2030 Conversations

"Ladies and gentlemen, fellow South Africans, I do know one thing for sure: when 2030 does finally come along, there will still be rainbows arching over the horizons of our beautiful and beloved land as a sign of hope. May God richly bless South Africa's future.
Nkosi Sikelel' iAfrika."

Opening Address by Archbishop Desmond Tutu, 6 May 2010

By
the South African Chapter
of the
World Future Society

The **2030** Painting

By Charlene Maslamoney

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Foreword

"2030 Conversations" is about applying futures thinking to an analysis of South Africa's prospects in the time period 2010-2030. Its purpose is to inspire knowledge-based plans and strategies aimed at creating favourable conditions for the nation's emerging future up to 2030.

The paper records the key themes, messages and information shared at a conference organised by the South African Chapter of the World Future Society entitled "Energy, Environment, Education and Economics: Imagineering South Africa's Future to 2030" which was held at the Pavilion Centre, V & A Waterfront, Cape Town, on 6-7 May, 2010. The conference was chaired by award-winning journalist and broadcaster, Debora Patta of e-tv and Third Degree.

The launch of the "2030 Conversations" is timely for two reasons. Firstly, the 2010 FIFA World Cup has focused renewed national and global attention on the country. Secondly, the South African government has recently formed a National Planning Commission (NPC) to bring long-term planning into the highest levels of government. The rationale for establishing the NPC is clear from the following quote from the government's Green Paper "National Strategic Planning" of August 2009: "Lack of a coherent long-term plan has weakened our ability to provide clear and consistent policies. It has limited our capacity to mobilise all of society in pursuit of our developmental objectives. It has hampered our efforts to prioritise resource allocations... In addition, weaknesses in coordination of government have led to policy inconsistencies and, in several cases, poor service delivery outcomes. This Government is determined to fix these weaknesses." It was perhaps the power crisis of 2007-2008 in South Africa, which NERSA estimated cost the country about R50 bn, that prompted this decisive realisation of the profound roles that foresight and long-term planning play in policymaking and national socio-economic development.

"2030 Conversations" highlights large-scale challenges and opportunities that lie ahead for the rainbow nation over the next two decades. The paper is freely shared in the public domain in the hope that real conversations will take place right across South Africa, at all levels of society, on the five main pillars of our future: (1) deepening and clarifying our national ethos; (2) attaining sufficient economic growth to reduce, and ultimately eradicate, poverty; (3) modernising our education system; (4) rescuing our environment and its vital eco-systems from pollution and mismanagement; and (5) undergoing an energy revolution to take us beyond Peak Oil to a sustainable future energy order.

It is no exaggeration to say that successful developments to strengthen these five pillars will largely determine whether or not our land fulfils its immense promise leading up to 2030. 2010, it seems, is a branching point for South Africa. Critical national choices have to be made soon. May they be based firmly on knowledge, wisdom and foresight.

I would like to dedicate these "2030 Conversations" to Nelson Mandela, father of our new nation, for making an impossible future possible and to Archbishop Desmond Tutu, for reconciling an irreconcilable past.

Michael Lee, Founder, South African Chapter of the World Future Society
June 2010

Introduction to 2030 Conversations

Preamble

Just over 100 professionals, futurists, strategic thinkers and media representatives attended the inaugural conference of the South African Chapter of the World Future Society. In view of the compelling nature and intellectual impact of the material shared during presentations, panel discussions and interaction with the audience, it was decided to draw up a Conference Memorandum to share key information, ideas and findings of the conference in the public domain. The Conference Memorandum, entitled "2030 Conversations", may provide a point of departure for exploring pathways for shaping and preparing for South Africa's shared, national future to 2030.

Delegate Feedback on Conference

"The WFS conference has left an indelible impression on me."

"My poor mind was in a rather befuddled and bewildered state at the weekend, trying to make sense of the profound intellectual and emotional messages it received."

"The presenters were on top of their game."

"It's great to know that so many talents and so much drive are busily planning and working toward a better future for South Africa."

Evocative Quotes by Futurists

"Passive adaptation to a deteriorating environment is a road to disaster."
Jamshid Gharajedaghi, Systems Thinker and Futurist

"The future can be explored, colonized, imagined and created."
Richard Slaughter, Futurist and complier of the Knowledge Base for Futures Studies

"Those who act with sustained and strong intention are the creators of the future."
Bertrand de Jouvenel, The Art of Conjecture

"A positive future is not a spectator's future, it's a participant's future."
Professor Philip Spies

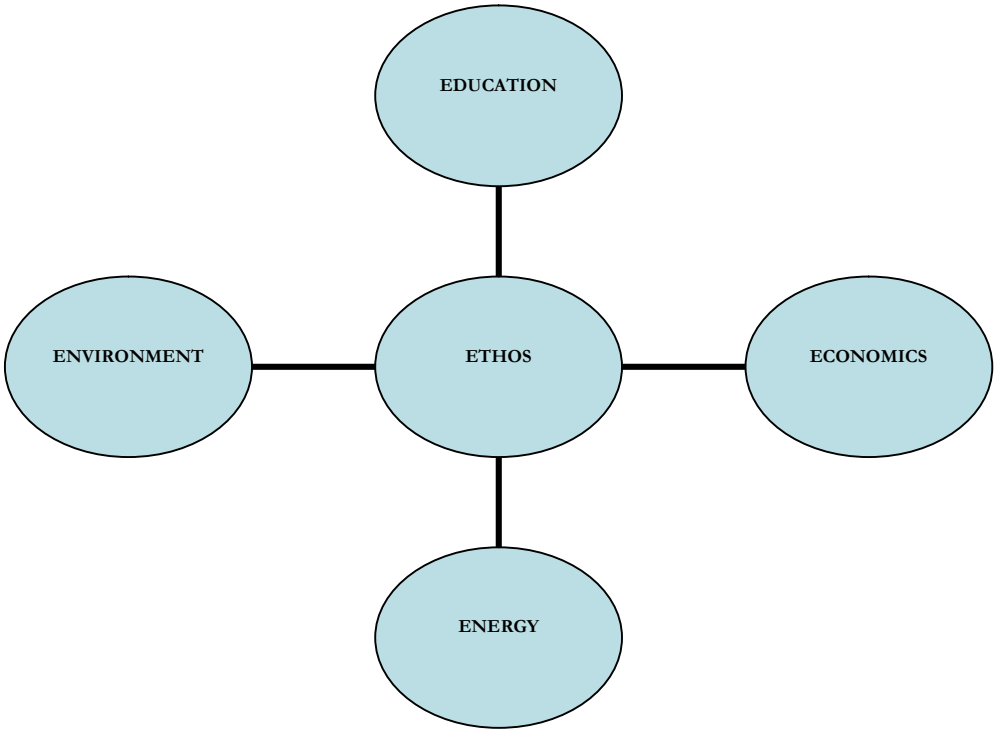
"The future is created by default *or* design. Either way we are responsible for our future."
Dr Elisabeth Dostal, Co-Founder, Biomatrix Theory

"Society cannot develop economically over the long term if, for instance, it is found lacking in its search for truth, and in its respect for liberty, for ethical behaviour and for beauty."
Professor André Roux, Director, IFR

"The goal of futuring is not to predict the future but to improve it. We want to anticipate possible or likely future conditions so that we can prepare for them. We especially want to know about opportunities and risks that we should be ready for."
Edward Cornish, author of Futuring: The Exploration of the Future and founder of the World Future Society

Future time is a conceptual space for design, for plans, for strategy, for dreams…it may be the most under-utilised resource on the planet.

"2030 Conversations" bases its future thinking on five pillars of South Africa's future.



