamber of Mines, SALGA, Agri-SA, WWF, SASOL, Eskom, leading consultants and academics. The project is being led by Wits Business School Professor and now member of the National Planning Commission, Mike Muller who is a former Director General of Water Affairs. The Framework for Education & Training in Water (FETWater) which is jointly funded by the Flemish Government (through UNESCO) and the DWA also has a network programme that is working in this strategic space.

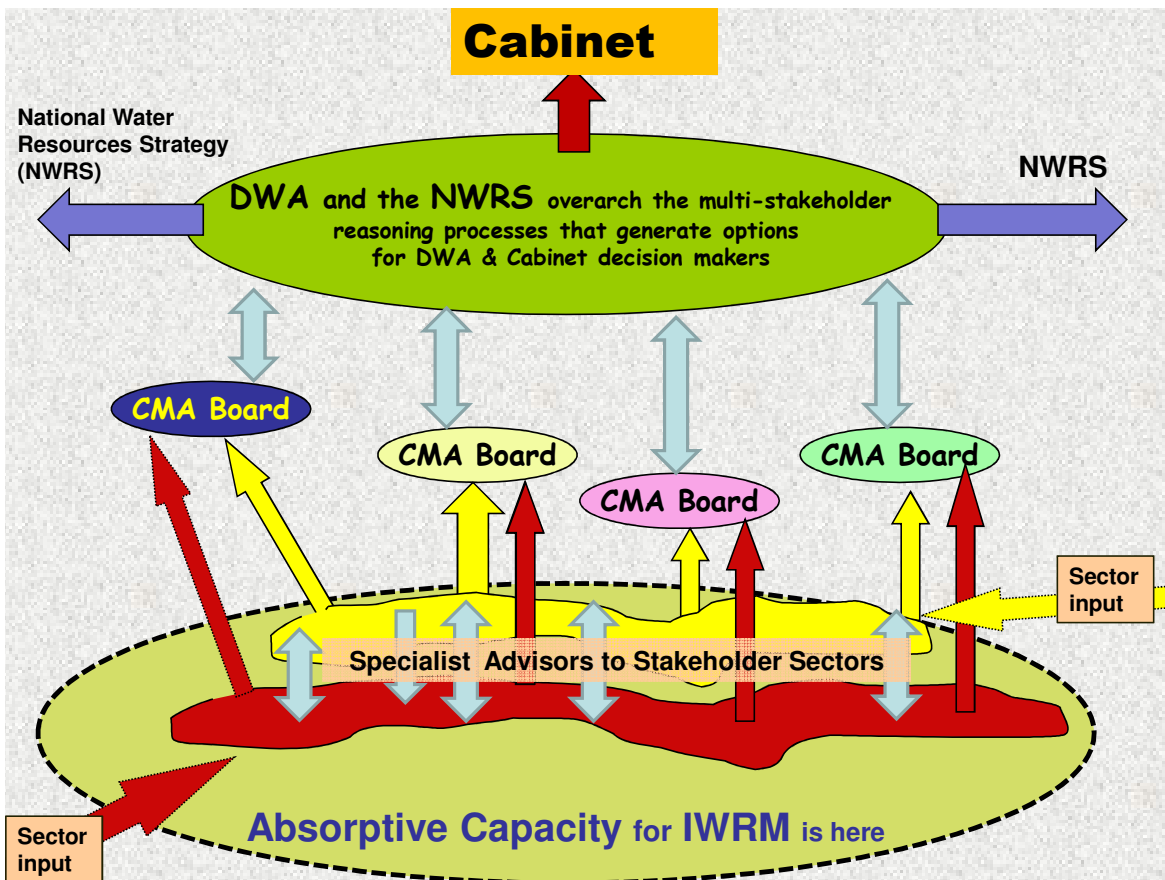
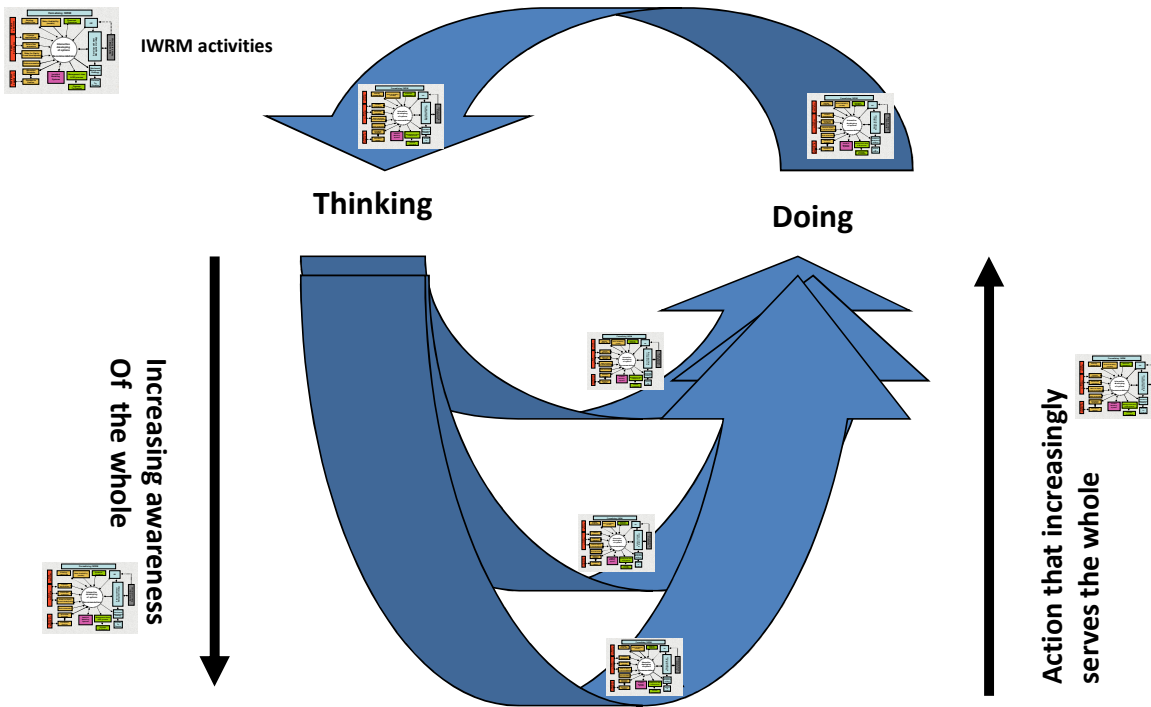


Figure 4 Depicting the location of the specialist scientific, economic and social advisor “virtual organization” that is taking shape to provide key absorptive capacity for IWRM.

4. What are they going to do?

A most succinct answer to this question is provided by DWAF (2004). The multi-sector stakeholder engagement process is going to “*interactively develop options*”. Figure 5 is only one rendition of a hugely complex picture of the activities required by IWRM, but it will suffice to illustrate my points.



Deeper Levels of Learning create increasing awareness of the larger whole – both as it is and as it is evolving- and actions that increasingly become part of creating alternative futures.

Figure 7 DWAF (2004) IWRM framework imbedded within the learning model articulated by Senge *et al* (2005).

One key outcome of this ongoing dynamic will be a series of reasoned & generally consensual win/win options that are passed up to the DWA, NWRS and then to Cabinet level for consideration and decision making. Participatory agent-based social simulation modeling discussed in CMA Leadership Letter 102 is congruent with this process and *inter-alia* produces installed modeling systems (see bottom middle Figure 5). These installed modeling systems will be the prototypes that are reflected on the upper right arm of the Theory U diagram in Figure 6.

A fascinating future is being born as we speak and there is a real possibility of a "*brain gain*" occurring as the world's best brains in this area are attracted to work in such an interactive multi-sector stakeholder space, at the top levels. It cannot be long before South Africa's world class financial services sector enters this strategic space to introduce a new dimension to benefit sharing, payment for eco-systems services and systemic risk management, in this critical resource and human health realm.

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111. Ecological Intelligence and Radical Transparency

Daniel Goleman's international best seller "*Emotional Intelligence*" had a lasting impact on my life and most probably on countless others. He has now gifted humankind with "*Ecological Intelligence :- the coming age of radical transparency*".

Goleman provides an exceptionally well researched and compelling argument for the emergence of ecological intelligence on a scale and speed, hitherto unimagined. The race can be won. Time magazine's review of the book calls ecological intelligence ; "*An idea that is changing the worldthe global economy is being remade before our eyes*".

Goleman offers many powerful cases to show how companies are proving that it is possible to simultaneously do what is good for the social and environmental health of the planet AND for the company. Before the choice was EITHER / OR. Guess who won?

The essence of Goleman's message is that through increasingly radical transparency in Life Cycle Analyses (LCA) humankind is becoming conscious of the dangers to social and environmental systems that are caused by the buying choices we make. He argues that radical transparency is presenting humankind with the ability to regain its lost ecological intelligence. The loss has occurred primarily because of the fragmentation and disconnections, in what is a whole system. Because we don't see the connections we are not in a position to take a consciously rational decision about the harm that we cause when buying without knowing. This harm is caused to social and ecological systems by the production and disposal of the products we use and consume.

The letter now follows with 5 stories that are aligned to the themes in Goleman's book.

Story 1 The skeptics might say that "*green washing*" is so rife that nobody can believe anything on the packaging.

Story 2 What about the big industries, will they change? Just look at the tobacco industry, say the skeptics.

Story 3 How can the concept of Life Cycle Analysis (LCA) labels be scaled up, fast enough to make a real difference?

Story 4 Linking what Goleman sees, to the rapid creativity & simultaneous control paradigms that underpin the IT industry success?

Story 5 Some everyday examples of developing creativity and exercising control at the same time?

Who is Daniel Goleman? He is an internationally known psychologist and journalist. He is co-founder of the Collaborative for Academic Social and Emotional Learning at the Yale University Child Studies Centre . He is co-chairperson of the Consortium for Research on Emotional Intelligence in Organisations, based in the Graduate School of Applied and Professional Psychology at Rutgers University. He is a member of the Board of the Mind & Life Institute. His book Emotional Intelligence was on the New York Times best-seller list for 18 months with nearly 6 million copies in print world-wide and translated into thirty languages. It remains one of the best selling non-fiction works of the past decade. He also wrote; *The New Leaders* and *Social Intelligence*.

