

Drawing Environmental Water Allocations into the world of realpolitik

Emerging experiences on achieving compliance with policy in the lowveld rivers, South Africa



Sharon Pollard & Derick du Toit
with inputs from S. Mallory
Skukuza April 2009



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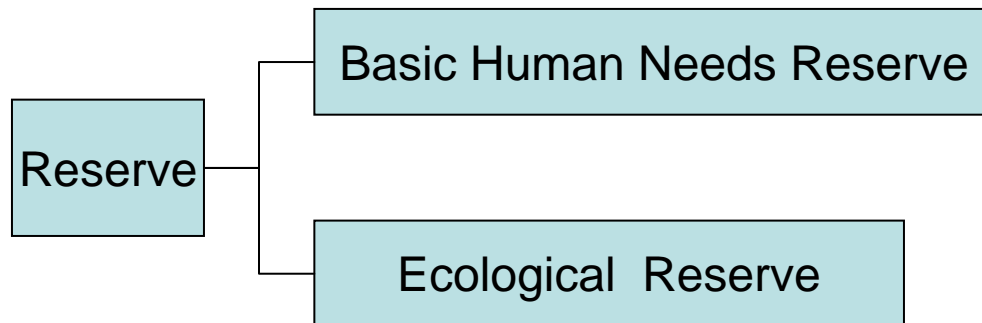
Introduction EWAS- The delivery on policy promises



- Environmental Water Allocations - emphasis on implementation in SA
- Requires us to think of EWAs beyond the conceptual
 - places an onus on all of us - academics practitioners and managers alike - to draw EWAs into the operational world – the world of Realpolitik.

EWA

- Sometimes called
 - Environmental Water Requirements
 - Environmental flows
 - IFRs
- In South Africa – **the Reserve** –
 - *quantity and quality of water required to meet basic human needs and those of aquatic ecosystems*



Keep river sustainable for human use

Some definitions

Realpolitik

- *Real* - “realistic”, “practical” or “actual”; and
- *Politik* = “politics” primarily on practical considerations, rather than ideological notions.
- Realpolitik is a theory of politics that focuses on considerations of power, not ideals, morals, or principles.

Implementation

- In policy
- Institutional realignment
- EWAs can be determined?

- Is it being operationalised:

What does this mean?

- Set for a future planning period (e.g. 6 months) in a manner that is practical and defensible
- Delivered
- Monitored
- Regulated & enforced
- Supported
- Learnings incorporated

Locating EWAs in the global discourse

- EWAs are very much part of the discourse on sustainability ...sustainable development
- Despite enabling policy & legislative *mileu*, reality of implementation is challenging

Multiple discourses on sustainability

- Change part of planet's history but trends are quite unlike those seen before (MEA 2005).
- Importantly Harris (2007) points out that we have a much **more recursive and complex relationship with ourselves and nature**
 - Things are more complex

Connell "Even getting a haircut is more complex"
22nd Feb 2009

Entering a wider discourse

‘...children born today – in both the industrialised world and developing countries – will live longer and be healthier, they will get more food, a better education, a higher standard of living, more leisure time and far more possibilities – **without the global environment being destroyed.**

‘And that is a beautiful world.’

**The skeptical Environmentalist,
Lomborg, 2001, p 351-2**

And....

7. *Environmental change:*

'The dual trends of growing exploitation of ecosystem services and the declining condition of most ecosystems are unsustainable...'

Ecosystem changes may occur on such a large scale as to have a catastrophic effect on human health.'

Ecosystems and human well-being: health synthesis.

Millennium Ecosystem Assessment, 2005

“Cultural fraud”

‘One of the most important and growing costs of our modern way of life is ‘cultural fraud’: the promotion of images and ideals of ‘[the good life](#)’ that serve the economy but do not meet psychological needs or reflect social realities.’

Richard Eckersley
Int J of Epidemiology, 2006

SA

The challenge of implementation

Despite enabling policy and legislative milieu, reality is challenging

Balance sustainability & economic development –legacy of Apartheid

Some assert that integrity of easterly-flowing rivers has not improved, or is continuing to degrade (qlty).

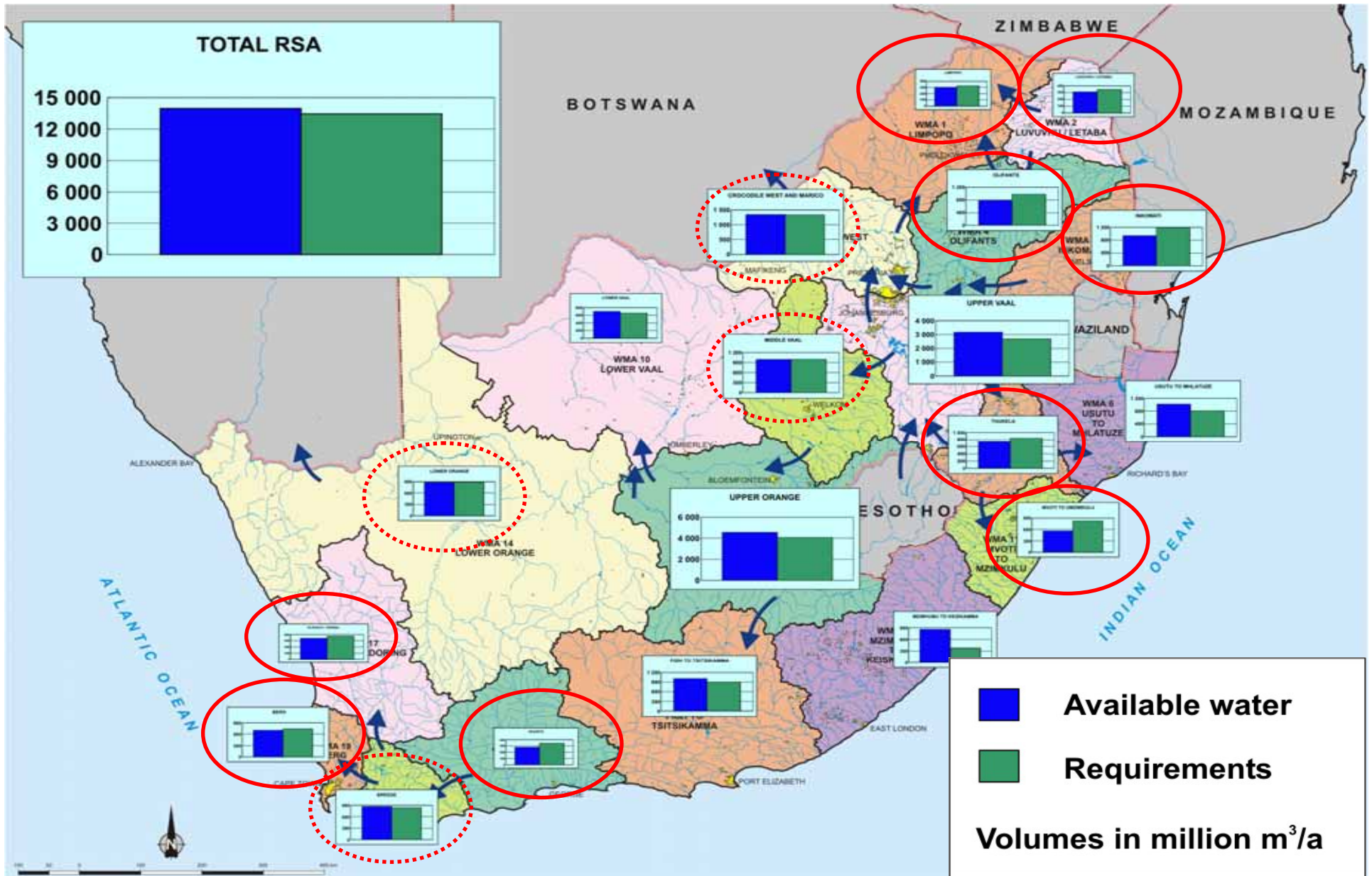
Some evidence:

- Olifants River ceased flowing despite Reserve in 2001.
- Contestation Mozambique and South Africa Massingir Dam wall
- Letaba improving
- Anecdotal- Shared Rivers Initiative

What are the implications for KNP if rivers deteriorate?



Is there enough where we need it? Water reconciliation scenarios, year 2000



In the media- water quality and municipalities

SA has drinking water problems (June 2006 Cape Town)

– South Africa's municipalities

South Africa's looming water crisis (DA MP: Mar 2008)

....polluted water sources & poor mgmt, sewerage works and treatment plants has led to a situation where our water supply is under serious threat.

Drinking water 'contaminated' (Oct 2007)

Louis Trichardt – “Residents of Louis Trichardt are drinking their own faeces” - ...

City could become an urban wasteland (November 2008)

The Star

- **Big stink over dead fish**

The Blue Scorpions have ordered the Emfuleni municipality to clean up hundreds of dead fish that have died mysteriously in a Vanderbijlpark lake in the past week.

.....cause remained unknown.



Mysterious Crocodile Deaths Puzzle South African Scientists

- 2008: A group of animal experts and wildlife officials rushed to SA's Kruger National Park to find out what has suddenly killed 30 crocodiles within a week
- Pienaar said: "It is believed at this stage that the condition known as Pansteatitis which is usually associated with the consumption of rotten or rancid fish."



Photo Rupert Bridgman

But....EWAs are meant to mitigate
such events

“What factors enable or constrain
achieving environmental flows in the
lowveld rivers?”