Ethos

worldview, governance thinking, value systems, visions, goals, cultural norms, social capital, constitutions, laws, i.e the deep, ordering principles of systems and societies

Education

key to human maturation and creation of skills and knowledge

Economy

systems of wealth production and exchange of goods and services, patterns of consumption

Environment

ultimate source of human survival, well-being, resources and sustainability

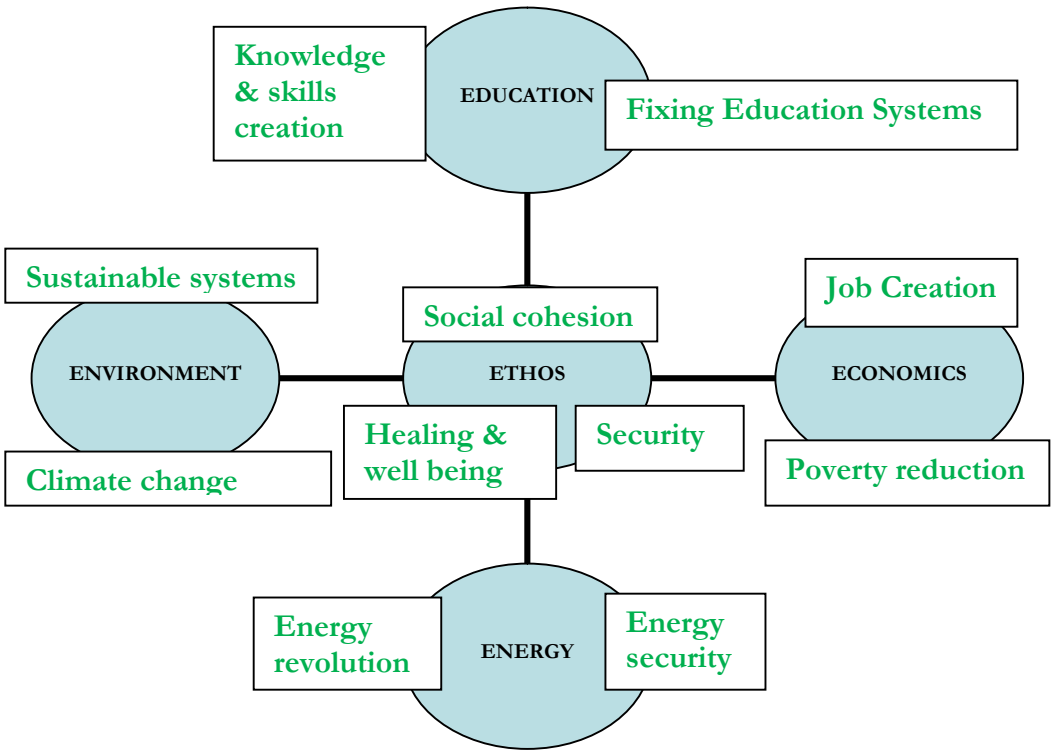
Energy

critical, indispensible input for all systems in nature, society and economy

Rigorous futures-based research, analysis, brain-storming, systems thinking, ideal future envisioning, policy-making and planning would need to be applied in all five dimensions to significantly increase the probabilities of bringing greater prosperity, cohesion and wholeness to South Africa in the time period 2010-2030.

If we look back at many of the highest-priority challenges identified during the conference in facing South Africa's future to 2030, they do fit readily into these big five dimensions: job creation, poverty reduction, fixing our education system, creating skills for a knowledge economy, social cohesion and healing, security, environmental sustainability, climate change, etc.

Plotting Key SA Challenges Across the Big Five Dimensions

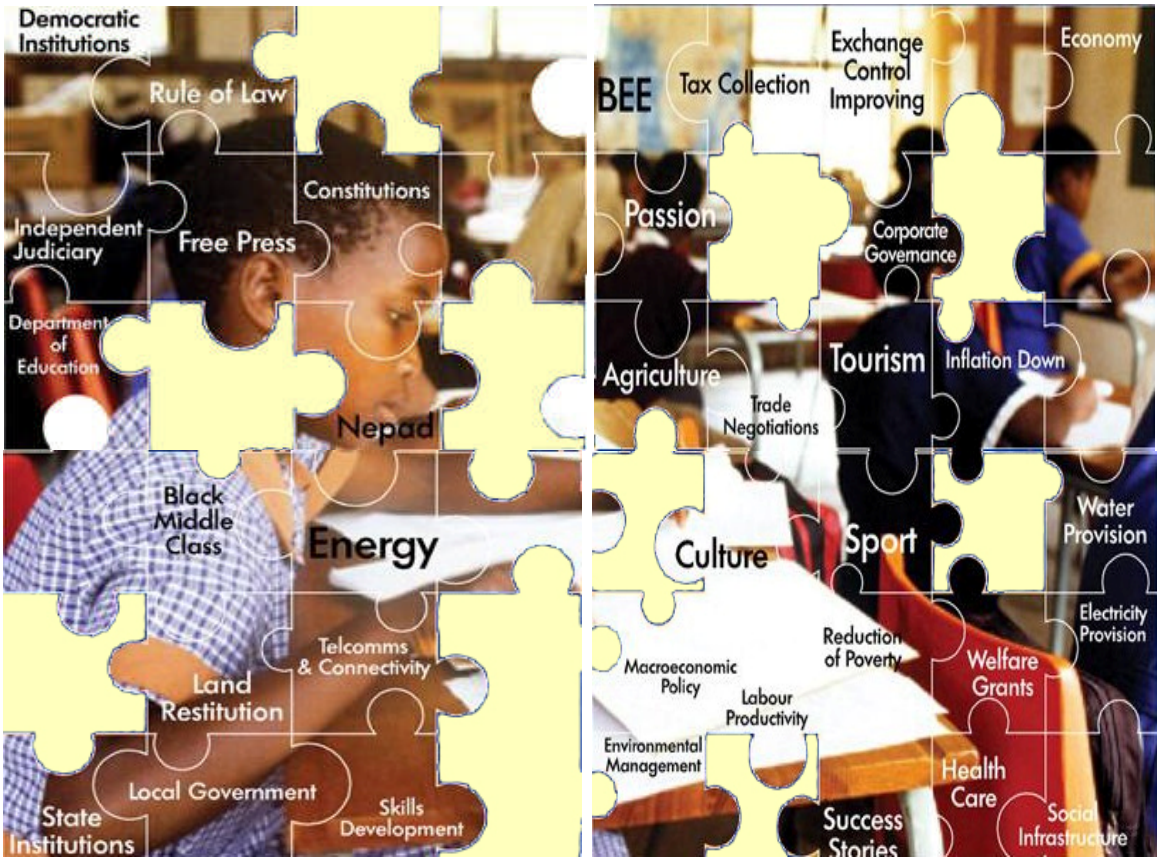


Starting the Journey of South Africa of 2030

Archbishop Desmond Tutu stated in his special recorded opening message to the conference: "It will be a challenge over the next two days of the conference to look far ahead towards a South Africa of 2030. Those being born now as we speak will be young men and women by then. What nation will they inherit? We have a responsibility to leave them a good, and even a great, legacy."

Our 2030 journey should be guided by this moral imperative to create a good, or great, legacy for the "born free" generation (those born in 1994 and beyond) as well as for the next generation being born now.

Perhaps the best place to start our journey to 2030 is with a memorable statement made by South African futurist and author of South Africa: Reasons to Believe, Guy Lundy, during his keynote address:"South Africa is a puzzle with some missing pieces."



Create More Jobs

Fix Education

Build new Knowledge Base

Health & Well-Being

Convert to Sustainable Energy Order

Healing of Nation's Psyche

Cultivate Nation's Ethos & Ethics

Aim for 'poverty museum' by 2030

Protect Nation's Eco-Systems

Ideal Redesign of Key Systems

Build Stakeholder Democracy

Conversations about the First Future Pillar: Ethos

Ethos

worldview, governance thinking, value systems, visions, goals, cultural norms, social capital, constitutions, laws, i.e the deep, ordering principles of systems and societies

There is talk of South Africa needing moral regeneration to build stronger families, to overcome residues of racism, to reduce violence, to promote peace and reconciliation, to foster good-will, to promote citizenship, to take nation-building to a deeper level.

The Rector of the University of the Western Cape, **Professor Brian O'Connell**, encapsulated the challenge ahead:

"We are a challenged country. By 2030 we will be in a sad state if we do not change course. We need to shift our nation. We must think big thoughts about ourselves. We need to build a new knowledge base for our society."

In developing ethos, value systems and governing principles, it is vital to realise that no social system, whether a family, an organisation or a public enterprise, really works properly without a guiding ethos.

Part of developing and deepening our national ethos is self-belief. SA Futurist and keynote speaker, **Guy Lundy**, gave reasons for South Africans to believe in our future. He argued that South Africa had weathered the global financial crisis relatively well. It has now got the world's 6th safest banking environment as rated by the World Economic Forum. In addition, the country currently has moderate inflation, fairly low interest rates (now at a 30 year low) and a large, growing middle class.