<http://danielgoleman.info/biography/>

Story 1

<http://danielgoleman.info/2010/05/21/earthster-a-metric-tool-for-leaders-in-the-age-of-transparency/>

Earthster: A Metric Tool for Leaders in the Age of Transparency May 21, 2010

The age of ecological transparency is nigh. Business leaders now must learn to embrace “externalities” (like pollution) and work to lessen them, as Christopher Meyer and Julia Kirby argued in the [Harvard Business Review](#) last month. If this is our emerging business reality, here’s a hot tip: look into www.Earthster.org.

Earthster represents an emerging generation of information systems that uses the metrics of life cycle assessment (LCA) to track sustainability impacts throughout a given product’s supply chain in their entirety, making visible the externalities with precision. This metric gives companies the tool they need to manage – and reduce – eco-impacts and assess a products sustainability footprint from cradle-to-cradle in the new competitive arena. While no one can say with certainty if such information systems will play a critical role in an ecologically transparent business world, signs from the government are beginning to point in that direction. Last week I was at an EPA-cohosted meeting about these information tools for an audience of key players from a handful of Federal agencies. As one attendee put it, “We’re tired of all the eco-labels, where you don’t know what’s truly green or greenwashing. The only solution will be an open-source LCA-based system. That way we can give reliable assurance and transparency to consumers.”

The GSA, meanwhile, is looking for just such a screen that the Feds can use for their **half trillion dollars in yearly purchasing**. One reason: an executive order, now under review at the White House, that will mandate how specific ecological goals – like reducing resource use – are evaluated by vendors for procurement. The ripples from this metric mandate could take tidal proportions. The rule-of-thumb is that what the Feds do will be modeled by States and municipalities in their purchase policies. And Walmart, of course, has already set the stage for the same [movement among retailers](#). Like WalMart to its own suppliers, the GSA might say, “You play this, or you don’t play at all.”

Mark Tulay of Earthster.org has been leading a series of meetings featuring Earthster for environmental groups, asset owners and asset managers looking for ways to minimize sustainability risk, and companies wanting to manage their eco-impacts better – and looking for a seat at the table ahead of the pack. One attendee at the EPA meeting was Jeff Rice, at the University of Arkansas, and leader in the [Sustainability Consortium](#) set up by Walmart and other retailers to work out a product sustainability measurement systems and tools.

Rice said he saw the ascendance of resources like Earthster as creating a marketplace for LCA data far greater than exists today, telling me, “Today LCAs area niche industry, but if thousands of companies start pursuing LCA data it will create a vibrant data marketplace, for companies big and small”. Representatives from data storage nodes of the Federal Government are assessing whether they could act as collators for a massive data commons on eco and social impacts – in effect a new information utility that could be enormously useful to industry as companies scramble to asses their externalities and find ways to reduce them. [Earthster 2.0](#), now under development, has been named as a model platform for such a commons.

What’s so great about Earthster in particular?

Open source. Unlike today’s standard LCA, which is a proprietary study done for a company, Earthster operates as a sustainability wiki, with everyone reporting into a data commons that companies build together. This allows, for instance, the establishment of sector averages for a given process or product and enables even the smallest companies to assess sustainability impacts

Trackable. Participating companies can protect their proprietary processes and ingredients, but report their outputs – like emissions into water, soil, and air – establishing their baseline to demonstrate improvement against. The head of the agency’s Sustainable Product Network saw Earthster as a potential tool for the Government to measure product improvement.

Certifiable. While companies can post data from their own LCA efforts, they cannot enter the data into the Earthster system until it has been independently audited.

Salient. In an analysis he did for the EPA, Gregory Norris found that “80 percent of a company’s cradle-to-gate impacts are in its supply chain, not within its own facility.” Making changes like energy and fossil fuel reduction within a plant are all to the good, but barely begin the job.

These are key elements of any sound ecological transparency information system. Earthster itself is at a critical stage: beyond proof-of-concept but not yet fully launched. <http://www.earthster.org/> “Open Source Transparency for Sustainability”

Story 2

<http://hbr.org/2010/04/the-big-idea-leadership-in-the-age-of-transparency/ar/1>

The Big Idea: Leadership in the Age of Transparency by Christopher Meyer and Julia Kirby

Companies have long prospered by ignoring what economists call “externalities.” Now they must learn to embrace them. Rarely do before-and-after business cases present such a neat study in contrasts. Compare the recent actions of the key players in the food industry with those of the tobacco industry two decades earlier. In the 1980s, executives at Philip Morris were still fighting energetically to hold back the tide of evidence that cigarettes cause lung cancer, and claiming that customers were exercising free will in choosing to smoke. A 1993 *Washington Post* article titled “Scientists Testify Tobacco Company Suppressed Addiction Studies” tells the tale: Damning company-sponsored research had been spiked a decade before by senior executives.

Fast-forward to the turn of the millennium and you see a **very different kind of behavior** in the packaged food and restaurant industries. As the dangers of trans fats came to light, managers in the most powerful firms took the health implications to heart and responded quickly, before the issue became a cause célèbre, by changing recipes, funding public education campaigns, and pushing reduced-fat products. By 2005, a trade publication was already announcing “Kraft completes trans fat reformulation,” and every one of the company’s competitors was following suit. Given that the first U.S. state law outlawing trans fats in restaurants went into effect only this year (2010), these were voluntary changes taken well in advance of legal or regulatory compulsion—or even public anger.

What transpired over those 20 years to drive such divergent managerial responses? Something very big, actually: As the impacts of business on the environment, on society, and on individuals became too substantial to ignore in many realms, and cheaper and easier ways to measure those impacts were devised, the rules of doing business shifted. Considerations that hadn’t previously complicated the plans of corporate leaders started getting factored in. In other words, **it was no longer possible to ignore externalities.**

Externalities is the term economists use when they talk about the side effects—or in the positive case, the spillover effects—of a business’s operations. They’re the impacts that a business has on its broader milieu, either directly or indirectly, but is not obliged to pay for or otherwise take into account in its decision making. The classic example is pollution: A smokestack in Akron may send particulates into the air that descend on farmlands downwind, but in the absence of any measurement of those, the factory isn’t charged for ensuing crop damage. Those effects are out of scope, and the company is off the hook. How a consumer disposes of your product at the end of its useful life is another form of externality, and so is the noise of your factory whistle.

The concept of externalities goes beyond impacts on the physical environment. Say your menu-driven phone system keeps callers on the line a bit longer and eats up their minutes, or your subcontractor decides to cut costs by using undocumented workers, or property values near your facilities start to slide: Those are impacts for which you will likely not be called to account.

When Kraft, Nabisco, and Nestlé decided to reformulate their recipes, and national restaurant chains such as Wendy’s and Burger King switched to less artery-choking fats in their fry-o-laters, they were choosing to internalize an externality. They were taking ownership of an issue that they could, by law, have continued to say was not their problem. Yes, they did so under some activist pressure, and yes, they could still do more. But unlike tobacco companies in the 1980s, the food companies didn’t wait for regulation or lawsuits. They acted. That’s a big change, and what’s behind it isn’t as simple as good public relations. There’s something more nuanced, and at the same time more hardheaded, going on.

In this article, we’ll explore the forces behind **what we see as a coming sea change in corporate leadership.** We’ll make the case that the true measure of corporate responsibility—and **the key to a business’s playing its proper role in society—is the willing, constant internalization of externalities.** Today, business leaders are bombarded with messages through many channels that they owe more to society, and many think so themselves. But often the result is an incoherent mishmash of charitable giving, CSR programs, and “going green” initiatives. Here, we present a far more disciplined way to respond to the challenge.

Story 3

<http://blogs.hbr.org/leadinggreen/2009/07/walmarts-transparency-exposes.html>

Wal-Mart Exposes the De-Value Chain

Wal-Mart's announcement of its new sustainability index marks the dawning of the age of ecological transparency in the marketplace. This is not just idle speculation; Wal-Mart has signaled that suppliers who ignore the requirements for ecological transparency will become "less relevant" to them. In other words, suppliers may one day compete for shelf space on the basis of their transparency about the ecological impacts of their products.

The retailer's 100,000 suppliers around the world will have to calculate and disclose the total ecological costs of their products — and that data will be boiled down into a single rating that shoppers will see right next to the price tag. For consumers, this will drop to zero the "effort cost" of finding an item's ecological impacts, which today often means digging through a confusing forest of rating systems online, then trying to recall that information while strolling the aisles of a store.

As consumer surveys have shown for years, only a small portion, maybe ten percent, of shoppers are passionate about shopping their values; around 25 percent couldn't care less. **The action is the two-thirds in the middle, who say they would value shop if they didn't have to make any extra effort, and if prices are comparable.** And Wal-Mart has the knack for keeping costs down.

The sustainability index will be built from answers to detailed questions about impacts that range from a company's greenhouse gas emissions and solid waste reduction targets to worker's wages and human rights — and positive contributions to the local community. Third party certifications will be built into the system. As the 900-pound gorilla of retail presses its suppliers for greener products, it is also inviting other huge retailers like Target and Cosco to adopt the same sustainability index. That will simplify things for both suppliers and consumers. And as more and more major retailers join in, we will see a growing business imperative for perpetually upgrading the ecological impacts of consumer products.

The value chain concept gauges how each step in a product's life adds to its worth. But value can be seen from another angle, as embodied in the index: all the environmental, health, and social impacts of a product throughout its life cycle. By creating a single standard for evaluation, Wal-Mart opens a window on products that reveals any negatives — what might be called the "devalue chain" — and puts them into competitive play.

The strategic value of these metrics is that every negative value offers a potential for upgrading, as each upgrade improves the item's overall score. Assessing the ecological pluses and minuses throughout a product's life cycle offers a metric for business decisions that will boost the pluses and lessen the minuses. The new metrics Wal-Mart imposes on its suppliers suggest a performance standard for ecological impacts all along the supply chain and throughout a product's life cycle. **This reinvents "green" as a process, not a static label, a verb rather than an adjective.** To stay competitive in this arena, companies need to think of themselves as *greening*, continually looking for ways to improve their ecological footprint.