Shared Rivers Initiative

Talk today

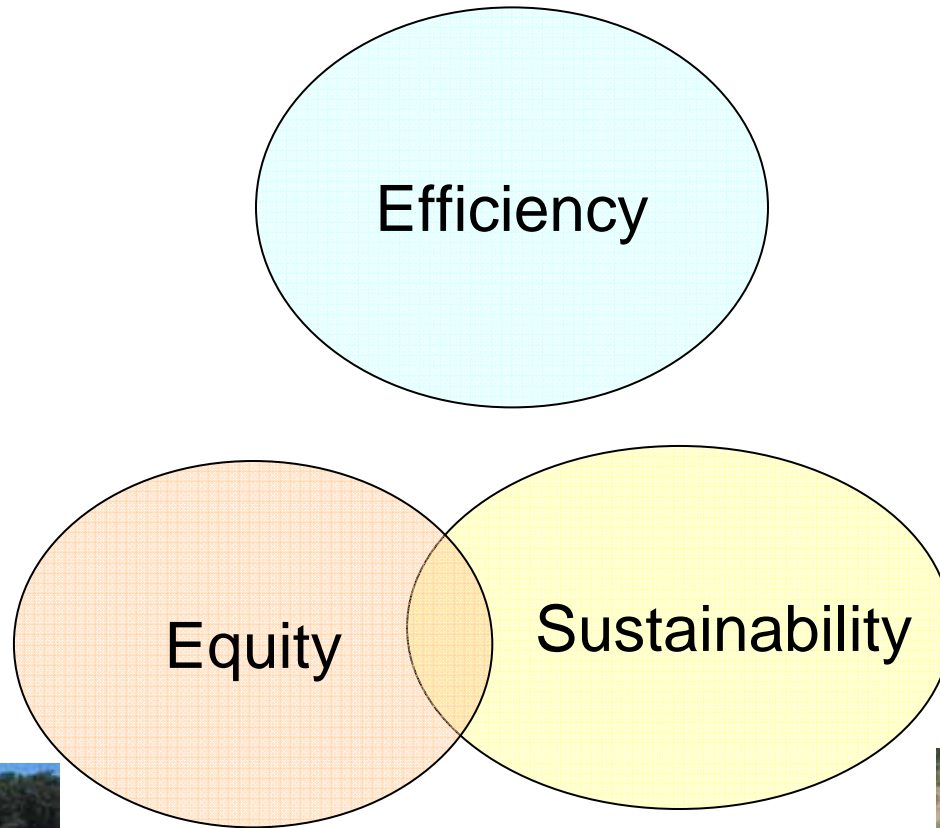
- Policy reform
- Important concepts
- Compliance- a case study Letaba River
- Lessons

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Policy reform

- A number of SADC countries are undergoing water governance reform
 - South Africa,
 - Zimbabwe,
 - Mozambique,
 - Swaziland
- Many of policy's provide overarching framework:
 - IWRM
 - Decentralisation
 - Catchment/ basin approaches
 - Only SA and Moz give priority to EWA's

Principles... SA adopted IWRM based on



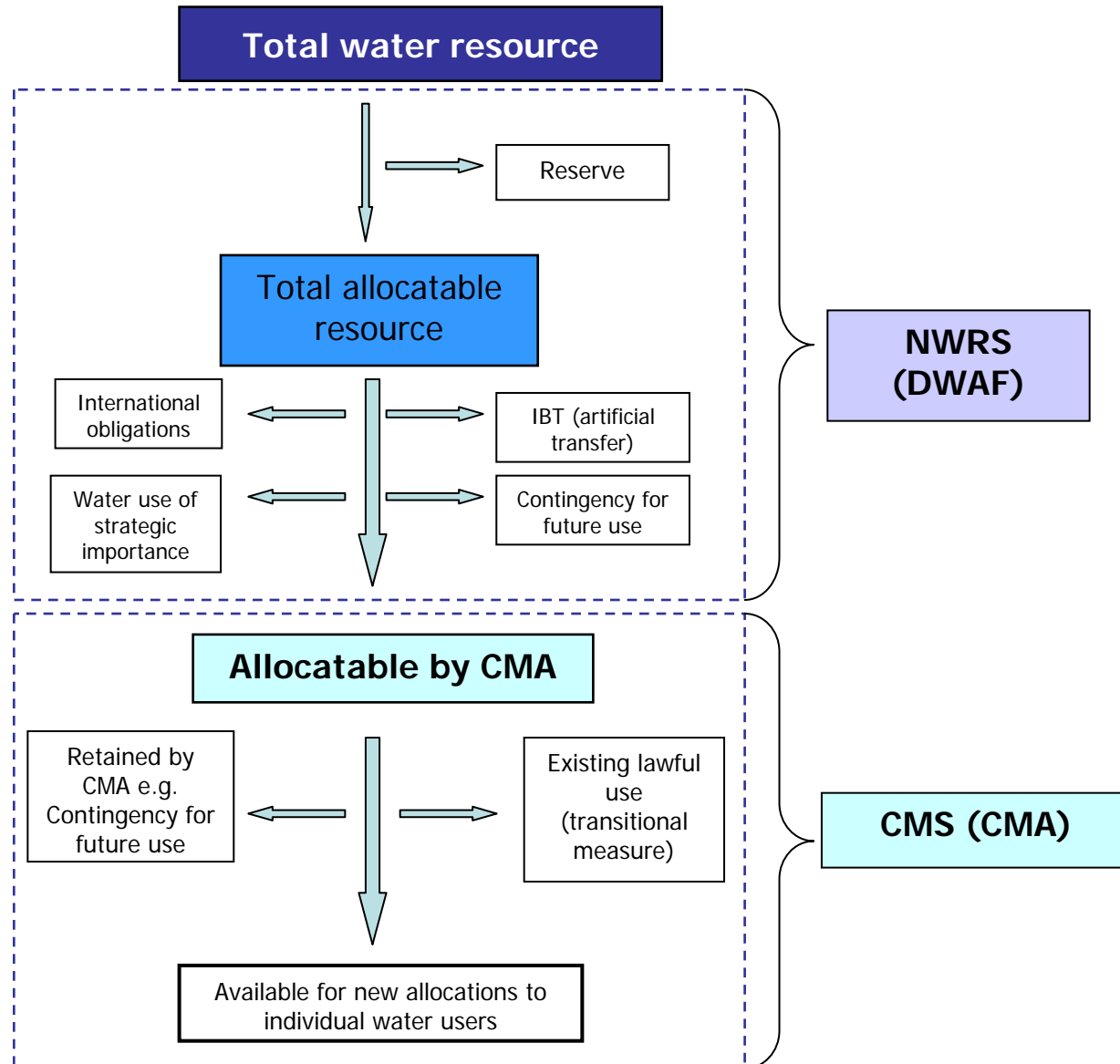
DWAF (1998)
defines IWRM as:



“a **philosophy, a process** and a **management strategy** to achieve **sustainable use** of resources by all stakeholders at catchment, regional, national and international levels, while maintaining the characteristics and integrity of water resources at the catchment scale within **agreed limits**”

Responsibilities

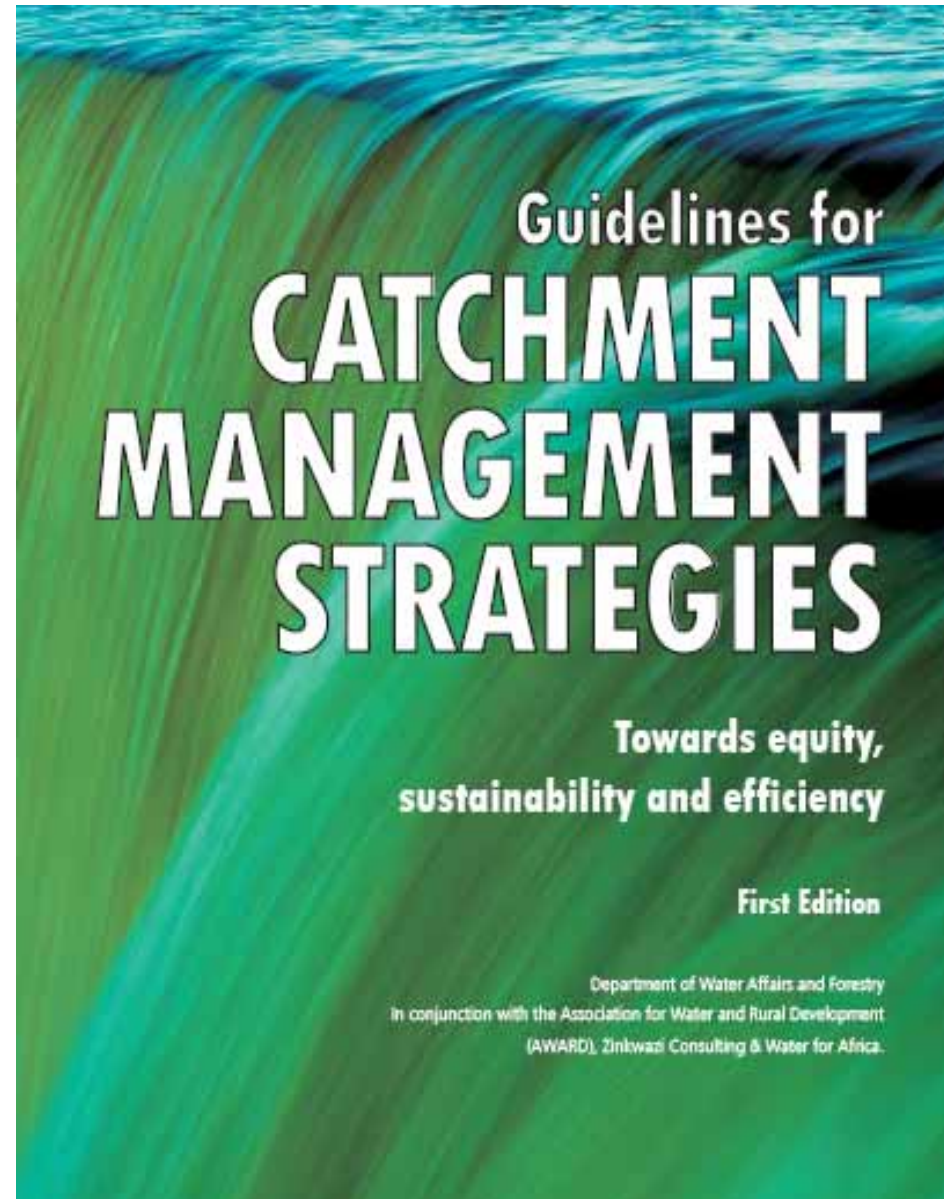
Overall water use allocation responsibilities



How is this being achieved?