He anticipates that significant economic growth lies ahead for the African continent as a result of Chindian investment and a telecommunications and media explosion now underway. In addition, the average African of the near future would be young, urban and educated. Lundy shared that the 2010 World Cup would give South Africa a new image as a "can do" country:

The New View of a Developing "Can Do" Nation

Infrastructure improvements brought about through the World Cup included:

- Roads
- Bus Rapid Transit
- Train station upgrades
- Gautrain
- Pedestrianisation
- Bandwidth
- Digital TV
- New mobile masts
- Airports
- Power upgrades
- Harbours

This could provide a lasting material legacy of the 2010 world cup, in addition to a new, improved national brand.

Managing Director of Homecoming Revolution, **Martine Schaffer**, spoke about South Africa's Diaspora. She pointed out there is talk among expat communities, and among those expats who return, of a sense of "home", of belonging to South Africa. She shared that professionals in their 30s-40s are the most successful group of SA returnees. On average, they have spent 8 years abroad. They speak of our family values, weather and lifestyle as attractors bringing them back. Schaffer said Homecoming Revolution had witnessed an increase in the rate of expats returning to South Africa in the last two years, especially in the light of the global financial crisis.

Talking Point

How can we nurture South Africa's unique sense of home and belonging as a core part of our national ethos?

Our sense of home could include factors like:

Our family values
Our lifestyle, balancing work and leisure
Our cosmopolitan and cultural diversity
Our "ubuntu" sense of humanity and community
Our tolerance
Our humour
Our hospitality
Our weather
Our natural beauty

One condition feeding the SA Diaspora is a swathe of uncommitted South Africans who are emotionally disengaged from the country. This group of disengaged South Africans are especially prone to national mood swings. This mirrors a trend among many low income groups who are dissatisfied and "alienated" due to poor service delivery after the end of apartheid.

The disenfranchisement legacy has become the disengagement challenge. The antidote to this could be to spread an ethos of citizenship, of belonging.

Another critical aspect of ethos and governance for a country is the amount of good-will, security and political peace prevalent in society. Widespread crime and violence, for example, is an indicator of social instability and breakdown.

Dr Jakkie Cilliers, founder of the Institute for Security Studies, presented security scenarios to 2030. He stated Africa is much more stable now than it was 10 years ago. There is increased security in the world yet a perception of increased conflict.

He pointed out that economic inequality is a major source of conflict: "A country with $250 per capita income has a 15% likelihood of internal conflict over five years – many times greater than the 1% risk to an economy with $5,000 per capita income." There is a robust relationship between demographic growth and economic growth; as well as a robust relationship between urbanisation and per capita income. Nearly all countries become about 50% urbanized before reaching middle-income status. All high-income countries are 70-80% urbanized. **Since Africa has a young, rapidly urbanising populations, these two pre-conditions for economic growth are in place.**

However, South Africa is one of the world's most unequal societies. 40% of the population is extremely poor. This represents another key challenge for the nation. Crime rates tend to be higher where there is high unemployment, high socio-economic inequality, and lax gun laws.

Rank	Gini
1 - Namibia	0.7
2 - Gabon	0.64
3 - Botswana	0.637
4 - Lesotho	0.632
5 - Central AfR	0.616
6 - Bolivia	0.616
7 - Haiti	0.597
8 - Paraguay	0.591
9 - South Africa	0.569
10 - Colombia	0.562

Gini Coefficient: The 10 most unequal Countries globally in 2010

Talking Point

South Africa is the 9th most unequal society in the world.

Cilliers sketched some mega-trends he anticipates could characterise a world of 2025-2030:

- Rise of emerging powers, China and India in particular.
- Historic transfer of relative wealth and political power from West to East.
- More heterogeneous world through influence of non-state actors.
- An increasingly global, multipolar world with a deficit in global governance.
- Aging populations in developed world;youthful populations in Africa & Asia.
- Growing energy, food, and water constraints.
- Worries about climate change.

On the downside, Cilliers foresees increased potential conflicts over resources - water, diamonds, wood, oil, food - in the 21st century. In particular, there is a huge challenge of food security for the region: "According to FAO, 265 million people in Sub-Saharan Africa (SSA) now suffer from food insecurity. This is an increase of 100 million (or 60%) since 1991."

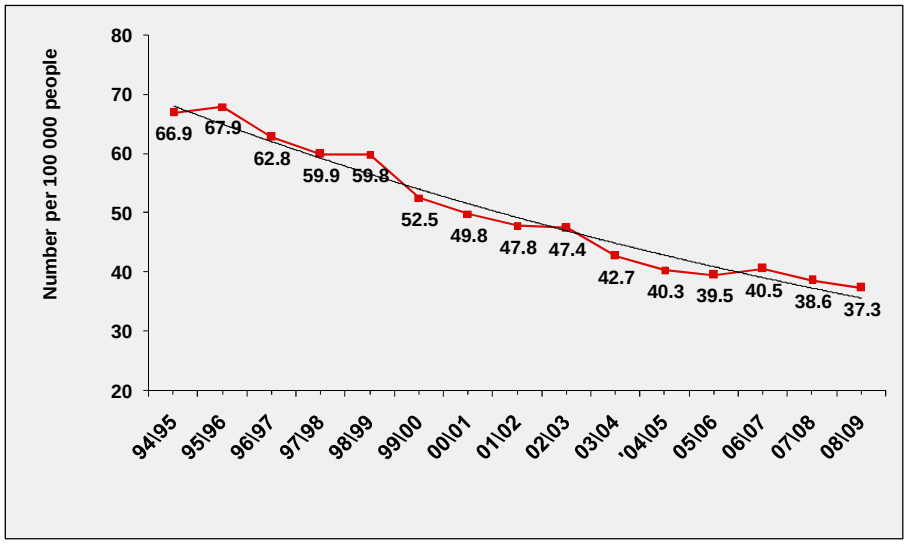
For sub-Saharan Africa, he had a surprising statement of hope, that we live in an time of unprecedented peace, characterised by a dramatic decline in conflicts. In 1999 sub-Saharan Africa was the most war-affected region in world with more battle deaths than rest of world combined.

Talking Point

From 1999 – 2006, the number of armed conflicts in sub-Saharan Africa fell by half. Southern Africa has entered an era of greater civil peace. To optimise this peace in its region, South Africa needs to aim for sustained 7% annual economic growth and to take dramatic strides towards equalising its society.

Dr Cilliers traces this decline in conflict to 3 factors: 1. End of colonialism. 2. End of Cold War. 3. International activism by UN and organisations such as AU. In addition, 9/11 put our region further away from the epicentre of the global war on terror.

Long-term Decline in Murder Rate in SA: 1994/95 – 2008/09



Crime in SA peaked in 2002-2003. The murder rate is 24% down since 1994. Cilliers forecast that crime in SA will probably continue to decline from its 2002/03 peak.

Talking Point

South Africa's murder rate shows a steady, sustained, long-term decline from 1994 and, overall, crime probably peaked back in 2002-3. This decline is forecast to continue.

Conversations about the Second Future Pillar: Education

Education

key to human maturation and creation of skills and knowledge

Education is about enabling, empowering and preparing citizens for social participation and advancement. "2030 Conversations" recognises that uplifting the nation's education system is one of our top systemic challenges.

Professor Brian O'Connell, Rector of the University of the Western Cape, took the audience's breath away with his passionate plea for educational reform in South Africa to ensure we do not keep a failing education system that will lead to social, economic and cultural decline in the country.

He argued that education in South Africa *must* change.

Citing the failures of the 2005 Curriculum "fantasy", Prof O'Connell stated that the conditions for educational excellence are becoming absent in the nation. We do not have a strong modern learning culture. There is an absence of a strong professional teaching culture. Currently our education is delivering terrible outcomes. We are merely spectators, not participants, in the new global game of knowledge. We have very weak PhD production rates and falling literacy and numeracy skills. In addition, there are colonial and apartheid legacies. To transcend our past, what kind of discourse is needed? What kind of consciousness is needed to deal with our legacies?

Nor is there a current national discourse on our future and how to get there. Futurists, he said, are a new breed of "knowledge creators".

Talking Point

There is no current national discourse on our future and how to get there. In particular, there is no sense of what our best economic model is for SA society.