Andy Ruben was appointed by Wal-Mart CEO Lee Scott as the first vice president of the company's sustainability initiative. Now he heads Wal-Mart's private brand sourcing strategy; we spoke while I was writing *Ecological Intelligence: How Knowing the Hidden Impacts of What We Buy Can Change Everything*. His perspective, as quoted in the book, was telling: "To me, all negative impacts of products are a discovery about unintended consequences. There can be thousands of consequences from a single decision, and we may be seeing just ten of these unintended impacts. The most competitive companies will engage to uncover these unnoticed impacts and make better decisions. Simply put, they will become more competitive by seeing their business in a broader light."

The potential business upside here for upgrade innovations is enormous. As Ruben also told me, "This is the largest strategic opportunity companies will see for the next 50 years. This is the most exciting time to be in business, with more opportunity to create change in the world than ever."

Story 4

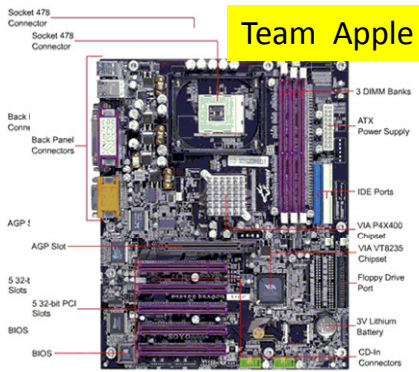
The psychological geology of what is happening in the above stories is not new, just the application. According to Chesbrough & Teece (1996) experience has shown that once a new inter-operability standard has been established then virtual organizations can manage further joint innovation quite well. These findings relating to systemic innovation are supported strongly by Upton & McAfee (1996) who reported on a number of innovative virtual factories which link across networks to have physical components manufactured at remote sites. Linux, the internet and open source software are classic examples of so inter-operability. The emerging new inter-operability rule is, if your product threatens sustainability it is **not** welcome to join the system.

According to Zachary (1994) the developers of Windows NT addressed the issue of coordinated systemic innovation in the following brutally tough but ingenious manner. Microsoft has many brilliant people developing individual components of software. They were however faced with the fact that **stand alone brilliance doesn't amount to much unless it is also consistent with the work of others**. The core dilemma facing the NT project leader and chief architect was how to achieve integration without stifling creativity. His solution for the NT development team was to "ban" the use of the OS/2 operating system on which they had been developing and enforce a system whereby on a weekly basis the components created in that week would be added to the skeleton NT operating system and redistributed as the **only** operating system on which to build the next weeks code. The two major virtues of this tough management philosophy were :-

- * the ultimate in bottom up **disciplined** systemic innovation in which integration of code was guaranteed;
- * it created a fierce opposition to bugs.

The above strategy created the necessary balance between order and chaos, rules and serendipity, innovation and tradition. Systemic innovation also requires the ability to deal with uncertainty, develop sensible unrestrictive controls and standards.

How does this link to what Goleman is saying?



Team Apple



Team Humanity



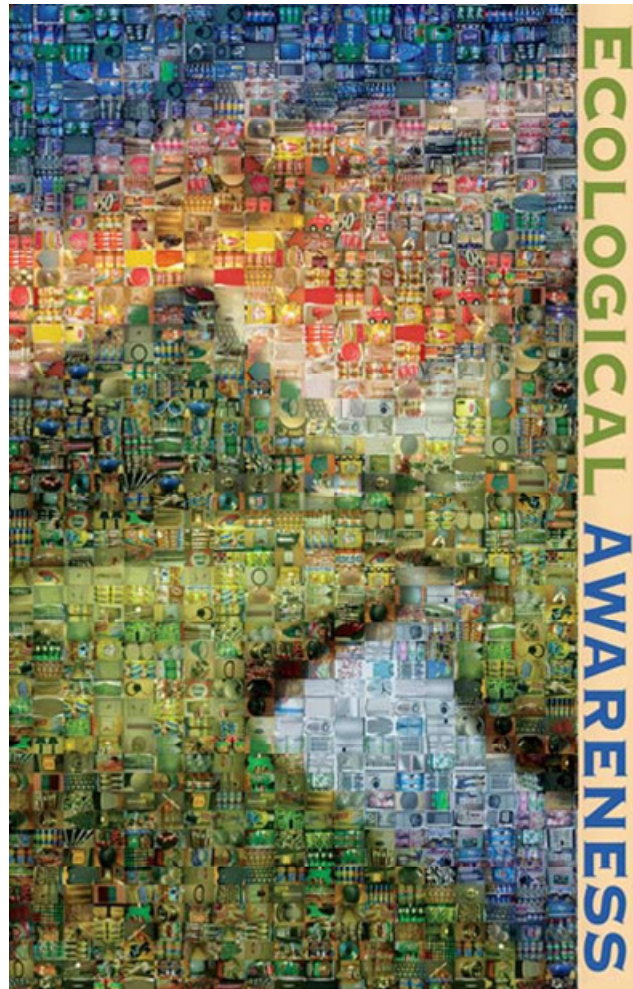
? Environmental & social impact shown in Life Cycle Analysis ?



Computer development teams ("team Apple") only accept into the system those components which don't harm the system. Component creators have complete freedom on this one proviso, the creation must not harm the system.

If "team humanity" (*ie billions of consumers*) are empowered, through radical transparency, to easily know what will harm the planet, then research shows that over 60% of consumers will prefer to buy what does least harm to the planet's social and eco-systems. Companies that produce harmful product will experience dropping sales. The spurring on of creation as long as it did not harm the overall system led to an explosion of innovation in the IT industry. In such an environment creativity seems to be endless and it happens at the scales and speeds that our ailing planet needs.

http://morethansound.net/downloads/teacher_guide.pdf



Take a careful look at this picture and note the mental imagery that it stimulates and how it connects to the computer circuit board imagery. Can you picture what Goleman is saying? The picture comes from the web page at URL above.

It is this challenge that is being taken up by many companies including those in the Sustainability Consortium (<http://www.sustainabilityconsortium.org/members/>).

Perhaps I am being naive but my pulse is certainly quickening when I see these developments and reflect on what the IT industry has done and is still doing with these same management paradigms that drastically stimulate responsible creativity.

Story 5

Developing Creativity and Exercising Control

Developing an organisational environment in which CONTROL and CREATIVITY live side by side in an integrated fashion is the goal of most leaders. Most potential leaders of CMA stakeholder sector groupings, that I have spoken to, would concur that this probably describes their challenge in a “nutshell”.

There are many excellent working examples of this challenge having been met in society.

- **The Alphabet**, 26 alphabetic characters combine to form millions of words, books, documents and the spoken word. Ignore the control point of the alphabet and chaos results.
- **103 chemical elements** (described in the Periodic Table) are the basis of millions of plant, insect, fish and other biota species and all the other natural and synthetic matter on earth. Staggering diversity!
- The **Internet** is based on 7 layers of data transmission protocols. Conveying every e-mail & every web page ever created depends on conforming to these protocols. If one bit or byte is out of place, no communication!
- **Computers** have combinations of 1's & 0's as their basis.
- **Accounting** practices are founded on the basis of debits & credits
- **Money** Few coins, infinite combinations.
- **Colours**, there are only three primary colours.
- **Nuts and bolts** conform to a limited range of dimensions. Our toolboxes are therefore manageable in size, yet our creativity is not stifled.
- A few **computer operating systems** and tens of thousands of creative applications that run on them.
- **Music notes**. All the world's music.
- **Containerization**. The worldwide standard container sizing has revolutionized transport and loading mechanisms for containers and packaging in sub units of the container dimensions.
- **Football**, hockey, rugby, tennis, baseball, cricket. A few lines & rules. Endless moves and combinations of moves and vast entertainment-business and communication empires are built.
- Combinations of **time** expressed in seconds, minutes, hours, days, years are enough to describe time from creation to eternity

In essence what is listed above are inter-operability standards which connect nodes of creativity in which variety is almost boundless and yet at the transfer interface to the next node, rules and standards are rigid. If the latter are violated the system is rendered inoperable. For planet earth any product that is not “inter-operable” with the planet's sustainability needs will, in the foreseeable future, most likely be shunned by consumers. That is Goleman's message.

Some generic attributes of the wisely executed creativity/control process;

- reduced transaction costs through time saving;
- each creation leads to further creations ;
- if the roleplayers break from the rigid control, chaos results;
- controls are “invisible” to the participants & do not hinder or irk, until they are violated.

Business organisations that are successful, know where to CONFORM & where to COMPETE. They are able to channel more resources into competing because they do not waste resources on transaction costs that they would incur if they did not conform. Consider this every time you use an ATM belonging to a bank other than your own.

What is the message for sector leaders in South African society?

Engage one another earlier and openly over common resources (*both social & environmental*), especially water, because it will be hugely cost effective in the medium to long term. Creativity and control are essential elements of integration and co-operative governance and both must be pursued strongly. Sector leaders that interact in CMAs need to search wisely and relentlessly for areas of creativity and for inter-operability standards which will offer some forms of control. Creative solutions are imperative but not at the expense of the system as a whole. Wisely selected controls will be transparent and will spur creativity.

112. Taking candid stock whilst offering hope & direction.

At the start of each year it is good practice to take candid stock of situations in a spirit of offering hope & direction. That is what I will do in this first CMA Leadership Letter of 2011.

It is encouraging to note how many of the weaknesses (in the list below) can be turned into strengths that offer hope & direction, simply by a change of thinking by the stakeholders in government, business and civil society. Thinking can change quickly and this is what gives me hope. Reflect on the changes in thinking in South Africa from 1989 to 1994. If we can do that, then we can certainly change our thinking enough to clean up our water resources and keep them clean and have "Some for All Forever".