Much of this is underway already

www.dwaf.gov.za/documents



Meeting EWAs (commitment to sustainability) - is a complex process

Does not reside in water resources protection strategies alone.

Multiple and complementary strategies and actions precede and support delivery of EFs, so as to ensure their longterm security.

How will this be achieved?

PART A
Foundational
information for
the CMS

PART B
WRM
strategies

PART C
Facilitating strategies

PART D
Integration strategy

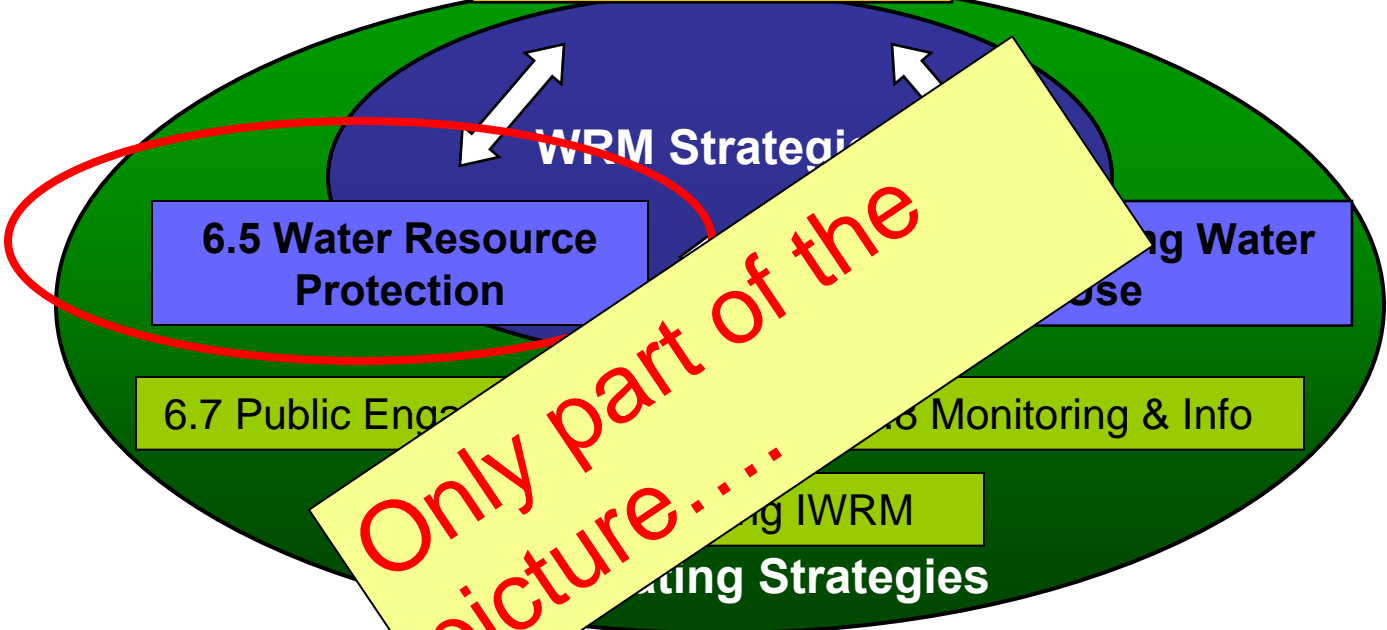
Sustainability

THE STRATEGY FRAMEWORK

Foundational Information for the CMS

6.1 Catchment description
6.2 Situation Assessment
6.3 Reconciliation

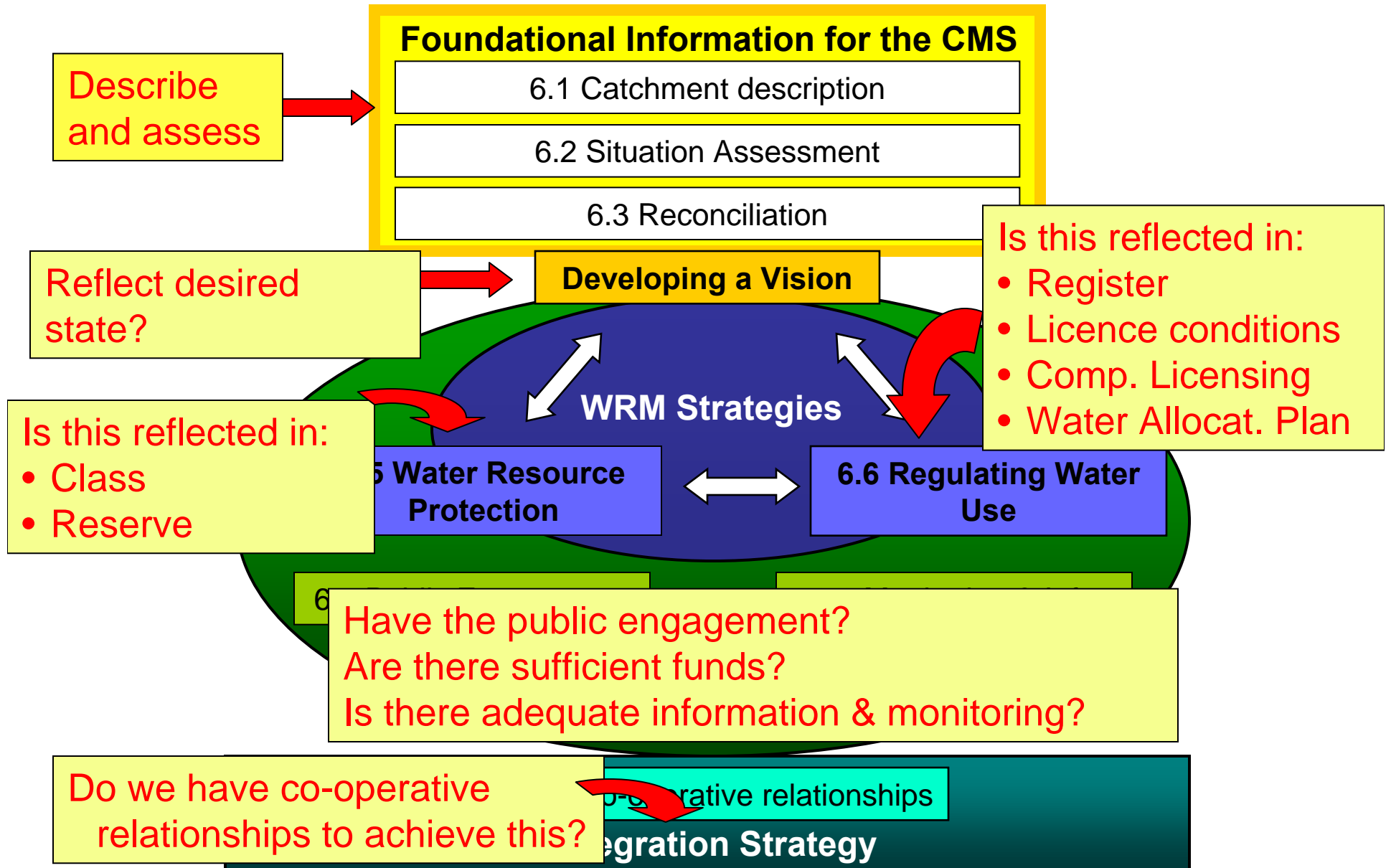
Developing a Vision



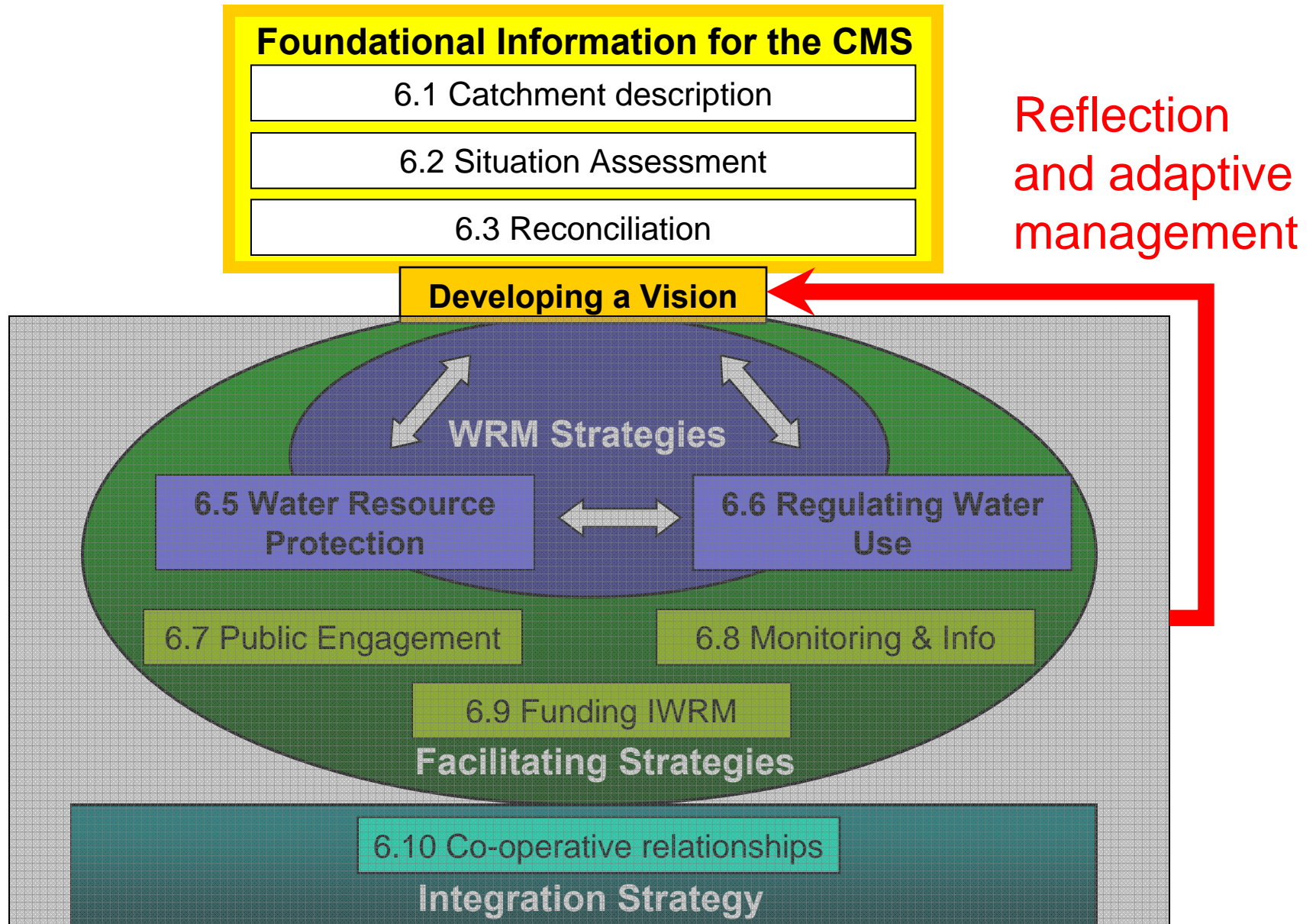
Only part of the picture.....