A new national educational curriculum is needed which is:

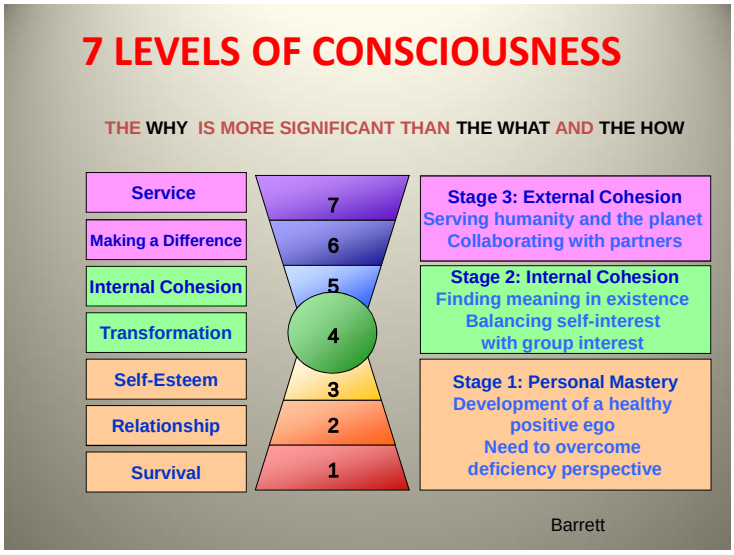
- Relevant
- Learner-centred
- Responsive to Dalin's revolutions
- Communication focused
- Focused on critical engagement
- Making wide use of technology
- Broadening knowledge

Such a curriculum should teach:

- How to learn and think (analysis, reflection and critical thinking)
- History of cultures and religions
- Respect for diversity
- How economies work
- Develop a scientific sense
- What the big environmental challenges/dangers are
- Personal responsibility to know and act
- Ability to work with others
- The significance of relationships
- The power of emotions

21st Century content includes the basic core subjects of reading, writing, and arithmetic- but also emphasizes global awareness, financial/economic literacy, and health and environmental issues. The skills needed fall into three categories: learning and innovations skills; digital literacy skills; and life and career skills. In addition, there is learning to participate in democratic activity and citizenship. We need a new breed of teacher/facilitators trained to do away with download-style pedagogy, and who can serve as curators of ideas and enablers of creativity and innovation. We need a modern learning culture where pupils are taught to think. We need a legion of knowledge workers.

O'Connell urged us to blossom a new consciousness, saying we must believe in ourselves and think big thoughts about ourselves, developing the 7 levels of consciousness.



Conversations about the Third Future Pillar: Economics

Economy

systems of wealth production and exchange of goods and services, patterns of consumption

Demographer Professor **Bärbel Haldenwang**, of the Institute for Futures Research, sketched key population trends for SA to 2030, notably:

- There will be about 52.2 million South Africans by 2030[1], up from 49 million in 2010 – a net increase of 3 million people in 20 years (note: without AIDS, SA might have had a population of 71.3 million by 2030[2])
- 65% of the 2030 population will be in the working age group 15-64
- By 2030, 71% of the population will be urbanised, roughly 39 million people

Rapid urbanisation and rural depopulation is likely to be a key, determining demographic trend between 2010-2030. The economic opportunities for a population in which 65% fall in the working age group 15-64 are immense. Will we seize this profound economic opportunity?

Talking Point

Rapid urbanisation is likely to be a key, determining demographic trend between 2010-2030. The economic opportunities for a population in which 65% fall in the working age group 15-64 are immense.

Increasing and nurturing South Africa's urban middle class must rank as a high-priority goal for the SA economy to 2030. This should be combined with engaging and empowering the low income population groups in both civil society and the economy.

[1] Projections done by using the ASSA2003-model of the Actuarial Society of South Africa, 2010.
[2] Projections done by using the Spectrum Policy Modelling System of The Futures Group International.

In his presentation, "South Africa's Economy 20 Years Down the Road", Institute for Futures Research Director, **Professor André Roux**, showed that the 2009 Happy Planet Index, which measures the degree to which long and happy lives (life satisfaction and life expectancy are multiplied to calculate happy life years) are achieved, places South Africa at four places below the USA at 118th position.

Rank	Country	Life expectancy	Life satisfaction	Ecological footprint	HPI
12	Egypt	70.7	6.7	1.7	60.3
20	China	72.5	6.7	2.1	57.1
59	Finland	78.9	8.0	5.2	47.2
74	UK	79.0	7.4	5.3	43.3
75	Japan	82.3	6.8	4.9	43.3
114	USA	77.9	7.9	9.4	30.7
115	Nigeria	46.5	4.8	1.3	30.3
118	South Africa	50.8	5.0	2.1	29.7
128	Kuwait	77.3	6.7	8.9	27.0
130	Angola	41.7	4.3	0.9	26.8

We need to move South Africa far up the Happy Planet Index.

But Professor Roux shared some big trends which favour Africa's future. He explained it this way as a **potential global shift**:

Finite natural resources + Ageing workforces
=
Restoration of Africa's strategic importance

There is a chance to restore Africa's global stature within this evolving context.

Africa can gain a new strategic importance because it has resources the world needs and the populations of the developed world are ageing significantly, while Africa's populations are young in comparison. Africa is becoming the youngest continent.

The world is waking up to the limits of growth through scarce resources (oil, water, even food) and new powers like China and India are looking closely at, and investing in, Africa's untapped natural resources and land. A global shift is underway and Africa stands to gain a new status as the desired continent *not the pitied continent*. As Africa's powerhouse economy, South Africa can gain new social, economic and political capital from this global power-shift.

Africa, then, has:

- A positive demographic future to 2030 in terms of being youthful compared to the ageing populations of the developed world.
- Only about 28% of its arable land is in use, meaning over 70% of its potential arable land is *not yet in use*!

Roux argued there can only be an African renaissance if the rule of law and governance are strengthened and implemented in Africa and if the continent develops natural resources-based economies. Corruption, strengthened by company bribes, including those by international companies, needs to be rooted out.

Roux outlined two preconditions for SA's economic growth:

1. Developing legitimate and effective leadership and governance, based on the rule of law.

2. Developing a diversified economy, based on extensive natural resources.

In addition, South Africa has the following challenges to overcome:

- High unemployment rate at 25%
- Structural inequality
- Poverty
- Poor savings rate

Roux stressed that economic growth cannot take place in a vacuum. South Africa must grow its social capital at the same time as its economic resources. "Society cannot develop economically over the long term if, for instance, it is found lacking in its search for truth, and in its respect for liberty, for ethical behaviour and for beauty," he explained.

Talking Point

South Africa must grow its social and human capital at the same time as its economic resources. A key insight is fostering the relationship between growth, wealth and human and civil development.

In addition to engaging our broader citizenship, we need to build bridges between civil society and economic and political structures. Another precondition is protecting and separating the state from the ruling party without political intervention and maintaining the autonomy of democratic institutions (e.g. SARB, auditor-general, public prosecutor, judiciary, free press).

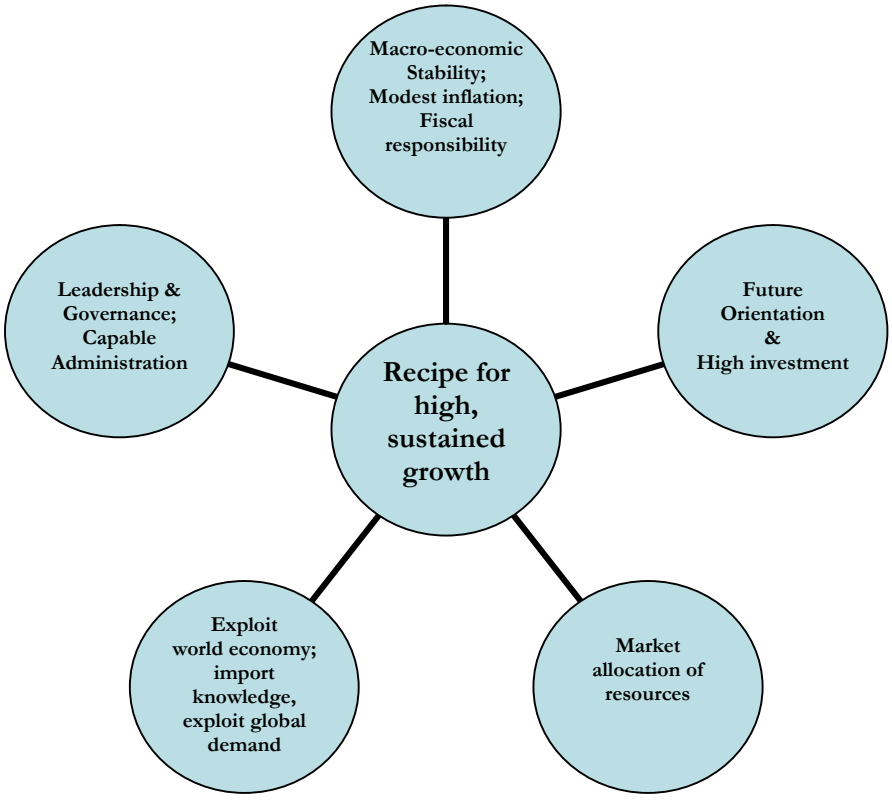
As we build greater social cohesiveness (opposite of polarisation) and as we move towards fiscal and financial integrity, we will move onto the path of sustainable development.