Current Weaknesses	Strengths that offer Hope & Direction
Policy and Law only partially implemented with respect to integrated management of water resources.	Integrated management can be implemented quickly, when attitudes change.
Actors generally unaware of unintended consequences of seemingly rational behaviours.	The Policy and the Law has foreseen this and makes provision for structures, processes and laws to facilitate collective thinking and actions which take in wider system.
Dis-integrated, fragmented , duplicated and disconnected efforts drain finances and overstretch human capacity.	Many realms of human endeavour have examples of how these shortcomings can be turned around by wise integration. The IT, aerospace and telecommunications industries are prime examples.
Transaction costs of the communication required to integrate are currently high.	The IT industry, the transport industry (containerization), airline industry and countless others have shown ways to drastically reduce transaction costs of integration. All Sectors can do the same as they interact over water. OpenMI has shown the way with respect to water IT. We just need to embrace it.
Institutional memory loss is currently high.	Our Policy and the Law makes provision for systems and structures that can facilitate enhanced institutional memory formation and retention in multi-stakeholder institutions, most notably CMAs.
Critical mass in human resources is currently low in most areas due to fragmentation and dis-integrated efforts.	Our Water Policy and Water Laws make provision for systems and structures, that will, if implemented with the right attitude, enable multi-sector stakeholders to greatly increase critical mass in human resources terms.
Economies of scale in terms of using intellect are currently almost non-existent.	Our Water Policy and Water Laws provision for systems and structures, that will, if implemented with the right attitude, enable multi-sector stakeholders to greatly increase these economies of scale.
Collective awareness of issues and linkages is currently low and non-	Our Policy and the Law makes provision for systems and organizational forms, that will, if implemented with the

transparency is a severe problem.	right attitude, enable multi-sector stakeholders to greatly increase their collective awareness.
Indulging in rights based clashes instead of interest based bargaining is still the dominant conflict related paradigm.	With a change in attitude Sector stakeholders can change to interest based bargaining (<i>or integrative bargaining as it is also known</i>), overnight.
Almost no engagement in participatory agent-based-social simulation modeling at present.	Participatory agent-based-social simulation modeling will naturally and quickly evolve if we make the attitude and thinking changes mentioned above and follow the dynamics illustrated in Figures 1 and 2.
Viewing the scientific challenges in purely normal science paradigms as opposed to a mixture of normal and post-normal science .	Post-Normal Science is the methodology that is appropriate when facts are uncertain; values are in dispute; stakes are high and decisions are urgent. We can shift to this science paradigm rapidly if we change our attitudes and face the reality of the above.
Currently almost no inter-operability standards to bring down transaction costs in modeling and information systems.	We can immediately adopt OpenMI standards and make rapid integration progress, if we change our attitude. OpenMI is revolutionising the developments in water information & modeling systems. South Africa is being left behind.
Poor understanding of the role of reasoning processes and the consideration of consequences in the continuous cycle of decision making.	This can change fast once Sector leaders gain insights into the value of reasoning and consequence consideration, which do not need authority to engage in. It is not just about the decision but more importantly about the integrated underlying reasoning.
Given the current ways of organizing intellect we have limited absorptive capacity for research results, especially innovations that require engaging complexity.	When our intellect is re-organised according to the right hand column of this analysis and Figures 1 and 2 below, then our collective absorptive capacity for research results and innovation will be drastically improved.
We are not engaging in multi-stakeholder dialogue on a continuous basis. Groups are talking at Water Affairs officials on an individual basis.	Our Policy, Legal and Institutional frameworks have created a space for multi-sectoral, simultaneous & continuous engagement to generate options, with DWA in an oversight role. This is a great strength and it is primarily why our 1998 NWA is hailed worldwide. We can start doing this overnight.
The complexity of the socio-ecological systems within which we exist has not been accepted widely and certainly has not translated into our organizational behaviours with respect to knowledge management.	Increasingly the complexity of the socio-ecological water realm is being accepted, in concept if not yet in actions, in Government, Business & Civil Society. This acceptance can take place overnight and it will dramatically strengthen our collective approaches.

<p>Self-organisation opportunities are not being taken up. We are still fixated on engaging only with the DWA and not directly with multi-stakeholder settings.</p>	<p>Elinor Ostrom's Nobel Prize for her work on self-organising to manage the commons has dramatically raised the profile of self-organising. Our strength is that our Water Policy & Legal framework already has made world class provision for self-organising in a responsible and controlled manner under DWA oversight.</p>
<p>DWA's tendering system for knowledge based systems is still being framed in terms of building construction paradigms. This is expensive, slow and detrimental in many ways.</p>	<p>This paradigm can change overnight and will most likely do so when multi-sector endeavours to produce installed modeling systems as espoused in the DWAF Internal Strategic Perspectives (ISP) Reports (2004) are implemented.</p>
<p>Almost all previously sunk costs are lost each time a new tender is awarded for water related modeling work</p>	<p>This can be changed overnight if Stakeholder Sectors agree on installed modeling and information generation system, probably from the OpenMI world wide movement. Furthermore the multi-sector stakeholder body can insist on only value add and no continual repayment for sunk costs from the consulting fraternity.</p>
<p>No installed modeling system to analyse water quality and quantity in an integrated fashion as advised by the 1998 NWA and DWAF's 2004 ISPs, has been implemented.</p>	<p>The world wide developments in OpenMI can be deployed immediately to rectify this weakness and turn the installed modeling systems into a great strength.</p>
<p>We have not operationally embraced the practices of Strategic Adaptive Management. The practice requires the use of models to enable the stakeholders to visit the consequences of their proposed actions. We have not implemented simulation models for this purpose.</p>	<p>A key element in Strategic Adaptive Management is for the role players to make their implicit assumption explicit, in and through modeling systems. This weakness can change to a strength overnight if we adopt OpenMI and a change in attitude concerning participatory agent-based-social simulation modeling (Pahl-Wostl, C. and Hare, M. (2004); Pahl-Wostl, C. (2007)).</p>
<p>The DWA has only slightly let go and the large well resourced stakeholders have only slightly taken up their responsibilities to engage each other. This is a major weakness.</p>	<p>The letting go of certain matters by DWA and taking up responsibility by the well resourced multi-sector stakeholders can happen very quickly and hence become a strength. DWA has all the legislation in place to perform its oversight of multi-sector interaction processes, in the CMA space, that generate options on which DWA has the authority for the final decision.</p>
<p>A collective identity as social learners in the same boat is almost non-existent amongst and between all stakeholders.</p>	<p>The transformation to accepting the need for a collective identity can happen fast. The Dinokeng Scenarios showed, we are all in the same boat. Nothing is gained by pointing to the hole in the other side of the boat. The recent National Business Initiative (NBI) Summit on Sustainable Development revealed a rapidly growing collective identity, at least in concept if not in actions, on sustainability</p>

	matters.
Social learning on water related matters is currently low.	The concept of social learning is taking root in a myriad of other areas of society and all sectors can learn from these endeavours. There is a fast growing recognition amongst key role-players in water that social learning offers much potential.
Our world class financial service sector, has not taken up the considerable opportunities to reduce water related risk and introduce innovative new paradigms into our collective behaviours. eg. payment for ecosystems related goods and services; thinking in terms of financial benefit streams in place of purely water streams.	Our Financial Services Sector is world class. Given a change in insight they have shown the ability to act rapidly and responsibly. Attitudes and actions can change rapidly when this Sector looks sufficiently far downstream in its customer chain or at the matters of water related systemic risk. It is not rational for the Financial Services Sector to ignore the wider systemic issues in a phenomenon such as water, which is vital to the wellbeing of every one of their clients. A strength, is that this "blind spot" is likely to end very soon.

Hope & Direction through Multi-Sector Stakeholder Interaction

What are the practical steps to putting it all together in South Africa so that one outcome can be a drastic improvement in the quality of our river water?

The first and most important step is to implement our world class 1997 NWP and 1998 NWA, in the full letter and spirit. Delays in this regard are totally unacceptable and hugely damaging. Government, Business & Civil Society are all responsible for this state of affairs. Our policy, law and institutional arrangements provide the crucible for multi-sector stakeholder interaction. Much of the change, that is necessary, has already taken place, despite the best efforts of some to frustrate the organic process of change and to ignore pressing imperatives.

Society is naturally organised into sector interest groups. These groups engage in a wide range of socio-political and economic activities. The South African Government's Cabinet and Government Departments are grouped according to Sectors and so is much of business and civil society. For the past 20 years or more there has been a steady migration of water and aquatic ecosystem scientific skills from public Sectors to private and civil society Sectors. This migration, first publically highlighted by DWAF/UNESCO/WMO (1998) has been one of the key element in the growing inability of the public sector to manage water resources and aquatic ecosystems on its own. All the relevant water policies, laws and institutional arrangements developed since 1994 recognise this and mandate integrated, co-operative, co-ordinated governance also involving business and civil society. The Sector is the unit of representation and engagement in Catchment Management Agencies (CMAs) and this was decided after a 5 year long process of public participation.

The migration of skills to various Sectors outside of Government and DWAs policy response to these developments and the imperative to democratise the processes of management for water find expression in Figure 1 below. The NWRS is the National Water Resources Strategy and the CMA is the Catchment Management Agency.

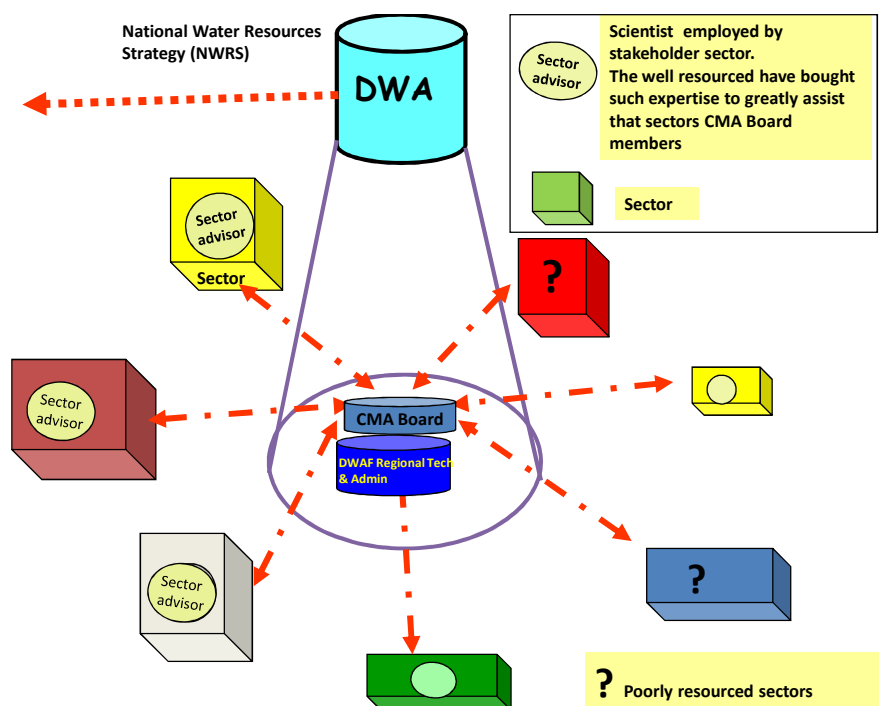


Figure 1 Sectors engaging each other under the oversight of DWA and with the scientific and other knowledge skills in close attendance in the intellectual space surrounding the Sector representatives on the CMA Board.