Co-operative relationships
Integration Strategy

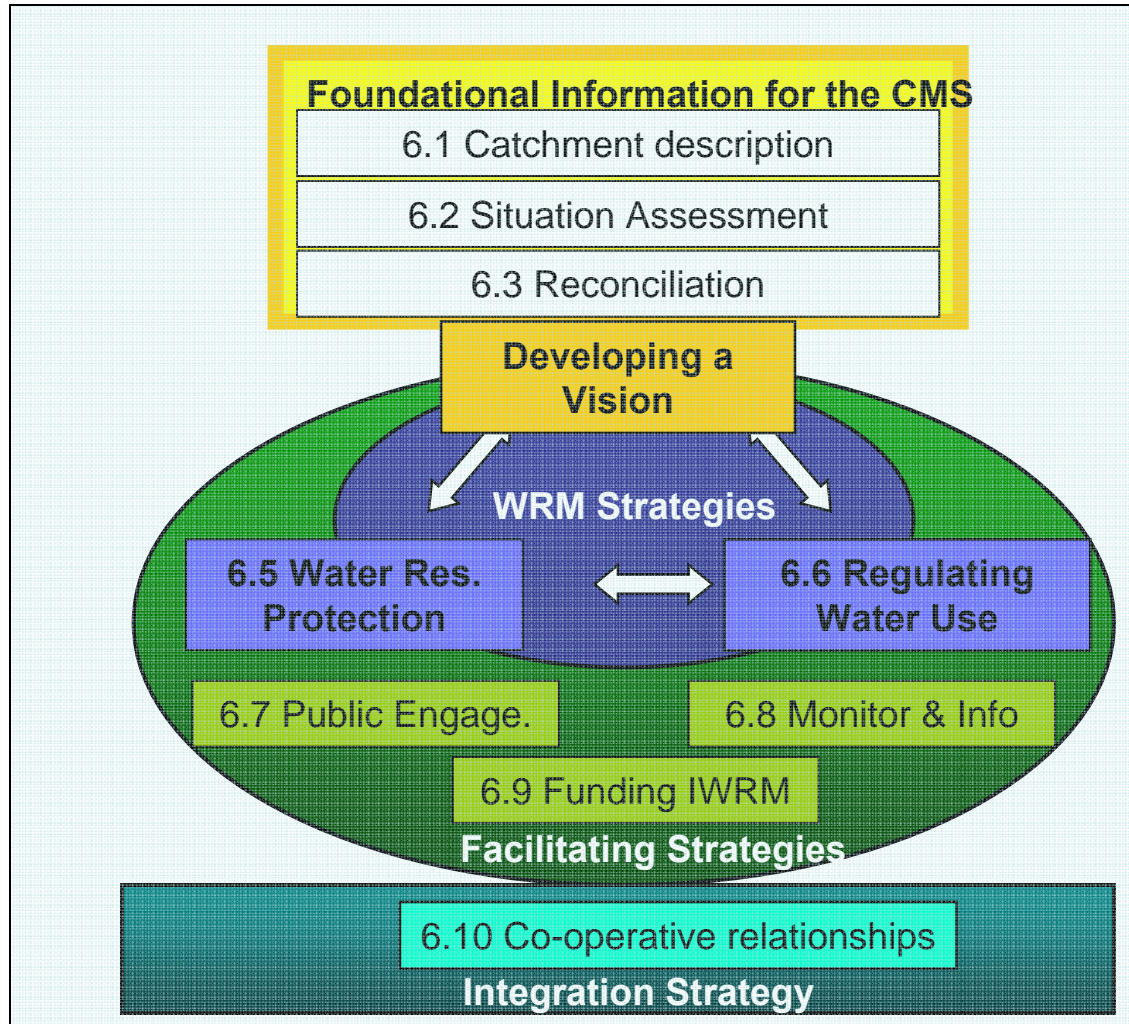
THE STRATEGY FRAMEWORK



THE STRATEGY FRAMEWORK



THE STRATEGY FRAMEWORK



Are we monitoring:

If transgressions -
is there action?

If not..then are we really able to meet
equity and sustainability goals?

3

Important concepts

Catchments as complex, linked systems

1. Complexity
2. Linked socio-ecological systems

Complexity theory (systems thinking) arose as a critique of linear, reductionist science

- Managing systems as if stable, linear (MSY)
- Failure to recognise
 - Variability
 - Linkages (scaled cause and effect; multiple drivers)



Key characteristics of complex systems - resilience

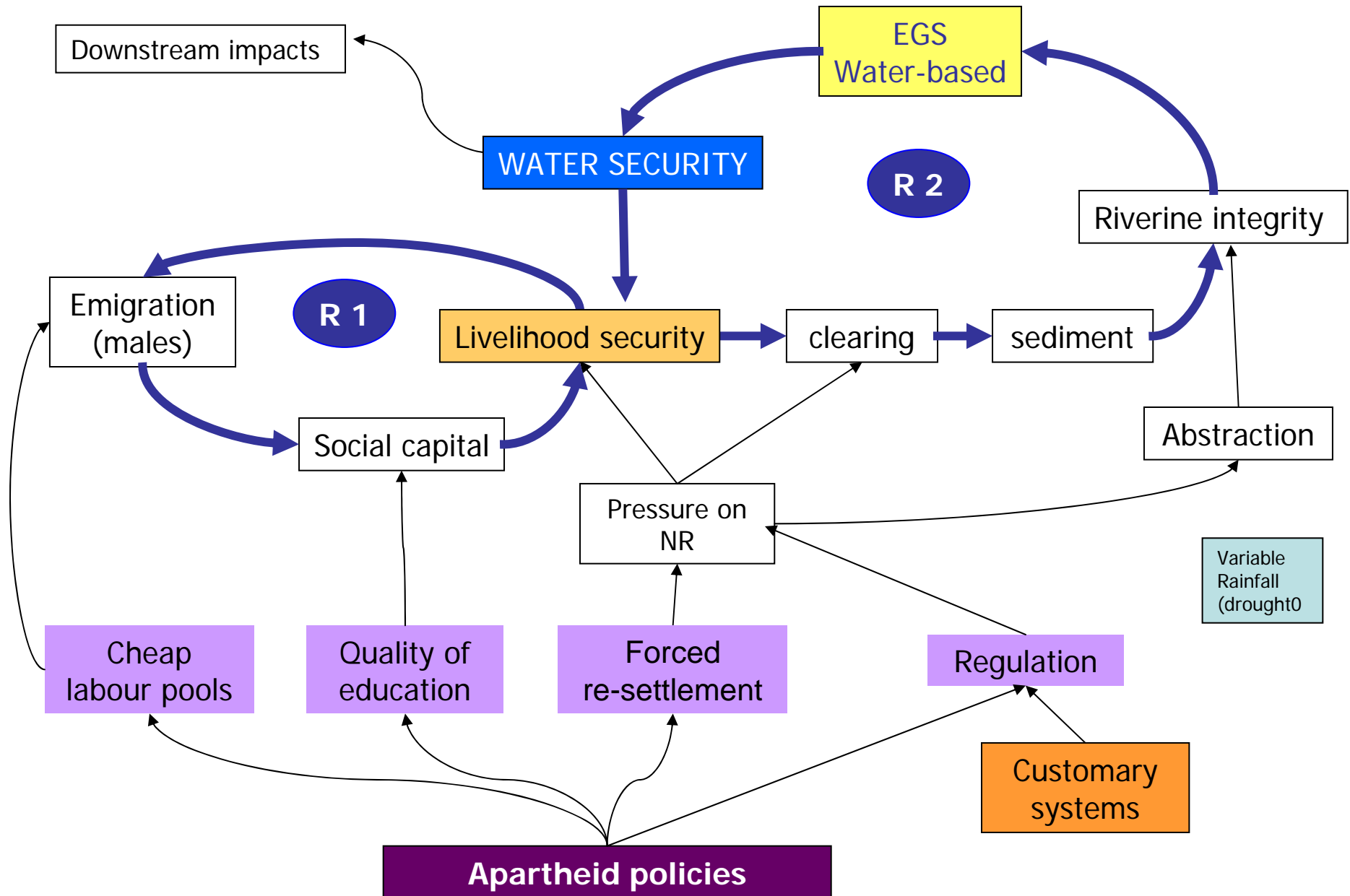
- Dynamic, flux
- Multiple drivers
- Interacting, linked, feedback loops