Talking Point

In order to meaningfully reduce poverty and unemployment, economies need to grow at 7% a year for 25 consecutive years.

Thirteen countries have recorded an average growth rate of 7% per annum for 25 years or longer: Botswana, Brazil, China, Hong Kong, Indonesia, Japan, Korea, Rep of Malaysia, Malta, Oman, Singapore, Taiwan and Thailand.

On the positive side: South Africa's Gross National Income per capita rates and our GDP per capita rates are on a long-term upward trajectory. Here is Roux's recipe for long-term economic growth:



Conversations about the Fourth Future Pillar: Environment

Environment

ultimate source of human survival, well-being, resources and sustainability

Professor Martin de Wit, from De Wit Sustainable Options, focused on factoring sustainability into South Africa's future. His definition of sustainability resonated:

Sustainability in its shortest definition is the capacity to endure. To endure one does not only need material goods, but also a mental and spiritual resilience and set of skills on how to cope.

In terms of our ecological footprint, SA ranked 91st out of 134 countries in 2009, with high carbon emissions, painting a picture which is *ecologically unsustainable*. In terms of environmental performance, SA ranked 115th out of 163 in 2010, with high degrees of pollution. These low rankings indicate we need to significantly improve our eco-systems management and our environment.

Factoring sustainability into South Africa's future is in the first place to start acting on the individual and collective hope we have as a nation. This hope can translate into deep changes in attitude and behaviour.

In terms of social systems, SA ranked 55th out of 180 countries in 2008 on a Corruption Perceptions Index, 41st out of 79 countries for subjective well being, but only 129th out of 182 countries in 2007 for the Human Development Index (for life expectancy, literacy and education) indicating a humanly unsustainable state in these areas. We also ranked 92nd out of 111 countries in 2005 for a Quality of Life Index (for material well-being, divorce rate, community life, unemployment, community life, etc), which is also humanly and politically unsustainable.

De Wit pointed out our nation's reservoir of collective hope and good-will.

He then shared his "wedges for change":

- material wedges to start bending the trends of material and resource use as well as the generation of pollution and waste.
- lifestyle wedges, such as pressures on conspicuous consumption
- behavioural wedge to change attitudes and behaviour

Future urban development in South Africa must also be sustainable and environmentally cognisant.

Rae Wolpe, Managing Director of Silimela Development Services, stated that most cities and towns will become unsustainable in their current structures and designs during and after the energy crisis. Most cities have been developed on the assumption of limitless fossil fuel - no modern city in its current form can be regarded as truly sustainable over the next 20 years. **In this context he warned many communities risk being left behind by the future.**

Talking Point

City and town planning from now on has to be sustainable with most past urban developments having been based on unhealthy fossil fuel dependence.

Wolpe argued that in future major shifts in technology will reshape urban systems all over the world. He then shared exciting aspects of the Gauteng vision 2055 scenario exercise.

Strengths of Gauteng:

- ⇧ Largest urban economy in Africa: the only true Global City Region
- ⇧ Logistics hub of the SADC region of 200 million (300 million by 2030)
- ⇧ Gateway between Africa and the world
- ⇧ Established City Region structures
- ⇧ Massive investment in Gautrain and Bus Rapid Transport
- ⇧ Significant revitalisation of Inner City

Weaknesses of Gauteng:

- ⇩ High levels of inequality and crime
- ⇩ 3m people earning less than 1 $ per day, living in shacks
- ⇩ 1½ million structurally unemployed
- ⇩ Chronic and deepening skills shortage
- ⇩ Weak alignment between government departments and spheres
- ⇩ Very high fossil fuel dependency
- ⇩ Inefficient urban structure

What lies ahead for Gauteng? The Gauteng City Region will double from its current size of 12-14 m to 25m people by 2055 and by then half of the South African population may live in the region. **Gauteng is clearly the key to South Africa's future prosperity and success as a nation.** Wolpe's emphasis on future-based urban planning is all the more important since urbanisation will make metros crucial in future as nodes of governance.

Wolpe shared Four Milestones to a Big Future for Gauteng:

African Vision: 2009 – 2014:
The City Region was positioned and geared for the anticipated "long boom" in commodity prices and the higher levels of investment in Africa by setting itself up for business as a gateway to the African economy.

African Trade and Manufacturing Hub: 2015 – 2024:
Because it laid the foundation by getting the basics right in the 2009 to 2014 years, the City Region used its strengths to become a booming African trade and manufacturing centre.

African Gateway: 2025 – 2034:
Because it was successful as a trade and manufacturing hub, Gauteng began to diversify and became a gateway of services, information and connections to Africa.

African Knowledge Capital: 2035 – 2055:
Because of its gateway role, Gauteng was able to develop into a global hub for African knowledge, technology and creative industries.

The environment presents new economic and global opportunities for Africa, in terms of both food production and switching to renewable energy.

The conference ended on an uplifting note when **Mr Riël Malan**, Group Managing Director of Unlimited Group, showed how Africa holds the key to solving the world's future food crisis and could become the new food-basket for the world. The first step in understanding how this could become true is looking at how population increases will lead to increased demand for food and especially protein.

UN GLOBAL POPULATION SCENARIO to 2050

REGION	2007 (MILLION)	2050	% CHANGE
• World	**6,671**	**9,191 (can be as high as 10,600**	**+ 38 %**
• Africa	**965**	**1,998**	**+107 %**
• Asia	**4,030**	**5,266**	**+ 31 %**
• South America	**572**	**769**	**+ 34 %**
• North America	**339**	**445**	**+ 31 %**
• Europe	**731**	**664**	**- 9%**

The World Bank forecasts that people earning > $16 000\year will increase from the current figure of 352 million to 2,1 Billion by 2050, resulting in a 7 X increase in protein eaters. **World food demand is estimated to double by 2050!**

Malan then argued that production of 1kg protein on average requires 4 kg grain. The 7 fold increase in protein demand will cause a 7 X 4 increase in grain consumption = **28 X increase in global grain demand**.

This presents a global challenge for food production. A 37% population increase will result in a 28 fold increase in demand for feed grain – however, **only 12%** of global agricultural land is not being utilized (rainforests excluded). **And Africa holds the bulk of this unutilized land.**

Talking Point

Will Africa become the future food-basket for the world?

COUNTRY	Total Area km²	Arable Land	Arable Area km²	Irrigated area Km²	% Arable irrigated	Renewable Water km³	
South Africa	1,214,470	12.1%	146,950.87	14,980	10.19%	50	
Angola	1,246,700	2.7%	33,037.5	800	2.42%	187	
DRC	2,267,048	2.9%	64,837.57	110	0.17	1283	
Africa (Sub-Sahara)	14,690,589	8.2%	1,198,411	49,340	4.12%		

Potential = 561 326.51 km² of additional irrigation possible, not including areas where irrigation is not necessary

Malan pinpointed some of the key challenges to overcome, especially moving away from subsistence farming. This is especially urgent with Africa set to have a 107% increase in population. Subsistence farming may be deeply rooted in culture but economies of scale will be needed to provide sufficient food and create critical mass in production. There is also a lack of infrastructure for distribution. Closely connected to this is the challenge of funding and investment.

Talking Point

Agriculture by default deals with poverty at its root.

Talking Point

Africa has potential to feed itself and other parts of the world. It holds the key to solving any future global food crisis. Let's invest in the infrastructure of mass food production.

How will Africa's Green Revolution happen?

Malan sketched 5 strategic action points:

- A realization of the magnitude of the crisis facing world
- Facing infrastructure challenges
- Funding mechanism to deal with perceived risk vs. long term investment.
- Gaining critical mass in global commercial agriculture
- Cohesive execution of an African agricultural policy

Conversations about the Fifth Future Pillar: Energy

Energy

Critical, indispensible input for all systems in nature, society and economy

Michael Lee, founder of the SA Chapter of the WFS, challenged SA to undergo an energy revolution. Otherwise its future economy will be based on very weak foundations and turbulence on an unprecedented scale could occur.