What is particularly interesting and encouraging about this diagram is that it shows that the scientific and other water related skills are all focused in to the "centre". This holds great potential for institutional memory creation and retention, economies of scale, countering the negative effects of job hopping and creating a critical mass of skills as we move into multi-sector stakeholder engagement. The migration of scientific skills has created a context which is well placed to engage in Participatory Agent-based Social Simulation as explained below:-

"Participatory Agent based social simulation is a very promising approach to represent the complex dynamics of social systems and to develop integrated models for human-technology-environment systems".

"Models and the whole process of model development therefore become part of a process of social learning."

Pahl-Wostl & Hare (2004)

Such a process is crucial for creating actionable knowledge also referred to as socially robust knowledge as explained below:-

"socially robust knowledge is the product of intensive (and continuous) interaction between results and interpretation, people and environments, applications and implications".

Nowotny, Scott & Gibbons (2001) Pg 258

The evidence of current developments in a range of Sectors shows that the Sector Advisors shown in Figure 1 would begin to self-organise as described in Figure 2. Herein lies the solution to the fragmentation, bounded rationality, non-integration, non-communication, non-sharing of information, in

short grand folly on the part of all, that has brought us to the current state of our freshwater systems in South Africa.

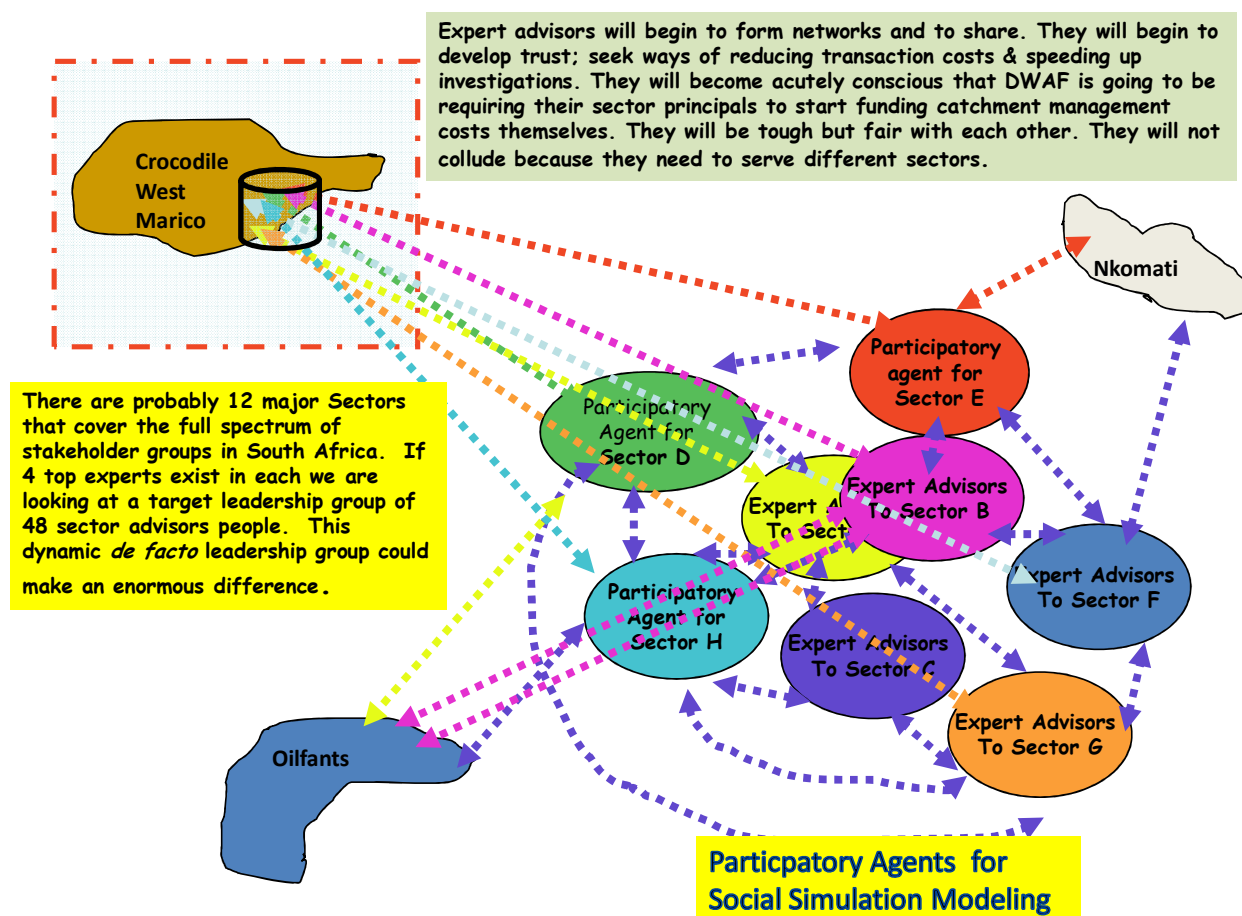


Figure 2. The emerging configuration of participatory agents for social simulation modeling and whole systems interaction amongst Stakeholder Sectors.

The Weaknesses and Strengths analysis above which embodies also the way forward is premised on the belief that the highest level aggregate unit of engagement for IWRM in South Africa is the Sector. It is from this aggregate level that I believe the core transformational, knowledgeable and servant style leadership will come. In my experience people in grass roots organizations are desperate for such leadership at national level. It is time for these leaders to move from the wings onto centre stage and lead. Complaining to government and wringing our hands is a pathetic response that will be judged harshly by current events and future generations.

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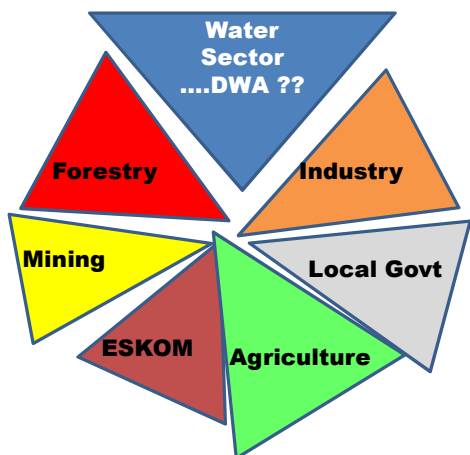
113. If I was the Minister of Water Affairs

It is common knowledge that the Minister of Water and Environment Affairs faces a huge task in South & southern Africa. In this letter I am going to stick my neck out and say, straight out, some of the things that I would say if I was the Minister.

I would say :-

1. **Stop** looking at the situation this way

What is the problem with this view?



- * It encourages finger pointing and blaming DWA
- * It feeds a dependency syndrome
- * It dis-empowers ALL sectors & overwhelms DWA
- * Co-creativity and joint innovation are severely inhibited
- * It encourages Sectors to take their unrealistic demands straight to Cabinet through their Ministers
- * It is simply incorrect because ALL sectors deal with water and ALL sectors create water pollution

2. **Start** looking at the situation in this way

Why is this view wise?

- * This view is consistent with the National Water Policy
- * This view is consistent with the National Water Law
- * Sector's can talk to the issues NOT at DWA or at each other.

* Sector's can talk in the presence of DWA and ALL other Sectors. Full systems transparency is key.

* Sectors are likely to go to their Cabinet Ministers with a much more realistic , systemic view of the overall picture than they do at present. This will have enormous benefits for planners in DWA, who at present have to deal with unrealistic demands emanating from Cabinet .

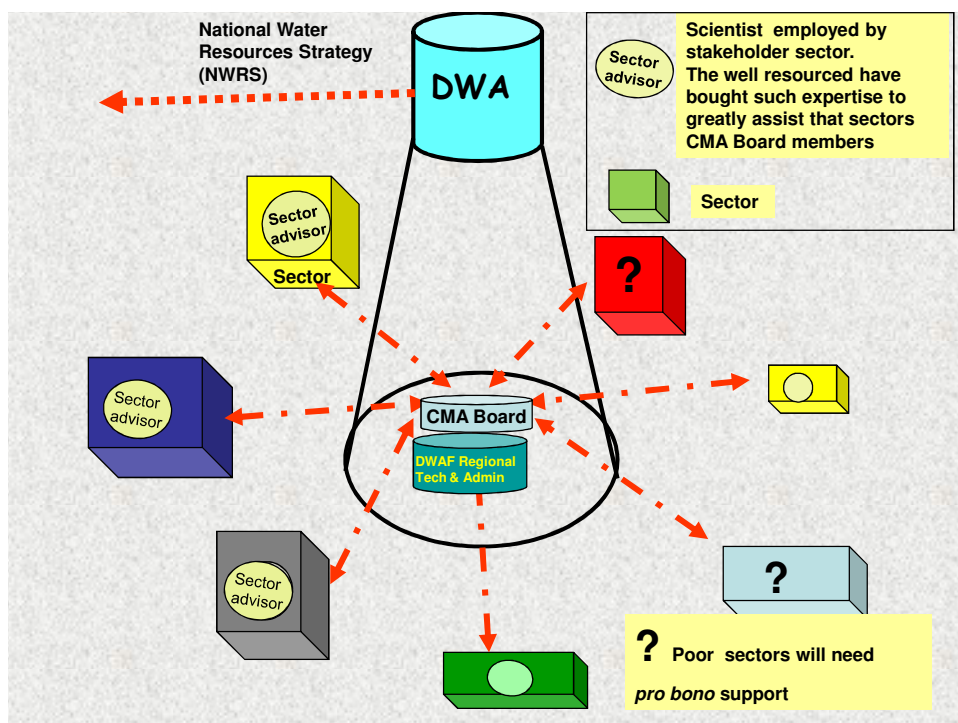
* Sector's will avoid shooting themselves in the foot by making selfish & unrealistic , short sighted demands.