- **Uncertainty:**
 - can't predict exact outcomes,
 - unexpected outcomes
- **Display lags**

- Learn-by-doing
- Adapt

**Example Sand River Catchment
Apartheid era [1950s – 80s]**

From Pollard et al 2008



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Shared Rivers Initiative

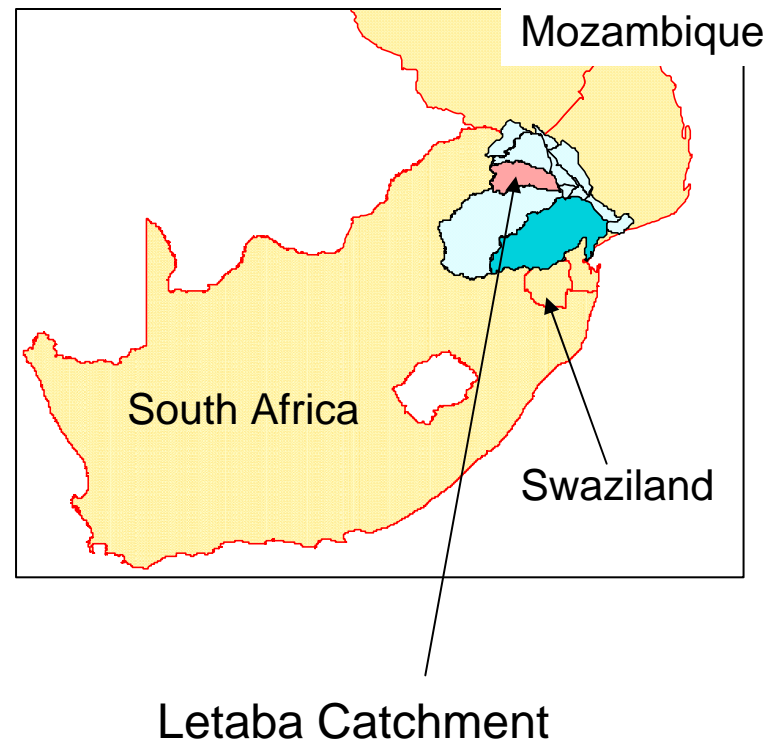
- Action-research transboundary programme



Focus..”lowveld”

What are the implications for KNP if rivers deteriorate?

- Focus on **sustainability** – are we moving towards our commitment to sustainability?
- The benchmark = the **Reserve**
- But ‘compliance’ - tells us little about why this is so
- hence “**what factors constrain or enable this?**”.
- A **participatory, learning** approach - collaborative interventions for Phased II.



Central research question:

“What factors enable or constrain achieving environmental flows in the lowveld rivers?”

A sub-set of questions

1. What is the status of the Reserve?
2. Do people give importance to sustainability
3. Is there unlawful use of water?
4. How effective/ adequate is regulation and enforcement?
5. Is there shared practice/ innovation around the Reserve?
6. What feedback loops exist?
7. Reflexivity regarding practice?

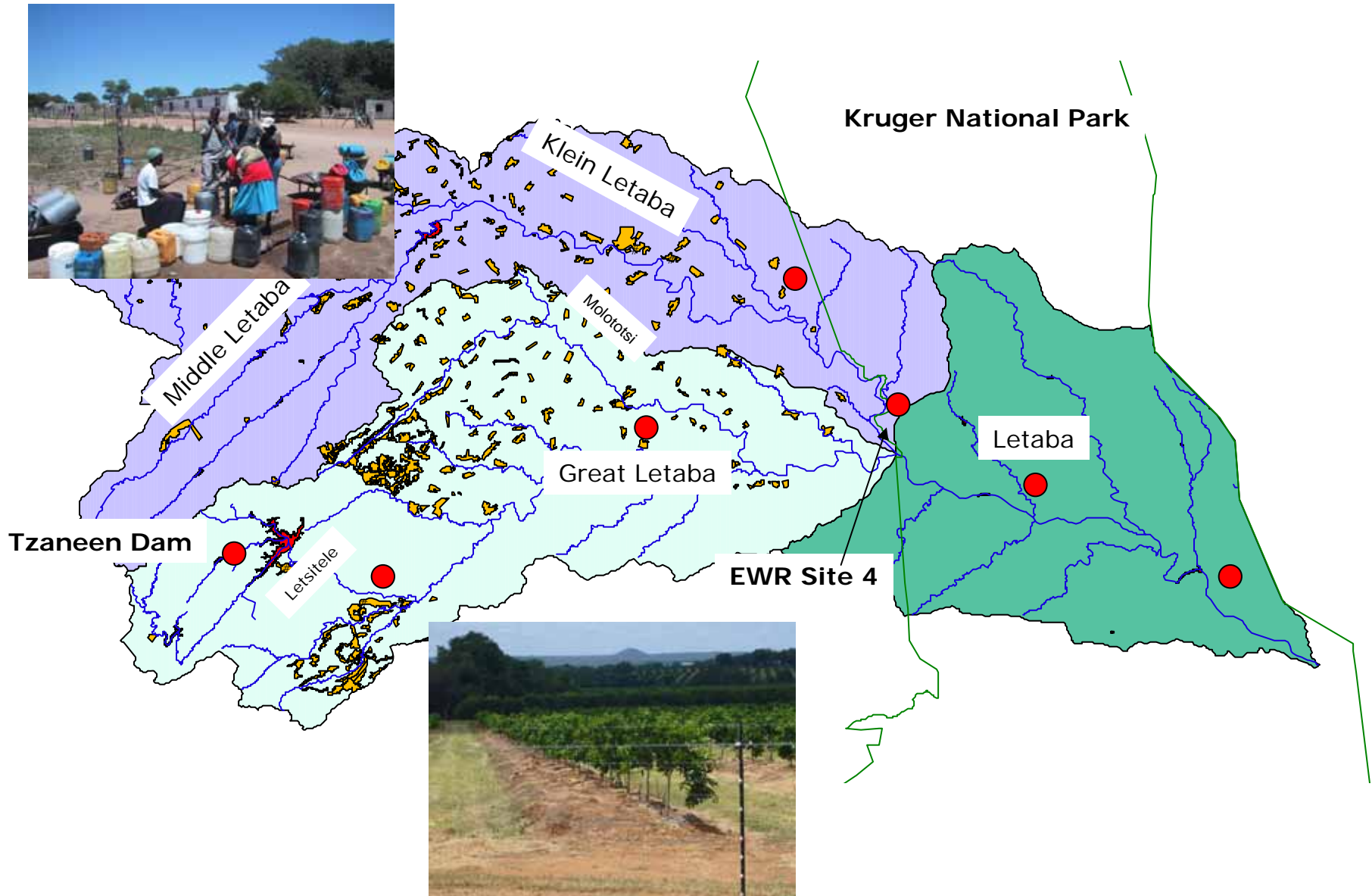
Methods: To assess progress with compliance

1. Hydrological analysis - flow regime vs Reserve reqs (if available)
2. Explore causal factors
 - Semi-structured interviews, one-on-one
 - Interview based on IWRM framework
 - Interviewees - represent broad groupings within catchment:

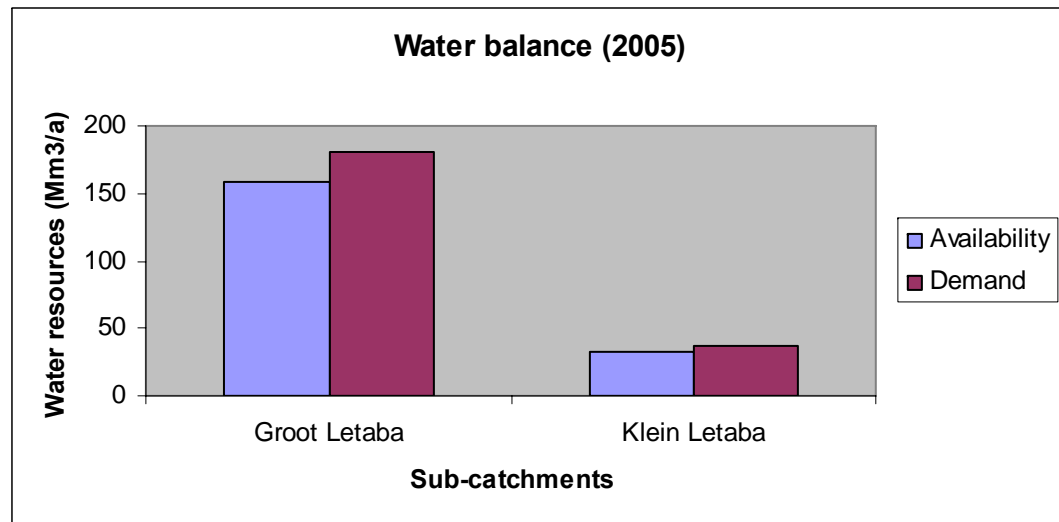
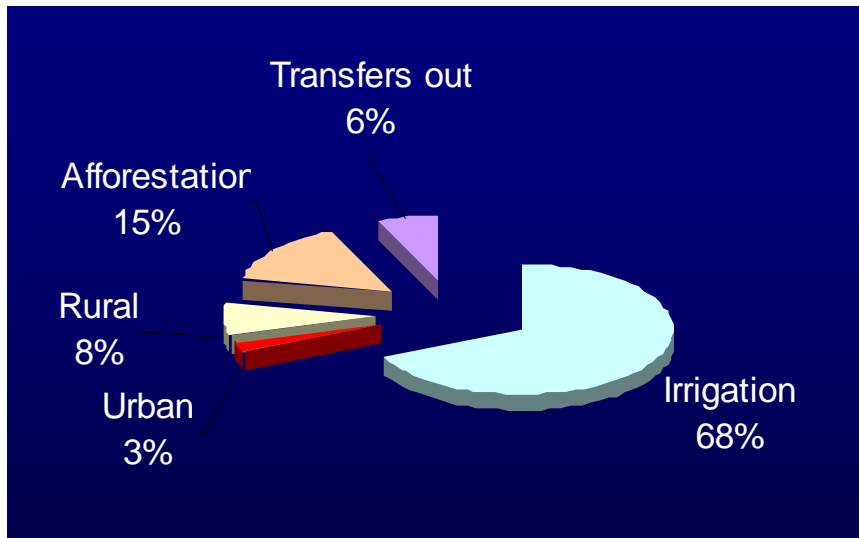
Who