Fossil fuel depletion will rock the foundations of the world economy because there is an absolute dependence upon the "big three" energy sources of oil, gas and coal.

The World's Primary Energy Consumption

Oil = 35%
Coal = 25%
Gas = 21%
Total = 81%

But these Big Three all face global production peaks.

Estimated "Big Three" Energy Production Peaks

Oil	**2006-2010**	**EnergyWatchGroup** "Crude Oil: the Supply Outlook", October 2007 www.energywatchgroup.org
Natural Gas	**2015-2040*** (i.e. long plateau followed by steep decline)	**Association for the Study of Peak Oil & Gas (ASPO)** " The Peak and Decline of World Oil and Gas Production" www.peakoil.net
Coal	**2025**	EnergyWatchGroup " Coal: Resources and Future Production", July 2007 www.energywatchgroup.org

*The International Energy Agency expects gas production to peak between 2020-2030 World Energy Outlook 2007

The energy challenge that will result from Peak Oil and other fossil fuel production peaks can be expressed as a syllogism.

PREMISE 1

Our industrial, globalised society has an absolute dependence upon an energy order made up primarily of the Big Three fossil fuels: oil, gas and coal.

PREMISE 2

During the period 2010-2030, we will move into an era of irreversible depletion of fossil fuels and diminishing economic returns for their associated industries.

CONCLUSION

Therefore our society has to find a new energy order to prevent socio-economic collapse scenarios.

Lee defined the coming energy crunch as follows:

> At different times during the next two decades, oil, gas and coal are likely to reach their peak of world production, resulting in relatively rapid declining supplies of energy and a growing incapacity to meet escalating global demand for key energy sources.

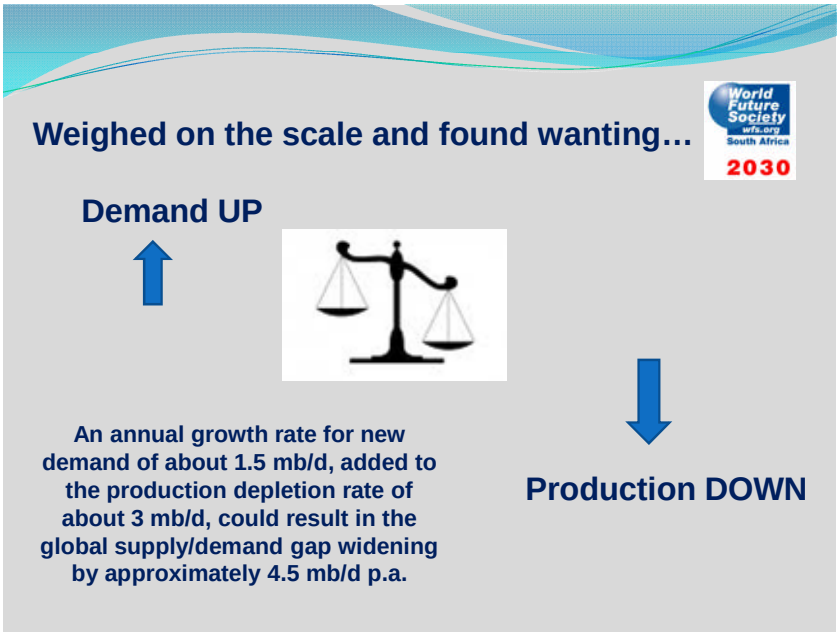
These fossil fuel resources are reaching their peaks at a time of unprecedented growth in **demand** for energy. The biggest and most imminent energy peak is Peak Oil, which some energy experts believe is happening right now.

Peak Oil (midpoint of total extracted and extractable oil reserves on earth) can be analysed in this way.

"The world has now consumed almost half the total amount of conventional oil most experts estimate will ever be available for recovery…. The overwhelming majority [of published studies] put the world's original endowment of recoverable oil at no more than about 2,400 billion barrels; the average estimate is 2,000 billion barrels. Cumulative worldwide consumption had exceeded 900 billion barrels by the end of 2003." (Association for the Study of Peak Oil and Gas (ASPO)"The Peak and Decline of World Oil and Gas Production")

The "second half" of oil production of recoverable reserves will be much harder and more costly than the first. During this period, the oil industry will be subject to the brutal economic law of diminishing returns.

It took 140 years (1859-1999) to consume the 1st trillion barrels of oil BUT
it will only take 30 years (2000-2030) to consume the 2nd trillion barrels.



Lee then drew up a balance sheet for South Africa's energy order.

The **SA Oil Balance Sheet**:
Oil production = 195,000 bbl/day (2008 est.)
country comparison to the world: 42
Oil consumption = 583,000 bbl/day (2008 est.)
country comparison to the world: 29
Oil imports = 490,500 bbl/day (2007 est.)
country comparison to the world: 25
(Oil = SA's largest single import)
Oil proven reserves = 15 million bbl (2009 est.)
country comparison to the world: 86
Source: CIA World FactBook

Our transport sector uses 3/4ths (77%) of SA's petroleum products! It has an extreme dependence upon foreign imported oil. South Africa has limited oil reserves and about 95% of its crude oil requirements are met by imports from the Middle East and Africa (Saudi Arabia, Iran, Kuwait, the United Arab Emirates, Yemen, Qatar, Iraq, Nigeria, Egypt and Angola). The Energy Security Master plan highlights liquid fuels as a key vulnerability, estimating the economy would, in the case of total fuel supply disruption, lose at least R925 million a day.

The **SA Gas Balance Sheet**:

Natural gas production = 3.25 billion cubic metres (2008 est.)
country comparison to the world: 53
Natural gas consumption = 6.45 billion cu m (2008 est.)
country comparison to the world: 54
Natural gas imports = 3.2 billion cu m (2008 est.)
country comparison to the world: 40
Natural gas proven reserves = 27.16 million cu m (2006 est.)
country comparison to the world: 102
Source: CIA World FactBook

In terms of coal, SA is a **coal giant**. It is the 6th largest coal producer with 5.5% of world's coal reserves and is seen as a reliable supplier of high-quality steam coal. It is also the **world's leader** in coal-to-liquids (CTL) technology (Sasol) . We export about 30% of our annual coal production (of which 80% to Europe). 68% of our primary energy is supplied from coal while 75 % of the South African economy is estimated to be coal-energy driven.

Although South Africa has about 40-50 years of coal mining left, futurists with long-range vision ask, what happens after coal? How are we going to transition to an economy free from dependence on coal for future generations? In addition our remaining reserves will probably be more expensive to mine and many existing mines are approaching the end of their economic life.

The **SA Electricity Balance Sheet**

The nominal installed generation capacity is 42 011 MW and the CIA World FactBook ranks SA a **high 16th** in world for annual electricity production.

Eskom generates about 96% of SA electricity needs, with most of its plants being are coal based, with one nuclear power station and the balance being hydro and gas.

Industrial and mining sectors use 2/3rds of our national electricity usage.

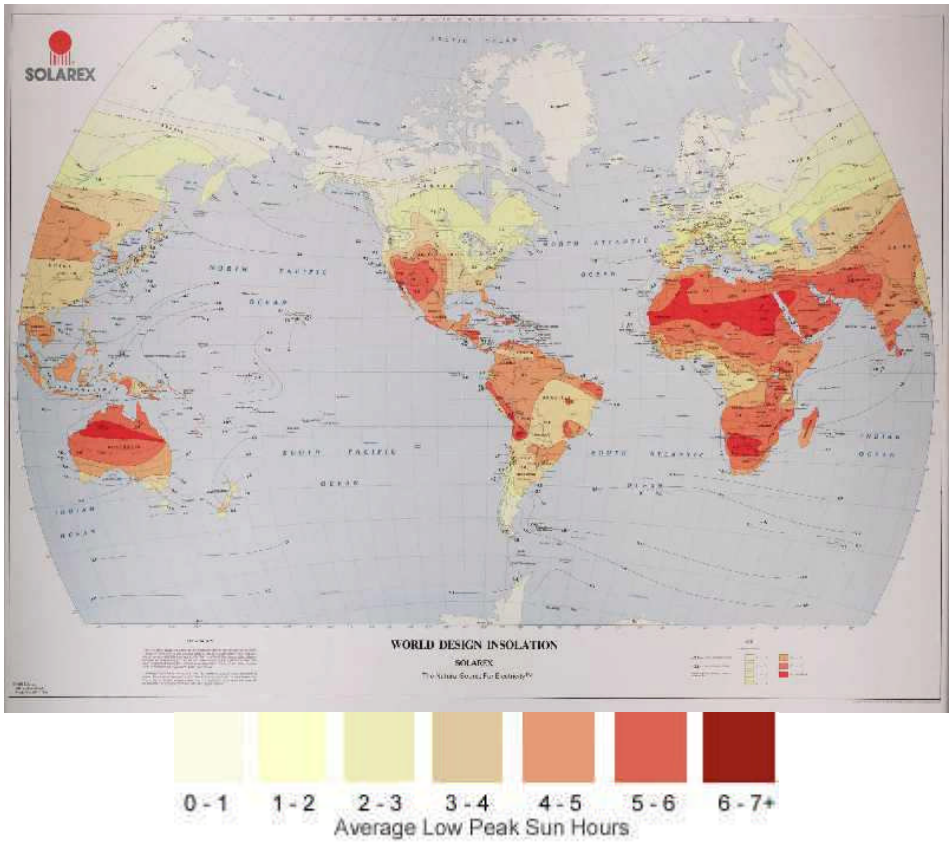
The anticipated electricity growth demand is projected at **1 500MW per annum**. This means an additional 40 000MW electricity has to be generated by 2025 (while existing capacity has to be upgraded). The SA Energy Security Master-plan proposes an Electricity Super-Grid with a backbone of transmission corridors to the regional nodes in the provinces.