* This view is consistent with the Constitutional imperative for co-operative governance

*** This view enables ALL the skilled knowledge resources to be focused on the common system & not just the skills in DWA and a few consulting firms, acting in fragmented isolation.**



3. Another rendition of 2 above is the following diagram. I will speak to several elements of this diagram in my notes below.



Note the key location of the multi-stakeholder interaction to develop options for IWRM. Note DWAs oversight role and its position to ensure that the options generated by the multi-stakeholder CMAs are consistent with the National Water Resources Strategy; international obligations; fundamental basic rights wrt water and the environmental requirements of water courses. Self-organisation within the framework of national needs and principles is going to be the way forward.

- 4.** The **composition of the Incomati CMA (ICMA) Board** in 2005 at the time of its appointment is shown in the Table below. As you will note it covers all relevant Sectors in Govt/ Business/Civil Society. The Board members can be supported by Government right up to just below Cabinet level and also huge top level Business & Civil Society Groups. CMA Board Members are not alone & if they have felt so it is certainly not the fault of the National Water Policy, the National Water Act or the institutional arrangements of the CMA. CMA Board Members are free to seek advice and support from anyone in their Sector and indeed from other Sectors. I would imagine that as your chosen leaders (*you put their names forward*) they would have access up and down the organisations in the Sector that they are representing. Furthermore that they will have financial and intellectual support from their Sectors for investigative studies, communications (*up & down*) the Sector so that they can truly represent the voice of their Sector. This would entail feeding back the views of other Sectors and how their own views have been received in the integrated cauldron of ideas in the CMA.

Sector	Representative	Ministry to support this Sector	Civil Society & Business Groups to support this Sector
Commercial agriculture	Mr Cas du Preez	Agriculture	Agri-SA; Agricultural Unions; Co-ops
Tourism	Mr Edward Thwala	Tourism	Tourism industry has many collective NGO groupings
Conservation	Mr Francois Roux	Environment Affairs	WWF; WESSA; EWT; Wildlands Trust; SA Conservation Trust
Water by the poor	Ms Grace Mashele	Social Development	
Traditional leaders	Mr Inkosi Mkhathswa	Cooperative Governance and Traditional Affairs	Congress of <i>Traditional Leaders of South Africa</i> (CONTRALESA)
Provincial government	Dr G H Karim	Cooperative Governance and Traditional Affairs	

Productive water use	Mr Krisjan Mokoena		SA Association of Water User Associations
NGOs	Ms Lilian Masilela	Social Development	This whole column & more
Emerging farmers	Mr Moses Makhubela	Rural Development and Land Reform Agriculture	National African Farmers Union NAFU
Industry/ business	Mr Nandha Govender (ESKOM)	Trade and Industry Public Enterprises Energy Mineral Resources	Business Unity SA National Business Initiative(NBI) SA Chamber of Business Business Leadership SA Chamber of Mines
Local government	Ms Patience Nyakane-Maluka (chair)	Cooperative Governance and Traditional Affairs Human Settlements	SA Local Govt Assoc (SALGA) Local Chambers of Business in each city
Forestry	Ms Patricia Mothibi	Trade and Industry (Pulp & Paper industry) Agriculture	Forestry SA

5. The ICMA Board composition is interesting from several other perspectives. Firstly the number of Sectors that can represent the interests of the poor. Secondly the number of Government Sectors in the Board. It is truly a Board composed of *Govt/ Business / Civil Society* as the Dinokeng Scenarios urge. www.dinokengscenarios.co.za We in DWA have given all Sectors this opportunity to walk together under our oversight. Whether you take it up or not is your choice in a democracy. However, I would ask you to cease complaining if you chose to NOT take up this golden opportunity, one for which other countries would give their eye teeth.

6. To **Organised Business**, please look at your record of engagement in the 2 CMAs and the many potential CMAs in the light of National Business Initiative (NBI) and your Regional Partnership with the World Business Council for Sustainable Development and your commitment to the UN Global Compact. Is your intensity of engagement commensurate with what you espouse in documents and conferences related to these initiatives?

7. Can groupings like the SA Association of Water Utilities (**SAAWU**) which has the following members really say they are punching to their weight in the CMA space. Just look at the illustrious list of SAAWU members below.

1. Amatola Water Board (East London, Eastern Cape) now incorporates Albany Coast Water Board which served the Boesmansriviermond area, Eastern Cape)
2. Bloem Water (Bloemfontein, Free State)
3. Botshelo Water (Mmabatho, North West) (formerly Bophuthatswana Water Supply Authority and then the North-West Water Supply Authority Board)
4. Bushbuckridge Water Board (Mafmani/Nelspruit, Mpumalanga)
5. Inkangala Water board (Belfast, Mpumalanga) (disestablished)
6. Lepelle Northern Water (Phalaborwa, Limpopo)
7. Magalies Water (Tehabane - Rustenburg, North West)
8. Mhlathuze Water (Richards Bay, KwaZulu Natal)
9. Namakwa Water (Nababeep, Northern Cape)
10. Overberg Water (Heidelberg CP, Western Cape)
11. Pelladri Water Board (Marshalltown, Gauteng)
12. Rand Water (Johannesburg, Gauteng)
13. Sedibeng Water (Bothaville, Free State) (formerly Goudveld Water)
14. Umgeni Water (Pietermaritzburg, KwaZulu Natal) (Regional Office located in Durban)

There are many other associations listed under point 4 above of even larger size, scope & financial strength. I am sorry if SAAWU feels offended for being named but space constraints confined me to one example. There are many more.

8. Please consider all the following which will ALL benefit by an agency which brings ALL Sectors together over the issues of water and then tell me you can't be bothered and DWA should do it all. The sharing of capacity, development of critical mass and creation of economies of scale for all these endeavours will benefit enormously from what well functioning multi-stakeholder endeavours do in the CMA relational space.

- **RSA Constitution** -- co-operative governance forms Chapter 3.
- **Banks** -- water rights are no longer tied to land rights. Loan sureties are often tied to the value of land, which is related to water entitlement. Successful CMA functioning is key to the development of any form of water trading. Banks are involved deeper than they may currently appreciate.
- **Presidential imperatives** -- which at their core are the triple bottom line.
- **SDIs** -- water is a critical component of any SDI.
- **SADC** -- 70 % of the land area of SADC is shared river basins. What we learn in CMAs is vital for the "health" of co-operation and sharing in SADC.
- **NEPAD** -- 60% of the land area in sub-Saharan Africa is comprised of shared river basins.
- **Industries** -- can view contributions to the CMAs finances and its workings as part of their contributions towards their Social Responsibility Index (SRI), this represents a Win /win. They will also have more influence on water related issues than they currently have. Wise environmental stewardship is an international marketing imperative for many industries.
- **Municipalities** -- (IDPs; LA21; MFA)
- **Integrated Development Plans (IDPs)** will need water resources components (certainly a water quality one). IDPs are not just about water services.
- **Local governments** have a critical responsibility to co-ordinate Local Agenda 21 (LA21) activities ... water organizations will form a useful core for these integrated activities.
- **Municipal Finances Act (MFA)** implies that seeking leverage and economies of scale in the use of funds is imperative. The integrative capabilities of the CMAs will be vital.
- **SALGA** -- needs to thoroughly engage in the CMA development and thankfully it now is.
- **DEAT** -- National Environmental Management Act (NEMA) - need I say more

- **SA National Parks** -- in Kruger National Park 50% of the biodiversity is in the rivers and 96% of river flow forms in the catchments outside the park. CMA engagement is imperative for SANParks, especially in the KNP ;
- greater St Lucia Wetland Park; the biodiversity in all our rivers
- **International Geosphere Biosphere Programme (Global Warming)** -- predictions are fine but when it comes to responses it is peoples behaviour that must change.
- In many instance it is water related issues (including plant evaporation) that are affected. The agency on the ground that binds sector integration for the IGBP, is the CMA.
- **Organised agriculture** – climatic information systems improvements; drought responses; flood responses
- **Health Sector** — water related health issues are huge and need to be integrated.
- **Mining sector** -- water is a huge issue in this sector.
-
- In addition the following are some of the many Acts, Bills, Plans, Associations, Conventions, Government Departments, Networks and Societies that will benefit from the healthy, successful functioning of CMAs.
-
- **Acts & Bills**
 - CARA Conservation of Agricultural Resources Act (Act 43 of 1998)
 - DFA Development Facilitation Act (Act 67 of 1995)
 - ECA Environmental Conservation Act
 - EBR Environmental Bill of Rights
 - LUM Land Use Management Bill, 2003
 - NWA National Water Act (Act 36 of 1998)
 - MA Minerals Act
 - MLRA Marine Living Resources Act (Act 18 of 1998)
 - MSA Municipal Systems Act
 - NFA National Forests Act (Act 84 of 1998)
 - NEMA National Environmental Management Act
 - NPA National Parks Act (Act 42 of 1976)
 - PAMB Protected Areas Management Bill
 - PFMA Public Finance Management Act
 - SSA Sea-Shores Act (Act 21 of 1935)
 - SUAR Sustainable Utilisation of Agricultural Resources Bill
-
- **LA21 Local Agenda 21**
 - SALGA South African Local Government Association
-
- RAMSAR The Convention on Wetlands, signed in Ramsar, Iran, in 1971.
- CEC Committee for Environmental Co-ordination
- MINMEC Forum consisting of the Minister and Deputy Minister of the DEAT, as well as the provincial members of the Executive Council
-
- **Plans**
 - CMP Catchment Management Plans
 - CMS Catchment Management Strategies
 - IDP Integrated Development Plan
 - ECEMP Eastern Cape Estuaries Management Programme
-
- **Partnerships**
 - CEPF Critical Ecosystem Partnership Fund
 - NEPAD The New Partnership for Africa's Development