Catchment	REGULATOR			USERS			IAPS
ISSUES	DWA Offices	Proto CMA	Infrastruct. / O & M	Agric WUA/	Emerging farmers	WSA/ WSP/ WB	

Focus: The Letaba Catchment



Stressed catchment



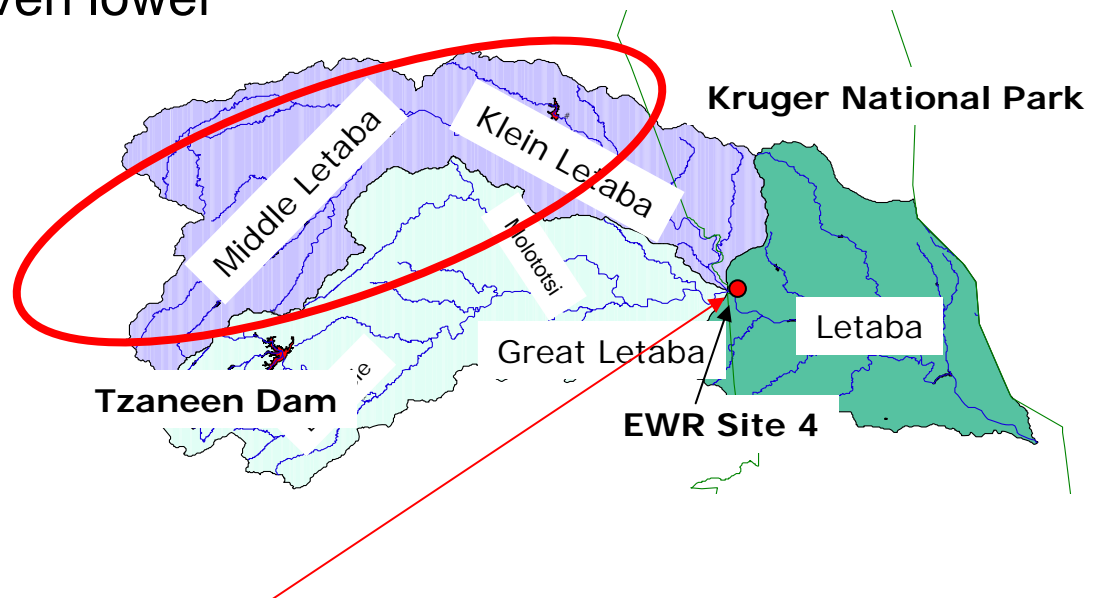
Results: Key issues emerging

- Impact of **lags** for the Reserve
- Embeddedness of concepts of **sustainability** and Reserve
- **Unlawful uses** and their control
- **Integrating** water resource management and water supply
- Reserve- **gap** between planning and implementation
- The **adaptive cycle**: Feedback loops, self organisation and learning
- Multiple **stakeholder** environments:

1. Status of the EWRs

- Reserve only 2006
 - OR and mgmt since late 90's
- Driving system = min.flow (600 l/s)
 - Not always been achieved.
- Approved Reserve even lower

No effort to meet Reserve in Klein Letaba –
no compliance Reserve



Est. nat. flow at KNP border = 558 Mm³/a
Reserve (GL + KL) = 96 Mm³/a, (17% MAR)
Low-flow requirements = very small fraction of natural

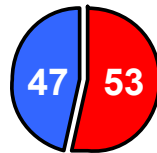
“Compliance” in Letaba

Incidents of non-compliance with a **monthly** minimum of 0.12 Mm³/m

%

Era of development

Oct 1984 – Sept 1989

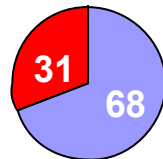


n = 38

n = 34

OR's come into force

Oct 1990 – Sept 1999

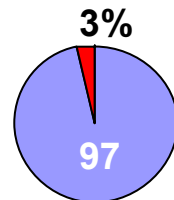


n = 34

n = 74

Period post NWA & OR

Oct 1999 – Sept 2006



n = 3

n = 93

In the spirit of the Act?

But

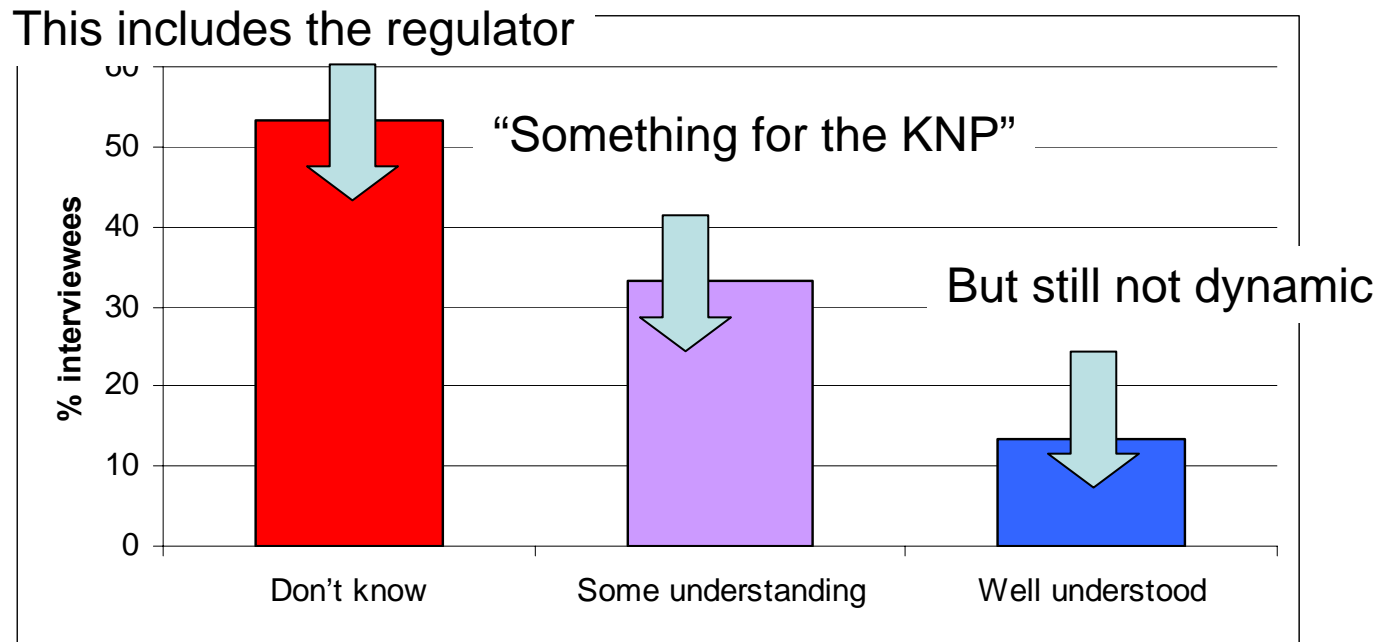
- Reserve is exceptionally **low**
- They are **not dynamic** values
- Not considered **per site**
- These are **monthly** values

2. Reserve poorly understood - and poorly embedded in practice

“The Reserve.....something that National DWAF does”

“The Reserve stands in the way of efficient licencing”

“The Reserve- never heard of it”



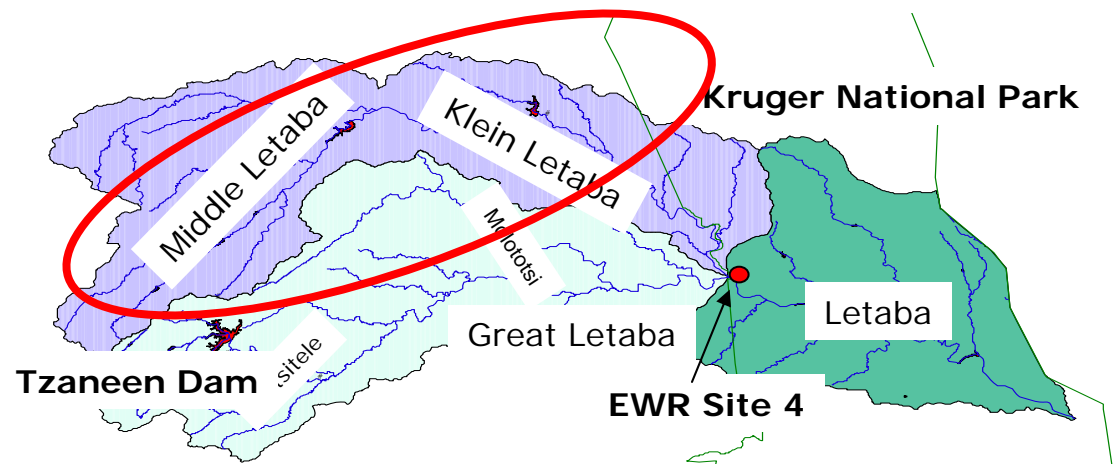
Most had not heard of Reserve or saw it as allocation for KNP
Some mis- perceptions regarding both flow regime and Reserve

3. Unlawful use and constraints to regulation

Use of water without a authorisation

Non compliance with conditions attached to use

- Groot Letaba, well-managed
- Unlawful use mainly in M & K Letaba,
- Agriculture and municipalities



*“The regulator can’t regulate”
raised by all*

Why is unlawful use not controlled?