One of the new South Africa's greatest success stories is the electrification of SA homes. Between 1994 and 2000, Eskom committed itself to connect 2,5 million houses. That commitment was exceeded by 750 homes, one year ahead of target. In 1990, only about 30% of households had access to electricity, fewer than 10% of rural homes had access to electricity. By the end of 2006 the national grid reached 73% of the population. In urban areas about 85% of households now have access to electricity, whereas the figure in rural areas is around 50 %. A target date of 2012 for 100% access by households, schools and clinics to electricity. This is a truly **phenomenal achievement**.

Lee said it was essential and urgent in view of impending fossil fuel depletion to convert SA's energy order to renewable power and nuclear. He said China has 20 nuclear power reactors under construction with plans to increase their nuclear capacity six-fold over the next decade. There will also be 12 such reactors built in India over the next seven years. In his 2010 State of the Union address, Obama called for construction of a new generation of clean nuclear power plants, pledging more than $8bn of federal loan guarantees to begin building the first US nuclear power stations for 30 years: "To meet our growing energy needs and prevent the worst consequences of climate change, we'll need to increase our supply of nuclear power. It's that simple."

Lee said Africa needed to go solar. Power unleashed at the sun's centre is equivalent to 80 billion hydrogen bombs exploding every second. In a year, solar radiation striking the earth is equivalent to 178,000 terawatts. Yet solar energy accounts for less than 0.1% of total global primary energy demand. Solar power has the potential to provide over 1,000 X total world energy consumption. Yet it provided only 0.02% of the total in 2008. On the plus side, solar energy demand is growing at about 25% per annum. (Source: "The Sun: A Biography", by David Whitehouse)

If we have one of the world's best potential markets for solar power why is less than 1% of the total electricity generated in South Africa based on renewable energy resources? When are we going to truly harness and harvest our sunny African skies?



Global Solar Power Map
Overview of worldwide solar power average Peak Sun Hours

One balance, South Africa needs a drastic restructuring of its energy order if we are to be prosperous in a post-oil world. We need a radical energy policy review taking into account fossil fuel depletion rates. We must develop our own SA Oil Depletion Protocol (ODP). Between 2010-2025, we need an energy revolution.

We have a liquid fuels exposure, as any oil shortages would bring transport and tourism sectors to a grinding halt. We should invest in a vast public/private expansion and modernisation of national, regional and local rail networks; we should invest in electric & hybrid cars; we should stock larger petroleum reserves.

We also have exposure to future electricity generation capacity gaps &
Very, very high economic dependence upon coal. We need massive public and private investment in solar power in rural and urban areas to finally provide for long-term energy security - South Africa must go solar!

Talking Point

South Africa needs to start its energy revolution <u>now</u> to come out as a winner in the post Peak Oil world of rapidly declining fossil fuels.

It appears that in the search for clean, sustainable energy there is little choice but to expand our nuclear power as much as we can. By building more nuclear power stations and switching to renewable power, we will be preparing for Peak Coal. We also need to drive systems efficiencies and energy savings, change unsustainable consumer patterns and incentivise measures like house insulation, solar heating, lift clubs, etc.

Lee proposed an independent national energy indaba to plan the transition from fossil-fuel dependent economy to a new energy order based on renewable and nuclear energy.

Conversations about Problem-Solving and Measuring Future Progress

"2030 Conversations" has highlighted large-scale challenges and opportunities lying ahead for South Africa. The conference speakers also provided some tools for problem-solving on a large social scale, using systems thinking.

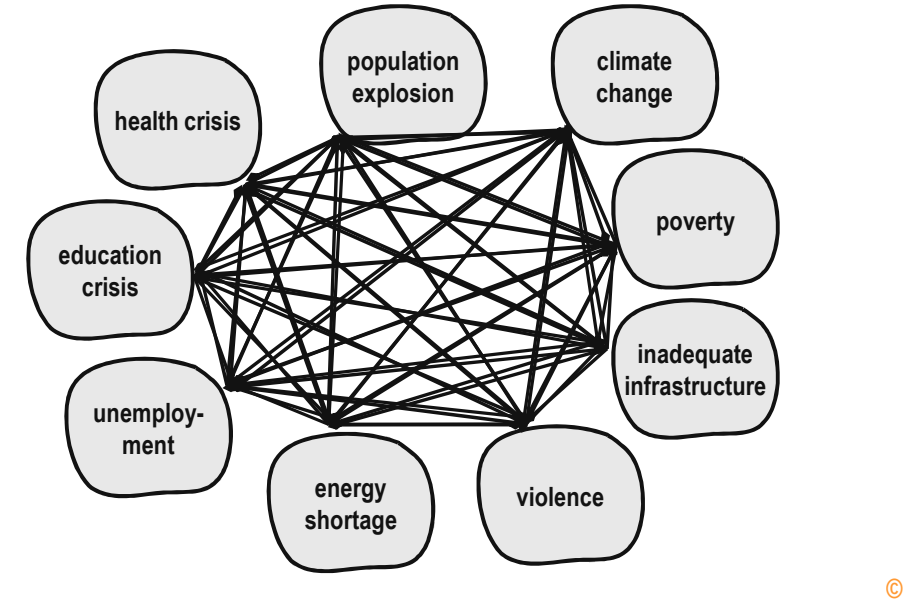
Dr Elisabeth Dostal, co-developer of the Biomatrix Systems Approach and one of the top systems thinkers, outlined the necessity for changing our worldview in order to deal with humanity's complex problems. In March 2009 the G-20 expressed the challenge of complex problems as follows: "We know what brought about the finance crisis, but we do not know what to do about it." The same statement is true if we replace the word "finance crisis" with climate change, pandemics, energy shortage, unemployment, crime, education crisis, population explosion, amongst other critical issues.

Dr Dostal highlighted three things necessary for meeting those challenges:
(1) Apply systems thinking as the worldview that can understand & deal with complexity
(2) Change our future course by using ideal future design
(3) Develop stakeholder governance in all our decision making processes

(1) Understanding complexity

Dr Dostal outlined the dynamics of systemic problems, namely that

- problems have multiple causes (i.e. are co-created by many stakeholders)
- problems co-create each other (i.e. they impact on each other and make each other worse)
- the problem does not contain the solution (i.e. analyzing the problem will not necessarily reveal a solution, because the logic of the problem is not the logic of the solution)