- Networks, Initiatives, Joint Plans , Joint Frameworks
- NBSAP National Biodiversity Strategy and Action Plan
- NSDP National Spatial Development Perspective
- SABI South African Biosystematics Initiative
- SABONET Southern African Botanical Diversity Network
- SADC Southern African Development Community
- SAEON South African Environmental Observation Network
- SAWAG South African Wetlands Action Group
- SKEP Succulent Karoo Ecosystem Plan
- STEP Subtropical Thicket Ecosystem Planning
- SDF Spatial Development Framework
-
- **Programmes**
- NLP National Landcare Programme
- WfW Working for Water Programme
- Govt Depts, Research Councils, Associations, Societies & Institutes (with national co-ordinating functions)
- ARC Agricultural Research Council
- CSIR Council for Scientific and Industrial Research
- DEAT Department of Environmental Affairs and Tourism
- DMEA Department of Mineral & Energy Affairs (mine water)
- DST Department of Science and Technology
- DWAF Department of Water Affairs and Forestry
- EKZNW Ezemvelo KZN Wildlife
- NBI National Botanical Institute
- NFAC National Forestry Advisory Council
- NRF National Research Foundation
- RHP River Health Program
- RISA Research and Innovation Support Agency
- RW Rand Water
- SAAMBR South African Association for Marine Biological Research (estuaries)
- SAASTA South African Agency for Science and Technology Advancement
- SAIAB South African Institute for Aquatic Biodiversity
- SANBI South African National Biodiversity Initiative
- SANParks South African National Parks
- UW Umgeni Water
- WESSA Wildlife and Environment Society of South Africa
- WRC Water Research Commission
- WWF-SA World Wide Fund for Nature, South Africa
-
- **Plans and assessments**
- EIA Environmental Impact Assessment
- EIMP Environmental Implementation and Management Plans
- EIP Environmental Implementation Plan
- SEA Strategic Environment Assessment
- SFM Sustainable Forest Management
-

9. When one is managing the behaviour of 43 million peoples towards a resource which:-

- is finite, limited, unpredictable and has no substitute;
- is vital for economic activity and environmental well being;
- is used and abused by everyone and owned by no one;
- is found in gaseous, liquid & solid forms;
- is perceived to have infinite value for domestic needs at times (*drought*) ;
- is perceived to have zero domestic value at other times (*floods*);
- is connected to 6 neighbouring countries;
- does not respect any man made boundaries;
- is a carrier of disease and death and a giver of life;

then the challenge is huge, complex and dynamic. No business can even begin to compare its challenges with those faced by the DWA and yet when all are invited to engage **one another** to help in a sensible way, the levels of engagement are pathetic.

10. When it comes to policing we have given you the Policy and Legal Framework to help and when you consider :-

- policing South Africa's 43 million people through the SAPS force of 260 000. Ratio 200:1 ;
- policing SA's 43 million people with SAPS and private security companies combined force of 750 000. Ratio 60:1
- policing SA's 43 million water users and abusers by the DWA 10 000 officials (*my guess, I don't know the actual figure*). Ratio 4300:1 ;

then we are saddened when you won't help us by engaging **each other** openly and earnestly, when water is so vital to your businesses and to your life.

11. Govt Departments/ Business/ Civil Society must reflect when complaining about lack of capacity; lack of critical mass; lack of institutional memory in DWA, that firstly you have drawn much of it away from Water Affairs for your own selected ends. Secondly you have done nothing to integrate your water related efforts with those of others outside of Water Affairs. You have all sat on your hands and waited for DWA to do it when only you, can mobilise your organisations and Sectors to get together with other Sectors to share and integrate.

12. Govt Departments/ Business/ Civil Society must reflect deeply when complaining about the "**brain drain**" in the realms of water. If you created a co-ordinated scientific platform for engagement in water related matters how much brain power could you attract back to work on southern African problems. There are many top people elsewhere in the world who would love to work on South & southern African challenges. However, when they come to South Africa they see the lack of cohesion; lack of common inter-operable information management & modelling systems; lack of bridging between tightly held silos, they see unco-operative fragmented efforts everywhere and they walk away frustrated. I would say that you can reverse that and make the "**brain drain**" a "**brain gain**" if you integrate your expertise. You don't need my permission to perform the latter and what more appropriate place to do that than in the CMA relational space.

13. To the Financial Services Sector & the Banking Council, "How are you addressing the systemic risk inherent in our water situation? Are you creating the technological conditions in which water trading & pollution trading will be practical from an operational viewpoint? Are you making contact with IBMs SmartPlanet, SmartWater and SmartCities initiatives in the area of water? OR are you saying that your business is not water. Well I say to you that the systemic risk in water issues is something that could drastically affect every one of your clients and their cashflows into your banks".

- 14.** To the Mining and Energy Sectors, “How are you translating your needs and risks into positive engagement with the many Sectors whom you impact, on water related matters?”
- 15.** To the Energy Sector and Eskom in particular, “Are you translating the generics of electricity demand management in which you are calling on all Sectors to engage in building a dynamic, connected systemic picture of the demand situation, into similar water demand management calls to all Sectors? The DWA has created the Policy, Legal & Institutional framework & space in which you and other Sectors can conduct that activity and it will have enormous benefits for not only your water needs but in instilling a culture & competencies in multi-sector engagement for demand management”.
- 16.** To the Fruit and Vegetable Export Industry, “How are you using the policies, laws and institutional arrangements which we have created for you to engage fellow stakeholder Sectors such as the small municipalities (SALGA affiliates) to lessen the risks (eg. overseas markets) for you and improve life for other dwellers in the catchments which you share?”
- 17.** To all Sectors I say, “Is it the inevitability of having to be **fully transparent**, in all you do wrt water, that is making you afraid to engage one another?”
- 18.** If I were the Minister of Water Affairs I would say to all Sectors, “Do you know that your Sector is probably represented in each and every CMA or potential CMA in the country? Has your national body ever engaged in the 2 CMAs that have been established. I am delighted with the embryonic efforts of the Chamber of Mines, SASOL, ESKOM, Forestry, Conservation & Biodiversity Agencies, Organised Agriculture and SALGA to provide national level support for future CMA Board members. I would encourage you to start engaging each other at the top national level for joint strategic initiatives in this regard. I would urge that the concept of Absorptive Capacity becomes core to your conversations and that you draw the National Business Initiative Sustainability Initiative and the Financial Services Sector into your conversations.
- 19.** I would ask all the Business Sectors, “Who has had serious conversation in your Sector and between Sectors on how the paradigms of integrative (*or interest-based*) bargaining (*which you use daily in your labour relations*) can be used for inter-sector integrative bargaining in the realm of water? You have wide experience in this area and it is desperately needed in the realm of water”.
- 20.** If I were the Minister of Water Affairs I would encourage Govt/ Business/ Civil Society to apply the very same thinking that got them organised in their current groupings, to a bigger grouping in the CMA relational space. Below I have included an extract from the **Community Empowerment Collective (CEC)** <http://www.scn.org/cmp/modules/bld-grp.htm> This is just to remind you why you formed a group and why you continue to form networks and interest groups.

GROUP FORMATION AND DEVELOPMENT

by [Phil Bartle, PhD](#)

<http://www.scn.org/cmp/modules/bld-grp.htm>

Community Empowerment Collective (CEC) webpage

There are several reasons why people want to come together:

- In a group, members have access to goods and services more easily than they would have on an individual basis;
- Group members pull together scarce resources, own and manage them themselves in order to fight against poverty, food shortage, powerlessness of an individual person against market forces, unemployment and low self esteem;
- Groups can be learning laboratories, promoting skills such as enterprise management and problem solving;
- Groups are useful receiving mechanisms for resources from Government and NGO development agencies;
- The group allows more small women entrepreneurs to be reached;
- It reduces on administrative transaction costs of lending;
- A group reduces default through collective risk taking; and
- Groups provide a channel for information.

21. I would say, "It is OK to be angry with me. There are many things which DWA has not done, BUT at the same time I would say, look in the mirror at yourselves and see the opportunities that DWA has created and that you have ignored. I would say that we acknowledge that we may have left some obstacles in your way, BUT I would also say you are big, powerful Sectors that do great things, so get over these obstacles and stop using them as excuses for not engaging each other. When faced with our water situation it is grossly irresponsible to find small, lame excuses to be selfish.

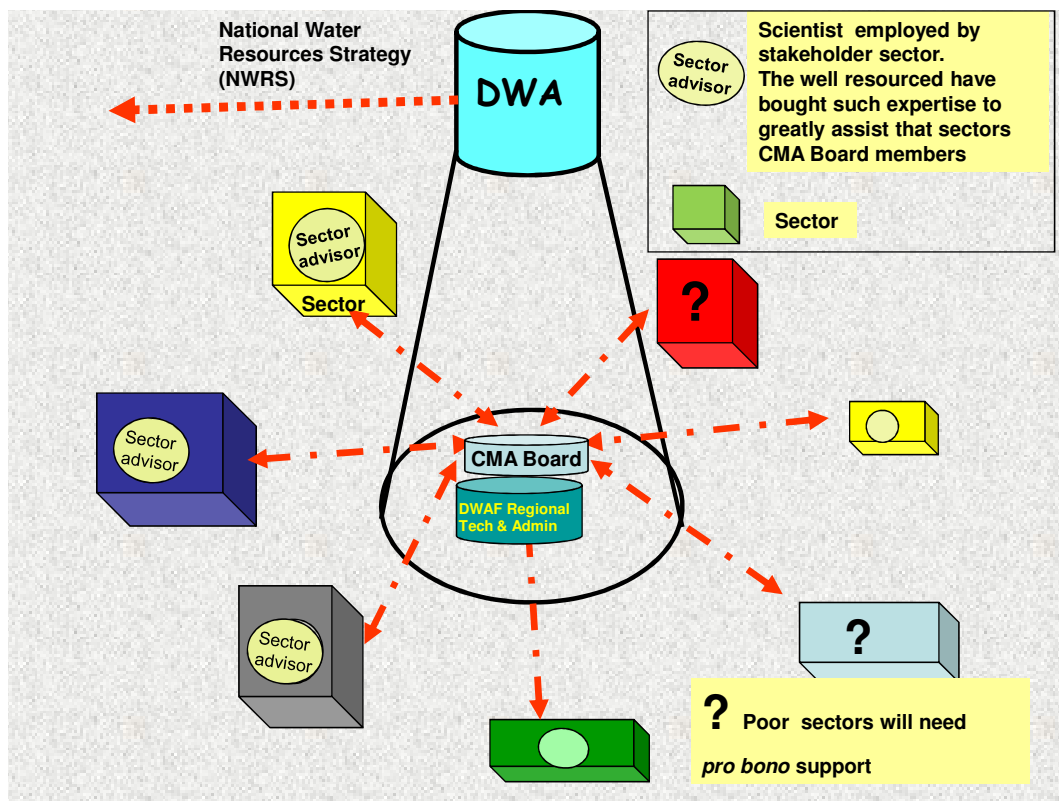
Finally, if I were the Minister of Water Affairs I would ask, "Who of you is going to greet this letter with deafening silence and who of you is going to, TODAY, begin engaging the opportunities which we have created for you".