- Incomplete user registration processes
- Lack of adequate monitoring systems
- Dearth of capacity and funds
 - lack of a local CME unit
 - and legal support
- Limitations on legal recourse government-on-government
- Political sensitivities
 - “no-one has the guts to close the valve”*
 - “Very difficult to restrict use of emerging farmers – they will see water in river“*
- Few incentives for compliance

Regulation.....



- Municipalities - little evidence of willful transgression - appeared to be flailing under **weight of responsibilities** and **lack of skills** in light of **growing demands**.

“Yes, we may be acting illegally but we have little option”

“I don’t know about water resources, we are in the business of service delivery”

- Why comply.....?
- One municipality has commissioned a Water Conservation & Demand Management strategy ✓

Regulation....CME

Blue scorpions



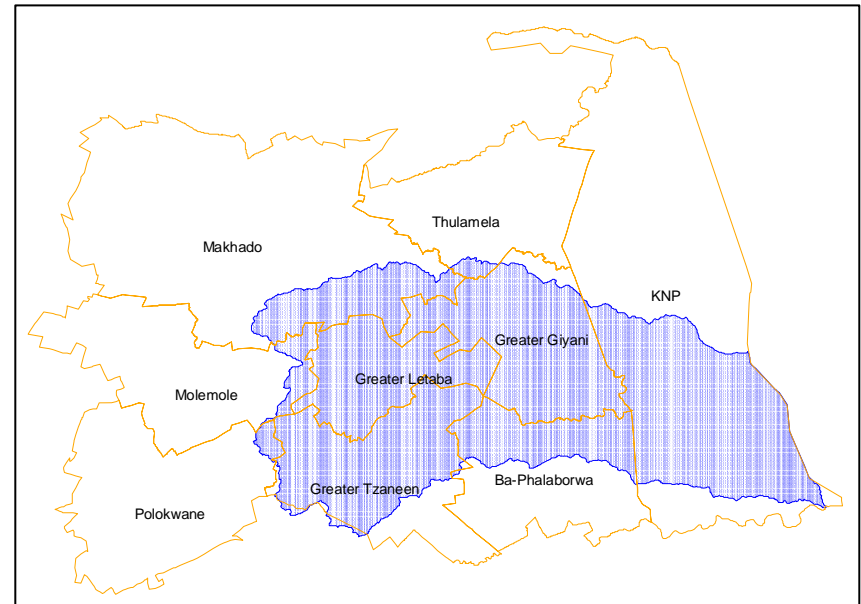
“Water-related offences are not yet fully acknowledged as serious crimes by South Africans, but

the DWAF reports that the **newly established Blue Scorpions** will **speed up awareness** about criminally reckless use of water within the legal system”.

4. Lack of integration WR and supply

• *Water resources – I am in the business of supply*

- One of the major issues
- Expansion of supply infrastructure by municipalities with no consideration of water resources



Mismatch in boundaries

5. Skills...

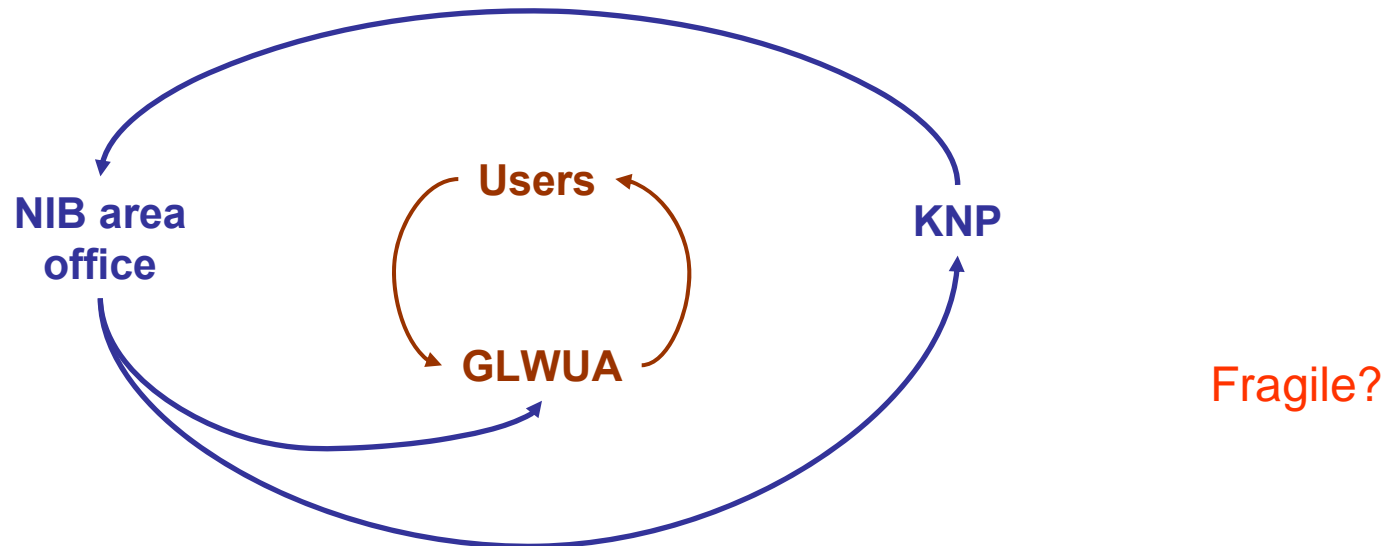
is this the “dennis the menace” of WRM and WS?

- Together with lack of integration, lack of skilled and experienced personnel, and **in particular technical** (and legal skills), was noted by almost all as a major problem
- But ..having skills does not mean they are retained....



6. Self organisation, self regulation

Feedback loops



*“Ja if it wasn’t for the **Park** watching....well.. we could use that water”*

*“We trust what the **area manager** does”*

“I think the Tzaneen office has a good system that works”

“I really believe in this WUA approach- that’s why I try”

Key elements

- “Something” to monitor – practical, real time
 - Do not use Reserve but default to simplest system
- Self-organisation and self-regulation
 - Water bailiffs key
 - Authority to act
 - Incentives to comply
- Supportive legal and political system
- Action!!

Achieving compliance What have we learnt?

Can the Reserve be set
& operationalised?

Can the Reserve be set & operationalised?

- Can the Reserve be set?

✓ Reserve can be “set” as part of a determination study (as a FDC & Class)

- Can it be operationalised:
What does this mean?

- Set for a future period (e.g. 6 months) in a manner that is practical and defensible
- Delivered
- Monitored
- Regulated & enforced
- Supported
- Learnings

Operational plan

But it is more complicated to set it for an **up coming period**

Practical – Operational plan

- set ORs, -
- infrastructure can respond, -- curtailments can be planned, communicated, measured

Monitored- in some cases

Regulated- not yet

Supported

Planning for the ‘year’..

But it is more complicated to set it for an **up coming period**

“Catchment manager”

- Set Reserve requirements
- Set ORs,
- Infrastructure can respond,
- Curtailments can be planned, communicated, measured



A system that can be **managed** by CMA
Real time not retrospective

- transgressions & take action
- But also potential concerns - trajectories
- **Predictive** = OR’s & curtailments can be established



How does the Reserve measure up?

Assessing compliance

Despite need to assess progress in implementation, process confounded by a number of factors.

1. EWRs only been **formally** determined in SA in the last 5 years (10 years for IFRs)
2. Strategic and operational processes required to collectively ensure that EWRs are met are still new - **lags**.
3. Disjuncture between outputs of planning process – essentially the request for an allocation - and needs of the **operational** phase which has yet to be addressed adequately

Is there compliance with the Reserve... but what is compliance..?

What constitutes **non compliance – still to be decided**

- Is any flow that is less than specified Reserve = non-compliance?
 - i.e. Reserve must be 100% assurance or...
- Reserve = magnitude, timing, frequency, and water quality - any transgression on any of these = non-compliant
- Reserve to be met at **ALL** EWR sites - **but we can't monitor this**

Not a simple concept

- When
 - (1) **practicalities** (IWRM complex environment)- and
 - (2) **legal** implications (what is a transgression “unlawful”)- are considered,

Many would be reticent to deem the above case as one of non-compliance

Monitoring

Reserve must be monitored for two key reasons ...

- Compliance monitoring:
Check transgressions
- It is a hypothesis: Check
if our predictions are
correct

Both NB because the Reserve carries risks for others and sets the development agenda for the catchment

Current constraints to monitoring

Monitoring:

Where?

- Without gauging stations- monitoring all sites is difficult

Against **what requirement?**

Daily flows are required for the Reserve..

- Without up-to-date natural flows, difficult to calculate Reserve (up to 2004)

Lessons from Letaba:

- Absence of translation of Reserve from a plan to an appropriate operational system, managers and **stakeholders have defaulted to the original** operating rule (...static, single-value)
- In absence of monitoring capacity, EWRs not met at all sites
- In stressed catchment like Letaba, **daily discharge** is critical monitoring tool but system to provide dynamic daily Reserve requirements is still needed.

Regulation for compliance

Lessons from Letaba:

- Regulator - get “house in order” – basis for action
- Take care of “feedback loops”
- IF all else fails (negotiation, coercion) – need the support of legal recourse
- Take action

Minister issues stern warning to water offenders



Speaking at the launch of DWAF's Compliance Monitoring & Enforcement Blitz week,

Minister **Lindiwe Hendricks** has issued a stern warning to members of the public who abuse South Africa's scarce water resources and has indicated that government's enforcement capacity is being enhanced to deal with offenders.