© Dr Elisabeth Dostal

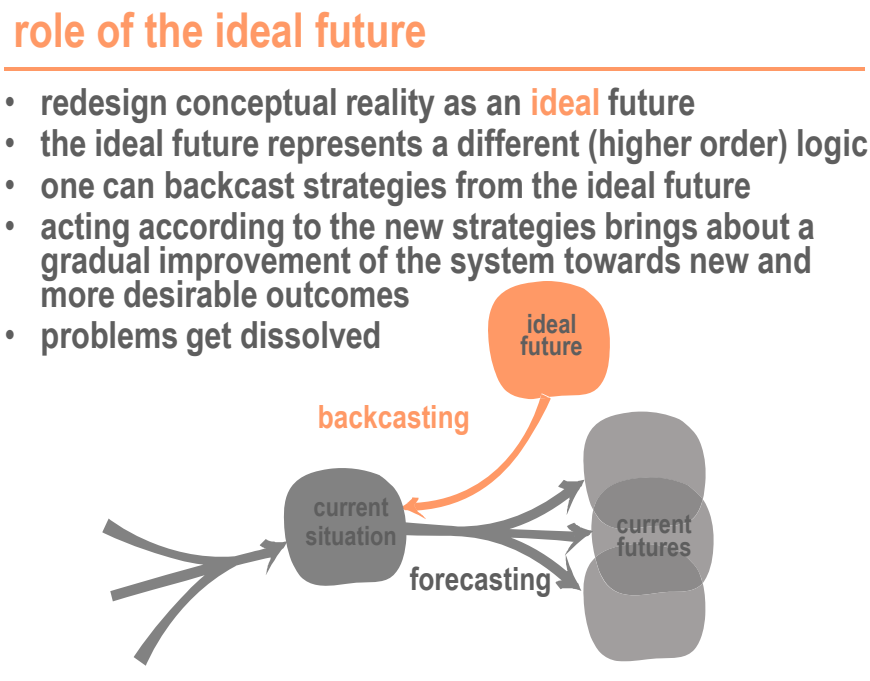
Systems thinkers look at the interrelations of systems and the outcomes they produce. These interrelationships become the breeding ground where complex problems emerge and grow. Even well functioning systems can produce problems in their interaction. Therefore we need a worldview and methodologies that can help us get out of this complex problems trap. Dr Dostal warns that "the current situation has momentum and it tends to get worse over time. And we don't notice gradual deterioration…" For example, we gradually release more and more greenhouse gases and year by year the population grows, land deteriorates, resources get scarcer, etc. until there comes suddenly the tipping point of no return.

How the future will unfold is not predictable. One can forecast a range of alternative future outcomes (or scenarios), depending on how the environment with which the system interacts will change. As forecasting typically implies current logic thinking, these are referred to as current future scenarios. If these scenarios are not desirable, how can we change our future course and create a more desirable future?

(2) Ideal future (re)design

Einstein observed that one cannot solve a problem at the level of thinking that gave rise to it. New thinking is required. Ideal system redesign creates such shifts in thinking. Formulating the future as an ideal outcome gives rise to new strategies – i.e. if we know where we want to be in future, we can design strategies that will get us there. This is referred to as "backcasting" from the future. The ideal future represents a different, higher order logic. For example, there are many diseases and accordingly many specific treatments. By comparison, creating health involves only a few strategies (such as nutrition, exercise, avoidance of certain toxins, stress management, hygiene and situation specific preventive measures) to prevent or overcome all diseases.

As a system begins to act according to new strategies inspired by a vision of an ideal future, its situation gradually improves and thereby dissolves the previously experienced problems.



© Dr Elisabeth Dostal

As complex systems span many levels and dimensions, comprehensive frameworks of system analysis and design are required. For example, a problem like poverty is co-produced by changes on the planetary level (e.g. climate change), societal and organisational levels (e.g. economic policies and activities), individual level (e.g. poverty consciousness) and the cellular level (e.g. disease). Moreover, various cofactors pertaining to the economic, cultural, psychological, political, technological and ecological dimensions at each level contribute to the creation of poverty.

Thus, to dissolve a complex issue like poverty requires ideal designs of systems operating at various levels and dimensions, involving many different stakeholders. The desired ideal future, designed by these stakeholders, is then backcast and implementation and strategic plans are developed to bring current reality more and more in alignment with the ideal future.

How could such a national conversation be structured and who would be responsible for implementing the designed strategies?

(3) Stakeholder governance

Dr Dostal suggested that – according to *Biomatrix Systems Theory* – the current governance models are insufficient and need to be extended to include systemic transversal ideal design and strategy development.

More specifically, stakeholders from all tiers of government, as well as organized civic society and relevant international governance bodies, need to co-design the ideal future, in which they are stakeholders and implement their share of the co-designed strategies.

This type of governance is function specific (i.e. stakeholders are defined by their functional interest. For example, the community is not a stakeholder per se. The community as teachers, pupils, employers, employees, unemployed, health providers, transport users, etc. are stakeholders.) Thus, systemic governance would imply stakeholder democracy as compared to the traditional majority rule democracy.

By means of a case study Dr Dostal illustrated that the sum total of diverse, comprehensive and even seemingly insignificant strategic contributions by the various stakeholders and their members will dissolve our complex problems – provided the individual strategies are derived from a shared ideal future design. Being contextualized and coordinated by such a design will multiply the effect of isolated and often random projects of the well meaning contributors that characterize the current situation.

She left us with a personal question: What will be *your* personal contribution towards dissolving our collective problems in South Africa and, indeed, the world – given *your* specific functional role and influence in society?

In addition to providing theoretically sound and imaginative models and methodologies for dealing with systemic problems, "2030 Conversations" concludes by conceptualising a unique index for measuring the kind of progress towards an ideal future South Africa might want. A panel discussion, comprising **Dr Elisabeth Dostal**, **Andile Ncontsa**, Director of the Old Mutual Foundation and **Edwin Roberts**, CEO of Creative Alliance Group, outlined a framework for an Index of National Quality Development.

It was decided to develop an action-based, effectiveness/quality index. It would measure how effectively we create new jobs, including new kinds of knowledge economy jobs, how effectively our systems operate and achieve their objectives. It needs to be a qualitative index as well as quantitative, measuring quality of life, quality of education, quality of civil society, etc. and not just economic data.

The index would define what kind of quality we are looking for in our systems.

The more we measure the better. We should measure all our progress.

An Index of **National Quality Development** (NQD) could include factors like:

- New jobs created annually, including new knowledge workers
- Number of thinking & logic courses delivered in education system
- Number of ethics and citizenship courses delivered in education system
- Number of systems thinking courses delivered in education system
- Number of quality reviews of education systems conducted
- Levels of citizenship awareness in annual sample survey
- Indicators of increased civil engagement
- Year-on-year increase in size of middle class
- Change in contentment in being South African in annual sample survey
- Change in population's sense of belonging to SA in annual sample survey
- Change in feelings of self-worth and dignity in annual sample survey
- Measure changes in seven levels of consciousness in youth & young adult groups
- Number of title deeds issued to low income and very low income families
- Change in % of SA homes electrified and supplied with clean running water
- Change in murder and violent crime rates year on year
- Change in net national migration rate
- Change in number of skilled South Africans returning
- Measure of national confidence in the future, including business confidence
- Entrepreneur-friendly policy measures introduced @national & metropolitan levels
- Number of systems reviews carried out in government
- Number of systems reviews carried out in business
- Number of new NGOs and voluntary community groups created
- Number of technical innovations registered on national database
- Number of new renewable energy projects introduced
- Number of conversions to energy efficient buildings & households
- Number of new sustainable town and city planning projects approved

Further widespread discussion is encouraged as we build our own NQD index!

But what dreams have been ignited by the "2030 Conversations" for our nation and our continent?

Future Dreams to Explore

Conclusion

2010 is a unique point in our nation's, and Africa's, history. An evolutionary branching-point has arrived. With any branching point of history, a precise course or direction has to be chosen wisely. We can use futurist tools like scenario-planning, environmental scans and ideal (re)design to guide our thinking, strategies and policy-making.

"2030 Conversations" stresses the need to change course to address some sources of current and future stress in our value systems, in education, in the biosphere, in our social systems and in our energy order (which is vulnerable to the global fossil fuel depletion problem).

South Africa's destiny is tied to that of the African continent. There is a real opportunity for Africa in coming decades to become a food basket, as well as a solar power and hydro-electric giant. South Africa, too, can transition from its coal-driven economy to one based on renewable and clean power to provide for more sustainable socio-economic systems.

For all the national projects that lie ahead after 2010, in the five dimensions of ethos, education, environment, energy and economics, the nation can draw on a reservoir of good-will and collective hope, as well as on its collective memory of overcoming huge challenges. The transition from apartheid to democracy, the electrification of millions of households in the new South Africa, not to mention the 2010 World Cup, all show we are a "can do" nation.

There is a significant opportunity to redirect the trajectory of our collective future as global shifts in energy, security, technology and wealth are underway, while, at the same time, challenges on an unprecedented scale, from climate change to fossil fuel depletion, are unfolding to face the world.

Truly, this is a time for boldness, national alignment and a deepening awareness of the power of the future.