I have never been an employee of DWA. I found these thoughts when I looked in the mirror and saw the levels of blame which I must carry!!!

114. The United Nations & Seed Analogies

The relationships between the CMA Board, CMA Staff and CMA Stakeholders and also their functions and responsibilities are key to understanding the phenomenon that is the CMA. In this letter I will use 2 diagrams and 2 analogies to convey some of my understandings of the above.

Diagram 1 Depicts the DWA standing in oversight to the multi-sector engagement processes which are co-ordinated primarily by the CMA Board, that consists of Sector Representatives chosen by the Sector Stakeholders themselves.



Analogy 1 The CMA Board is analogous to the United Nations and the CMA Staff can be thought of as the Staff at the UN, that keep the administrative and operational systems (*eg. meeting documents, buildings, security, computers, information systems, translators etc*) running. The political business of the UN is analogous to the integrative water negotiation business of the CMA and is conducted by country Ambassadors (UN) and Sector Representatives (CMAs) respectively.

The UN Secretary General is ultimately in charge of the UN Staff and reports to the General Assembly. The CEO of the CMA fulfils the equivalent role and reports to the Board.

Each country pays a levy to the general fund that pays for the UN Staff, buildings, computers, security etc. In addition each country pays the costs of its own Ambassador (*& his/her staff*) and the costs of any research that the Ambassador needs in order to contribute to or understand any of the UN debates and reports. The Societal Sectors are meant to support their CMA Representatives in the same way. It is the responsibility of each member country to implement, at its own cost, any conventions *eg* Water, Biodiversity, Climate Change or Human Rights, that the General Assembly may decide on. In the same way Sector allocations or obligations to the collective (*that have been endorsed by DWA*), will be for the

Sector itself to ensure compliance from its members. In the event of non-compliance by water Sectors the DWA is always present to ensure compliance. In the case of the UN most countries manage self-compliance and I imagine that so will most Sectors. In the glare of the transparency and information rich, '*systemic spotlight*' that will shine on the CMA negotiating table, it will be very uncomfortable for a Sector to avoid self-compliance. This will cut down enormously on the compliance monitoring work and costs of the DWA. The savings by DWA can go into financial aid for poor, previously disadvantaged Sectors to engage in the CMA processes. As I showed in Letter 113, all Sectors in the Inkomati CMA have national level connections and support for intellectual and other resources. The same is true for every potential CMA in the RSA.

Diagram 2

- * This view is consistent with the National Water Policy
- * This view is consistent with the National Water Law
- * Sector's can talk to the issues NOT at DWA or at each other.
- * Sector's can talk in the presence of DWA and ALL other Sectors. Full systems transparency is key.
- * Sectors are likely to go to their Cabinet Ministers with a much more realistic, systemic view of the overall picture than they do at present. This will have enormous benefits for planners in DWA, who at present have to deal with unrealistic demands emanating from Cabinet.
- * Sector's will avoid shooting themselves in the foot by making selfish & unrealistic, short sighted demands.
- * This view is consistent with the Constitutional imperative for co-operative governance



*** This view enables ALL the skilled knowledge resources to be focused on the common system & not just the skills in DWA and a few consulting firms, acting in fragmented isolation.**

Analogy 2 The blue, centre of the diagram above is the seed in this analogy. All of life uses information to organize itself into form and the "*blue centre*" in Diagram 2 is no different.

*It's common to say that trees come from seeds. But how could a tiny seed create a huge tree? Seeds do not contain the resources needed to grow a tree. These must come from the medium or environment within which the tree grows. But the seed does provide something that is crucial: a place where the whole of the tree starts to form. As resources such as water and nutrients are drawn in, the seed **organizes** the process that generates growth. In a sense, the seed is a gateway through which the future possibility of the living tree emerges.*

Opening quote in Presence by Senge , Scharmer, Jaworski & Flowers

The Sector Stakeholders themselves are the environment that surrounds the seed in the above analogy. They provide the intellectual, informational & financial resources for the CMA and they use & abuse (pollute) the water resources. The **primary organizers** (*in the seed*) are the Sector Leaders ie. those that the Sector has chosen to represent them around the CMA table. If CMA Board members need more intellectual resources they draw them from their Sectors. These Sectors are **all** connected to National level intellectual & other resources as I showed in Letter 113. All Sectors, particularly at National level, have access to affordable world class information creation and management systems that have been developed, tried and tested in conditions which have the same generic attributes as conditions in South Africa. All National level Sectors can and must serve their Sector at Water Management Area (WMA) level. All National level Sectors can and must engage **each other** at National level to provide the cross cutting common needs, the critical mass, the economies of scale and the institutional memory for their Sector, at CMA (*ie WMA*) level. An example of this form of organization in the business world is the benefits at branch level in banks that derive from National level cooperation in the Banking Council.

Some may say that this is all very well, in concept, BUT that the devil is in the details. I have no doubt that those who fear transparency and the re-allocation and accountability that this transformation will bring about, are ready to put many devils, in many details, into the process space. However, the generic principles are really quite simple and widely accepted and practiced elsewhere in multi-stakeholder bodies eg. at the United Nations, FIFA, ICC, International Atomic Energy Agency, IRB, IOC, the African Union and the list goes on.

115. Eskom and the Chamber of Mines Lead the Way

"Eskom lays facts bare over power supplies" was the heading of a Sunday Times (3 April 2011) article by Lucky Biyase.

"Power utility Eskom has held a heart to heart meeting with the Chamber of Mines to discuss coal supplies", chief executive Brain Dames said.

The meeting with the Chamber had to do with 2 things:-

- Power supply to mining
- Coal supply to Eskom

Dames said, *"The spirit of the meeting was being very transparent with the challenges Eskom faces and getting the Chamber working together with Eskom."*

At the same meeting Public Enterprises Minister Gigaba said, *"there should be transparency about the state of electricity security as winter peak period is approaching."* Total transparency is imperative

What would such **working together** and **transparency** mean in practice?

I am certain that a **shared** model of the coal & electricity supply elements of their respective businesses would have to be developed. The model would need to contain & make explicit all the assumptions that they each make about the other. This shared model would have to be built and used in a spirit of openness, building trust through common systems and communications and probing of assumptions, ideas and their consequences for each other. These are the actions that would breath life into commitments to transparency and working together.

Is it conceivable that such a model could leave out water? NO.

I have personally been in a national level multi-stakeholder meeting where I heard a strong call for **transparency** on water information by Eskom, a key player in any water engagement.

Both Eskom and the mines would be competing for the same water supplies. Since water use reduces dilution capacity, quality has to be included in any meaningful modeling system.

The Minister of Public Enterprises who was at the meeting and press briefing afterwards, *"gave assurances that Eskom, together with the Department were working hard to ensure that the country does not go back to the coal supply shortages that led to the near collapse of the grid in 2008."* The outages forced some mines and smelters to shut for days which cost the country billions of rands and many jobs. With jobs goes hunger and hardship. The social dimension is inextricably linked to what is going on between Eskom and the Chamber.

Can those who watch over our country's food & job security interests ignore this model that helps inform the major discourse about the allocation of water? The world over it is recognized that energy/food/water are inextricably linked. This was one of the key subjects at this year's World Economic Forum in Davos.

Can SALGA and COGTA stand idly by and not have a clue what is going on in these modeling dialogues and more importantly can Eskom & the Mines afford to keep SALGA & COGTA in the dark with respect to such discussions and the assumptions they are making? No.

Can Business Unity SA (BUSA) and SASOL be far behind in wanting to contribute and benefit to such a modeling dialogue and action? No.

I cannot imagine that the mines and Eskom can ignore environmental considerations when one thinks of their exposure to capital funding from international sources and climate change concerns, not to mention their own triple bottom line commitments. Can SANBI, WWF, EWT, SANParks stand idly by and not probe the assumptions that Eskom & the Mines are making in their modeling systems dialogues.

If the leaders of the Dinokeng Scenarios process are reading this letter, may I suggest that this Eskom / Chamber of Mines endeavour is the start of engagement and commitment at the very top level of Government/Business/Civil Society and that their joint modeling efforts will feed directly into the NWRS allocation plans and hence form the outer framework for multi-sector allocation dialogues in the CMA crucibles. Dialogues to which they are also party.

How wide must the system boundaries be in understanding the challenges. Consider this extract from the Biyase's article. *"But coal producers can make more money by selling coal on the export market - to India & China - than to Eskom."* Water resources also need to be shared with our international neighbours, who are also Eskom customers.

As **predictors** in a complex emerging socio-ecological realm simulation models are NOT good, BUT as an aid to learning, by multiple stakeholders they can be really useful if engaged wisely, transparently and collectively. Flight simulators for training pilots on large passenger airliners are the only way that 96% of the emergency procedures are learned. Next time you fly, think of the **learning** that the pilot has undergone on a simulated model of the plane and you may just look at simulation models differently after that.

The '*Eskom/Chamber/Food security/Water/Jobs/Health/Ecosystems flight RSA*' has 45 million passengers on board. Can rational leaders really believe that this 'flight' can be 'piloted' without learning in a **participatory agent based social simulator**? Flight RSA has huge momentum that take years to speed up and slow down. Piloting flight RSA **without** the imagination into the future and rigorous interrogation of assumptions that the above learning will foster, would be irresponsible in the extreme!

Dames said, *"Really our concern with the mining industry is making sure that investments are taking place in the industry to secure our long-term coal supplies that will run all our power stations until the end of their life."* I am sure the Chamber echoes these sentiments wrt Eskom and electricity supplies. I am also sure that both parties see the wider connections I have mentioned. They will not leave out water, the key connector in the integrated picture. Water which can no longer be obtained at will, just by putting pressure on DWA, through Cabinet if need be. There are just too many other big actors on "*Flight RSA*" including the financial services sector (which finances all parties) and certainly does not want to see systemic collapse, not only in "Flight RSA" but also in "*Flight SADC*".