Water misuse in South Africa is believed to be rampant (dec 2008)

www.engineeringnews.co.za/article/minister-issues-stern-warning-to-water-offenders-2008-12-05

“Blue scorpions crack down on illegal use”



- On the 25th November, 2008 DWAF launched their “Blitz Week”, the first in a series of publicised crack downs on land owners illegally drawing water from rivers, dams and aquifers.



• <http://theopinion.co.za/2008/12/04/blue-scorpions-crack-down-on-illegal-water-use/>

How do stakeholders view the Reserve?

Assessing “buy-in”

- Most do not see Reserve as an
 - important aspect of longterm sustainability.
 - rights of future generations.
- Some awareness of WR constraints but..remains **outside of social pre-occupation** of users and some regulators
- only legally bound to ensure that it is met.

This ‘othering’ of sustainability not unique to SA
Well known in NRM systems –

Remains a challenge for sustainability discourse worldwide (e.g. Ison et al. 2004, Harris 2007).

Addressing this....

“If people knew how important a healthy river is they would change their behaviour – act differently”

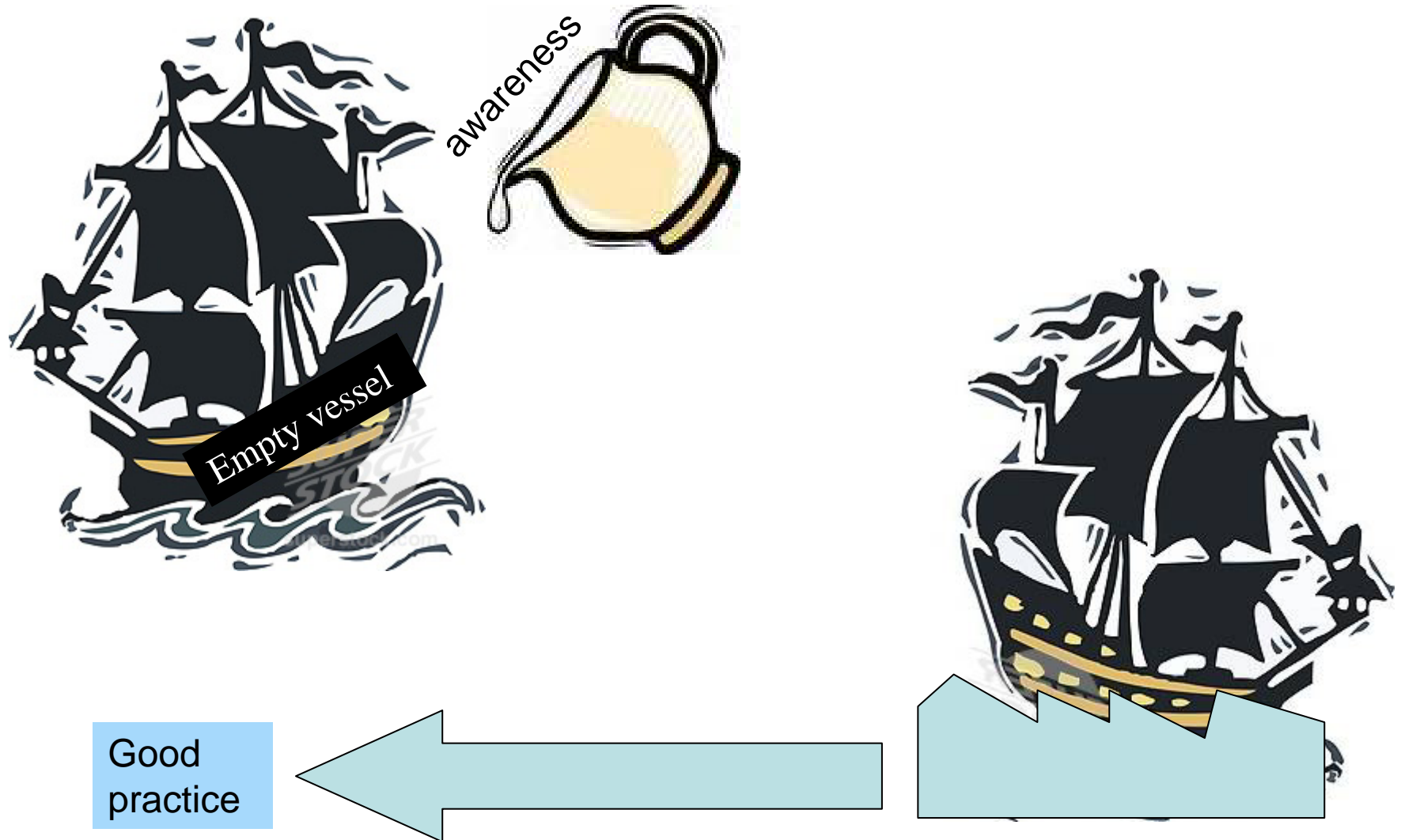
seems obvious?



Obviously something is wrong with the entire argument of "obviousness".

[Paul Lazarsfeld, 1949, about the interpretation of results in social science as obvious].

Behaviour change is complex



Issues from planning to operation

Challenge to think about

- What is needed to deliver EWAs...?
 - On an ongoing, sustained basis
 - Not as a single value
 - At a certain assurance
 - In a world of contestation (power)
 - That is truly supported by people (negotiated, beyond borders)

What is needed to meet EWAs (Reserve)....

- **Bundle** of strategies (Both government and stakeholders)
- In a complex, dynamic system

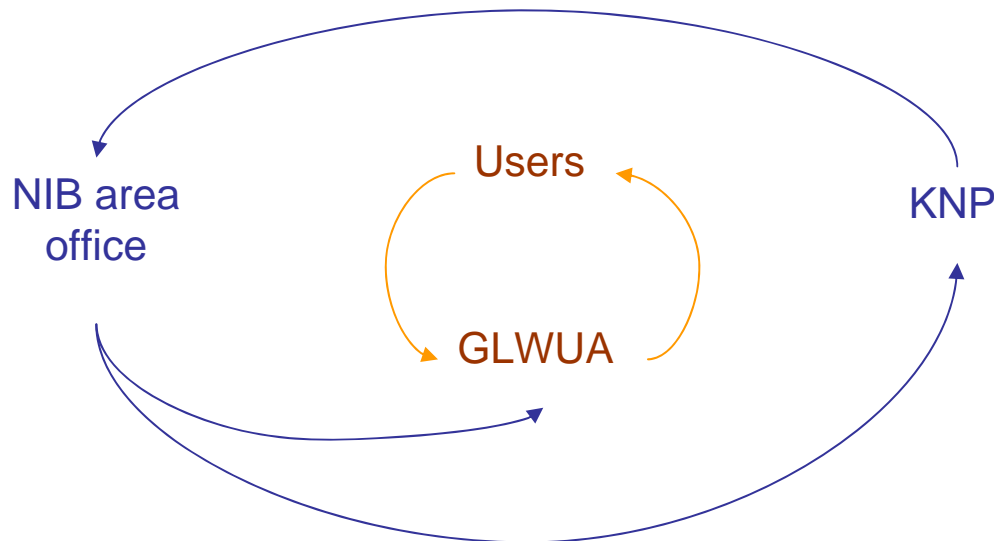
This means

- Lags** are to be expected: plans translated to operational plans, staff skilled, stakeholders involved, risks evaluated (people lose water)
- Need to be able to **assess compliance**
 - Determined in a way that is tenable (sites that can be monitored); actually deliverable,
 - **Concept understood** at least by regulator

6 Looking forward

Of loops and learning

What makes them successful ?



*Essential elements of resilient, complex systems –
Learning and adapting*

- Without feedback in complex systems There is no basis for taking action, learning and adapting

What makes them successful ?

- NB driver - need to **share a scarce resource** internally
- **Self-organisation**, and regulation key
- **Understanding** of why and of legal requirements
- Availability of **benchmarks** to monitor
- Presence of a '**watchdog**'; [bailiffs, the Kruger Park]
- **responsiveness** of the manager and users
- **trust** and collaboration (letaba it is a decade)
- **internal mechanisms** for monitoring and action;
- **Flexible** system understood and respected by users.
- Trusted point of contact - manager - can and does **respond** appropriately [considers risks for others]
- **Enforcement** is imperative.
- Support **legal system**- when all else fails

As we move into these relatively uncharted waters,

- An NB feedback loop requiring attention is that between academics, practitioners and managers
- In particular the need to develop tenable links to operations (even if not perfect).
- **Failure to do so** adequately will
 - frustrate turning one-time supporters into critics
 - without loops there is no basis for learning and adapting

MSP's

Multiple Stakeholder Platforms

- Dialogue provides basis for reflecting on and responding to feedback in a way that is open to change and that encourages creative responses to an ever evolving context.
 - Many legal system supports this (CMA, forums)
- But beware...MSP have failings too –
 - Power, power, power**
 - Overload**
 - Inaction**
 - *I'm not scared to say to you one-on-one...but **but I'm scared to stand up** (publically) and say "Mr farmer that is very wealthy and influential in the area, and controls everyone.."Please sit down"- No one is going to do that".*

Advocating for the voiceless...

Generational rights...

- *Strange is our situation here upon Earth. Each of us comes for a short visit, not knowing why, yet sometimes seeming to **divine a purpose**. From the standpoint of daily life, there is one thing we do know: that we are here for the sake of others...above all, for those upon whose smile and well-being our own happiness depends'....*

Albert Einstein

Thank you

- Thanks to WRC – Dr S Mitchell & Dr S. Liphadzi
- In particular Harry Biggs

