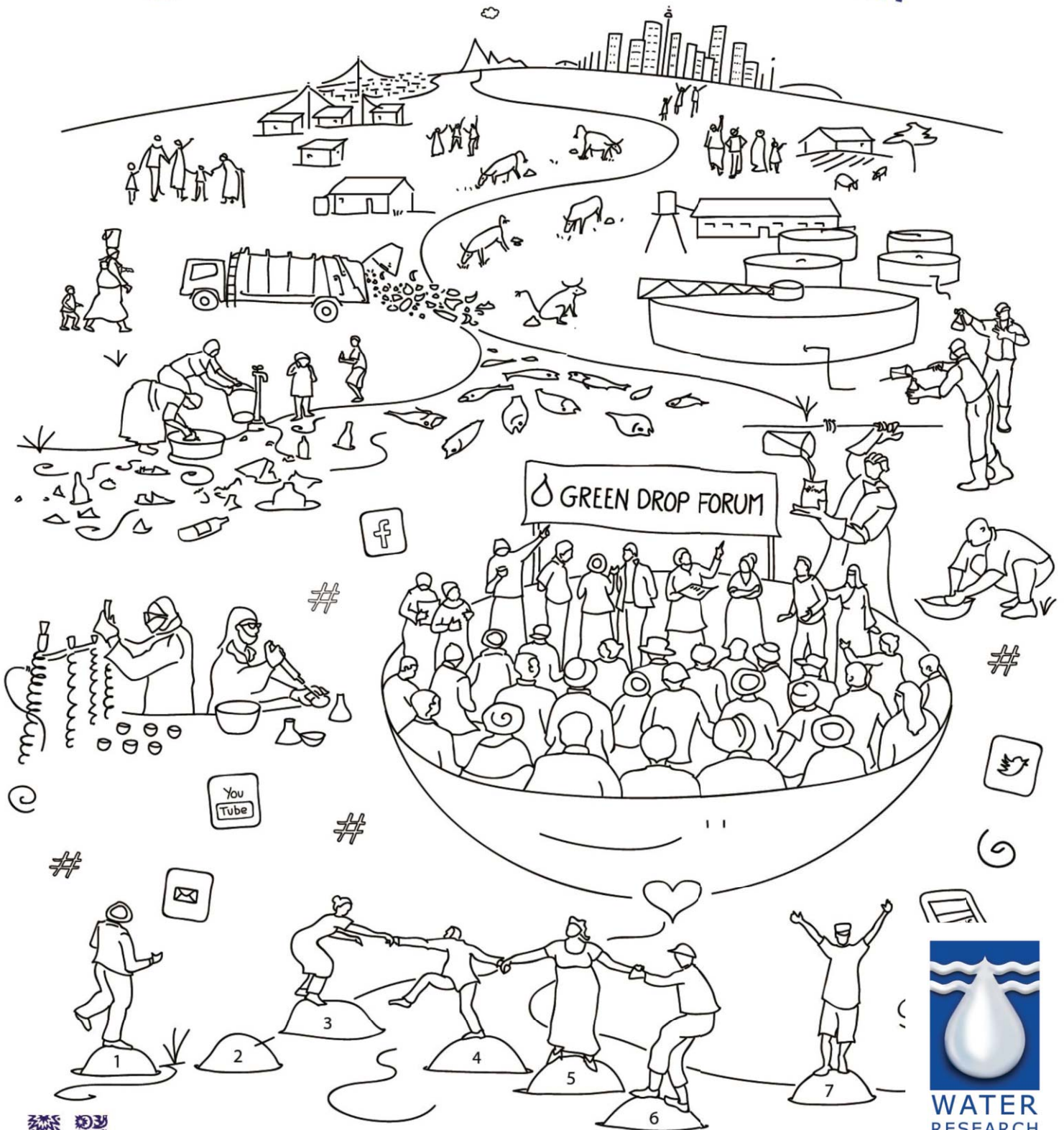


HOW TO...
run a Green Drop campaign in a
Catchment Management Forum



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WHO ARE THESE HANDBOOKS FOR?

The user-friendly series of “How to...” handbooks are aimed at staff and stakeholders in catchment management forums (CMFs), catchment management agencies (CMAs) and municipalities. The handbooks are not all written at exactly the same level of “user-friendliness”, it depends on the topic, and target users.

The list below shows which groups are likely to find the handbooks most useful:

TITLE	#	CMF	CMA	MUNICIPALITIES
How to think and act in ways that make Adaptive IWRM practically possible	1		√	√
How to think about water for people and people for water: Some, for all, forever	2	√	√	√
How to establish and run a Catchment Management Forum	3	√	√	
How to manage Water Quality and Water Quantity together	4		√	√
How to engage with the challenges facing Water and Sanitation Services (WSS) in small municipalities	5			√
How to run a Green Drop campaign in a Catchment Management Forum	6	√	√	√
How to engage with coal mines through a Catchment Management Forum	7	√	√	√
How to use Strategic Adaptive Management (SAM) and the Adaptive Planning Process (APP) to build a shared catchment future	8	√	√	√
How to understand Environmental Water Quality in Water Resources Management	9	√	√	√

NOTE: Words marked with an * in these handbooks appear in the glossary at the end of each handbook.

Definition: **Adaptive IWRM:**

Using adaptive, systemic, processes and an understanding of complex social-ecological systems to coordinate conservation, manage and develop water, land and related resources across sectors within a given river basin, in order to maximise the economic and social benefits derived from water resources in an equitable manner while preserving and, where necessary, restoring freshwater ecosystems.

A definition based on the Global Water Partnership 2000 definition of IWRM (Agarwal et al., 2000), with specific Adaptive IWRM additions (italics).



Words marked with * appear in the Glossary at the end of the handbook

WHAT IS THE GREEN DROP CAMPAIGN?

If sewage get into the rivers, everyone and everything suffers: people get sick, babies can die, fish die, plants die, rivers and dams die! The Green Drop certification scheme run by the Department of Water and Sanitation (DWS) keeps an eye on the quality of effluents released from wastewater treatment works. The strategy encourages and rewards local governments for reaching a standard of excellence in the way they operate their Wastewater Treatment Works (WWTW). A CMF can run a Green Drop Campaign to support both local government and the DWS to improve standards. In a Green Drop campaign, the public helps to look after and spread awareness about WWTW.

There are almost 1000 sewage treatment plants in South Africa. In 2006, the Department of Water and Sanitation revealed that most of them were not properly operated and maintained, and discharged poor quality effluent to streams and rivers.

The report said:

- There are not enough skilled and experienced operations staff. At least half of all WWTW checked did not have the appropriate staff working there.
- There are not enough mechanical and electrical maintenance crews. An estimated 56% of all WWTW are not being adequately maintained.
- There were no data and information to properly operate the two-thirds of the WWTW. Some municipalities and DWS officials did not even know where the WWTW were!

The Green Drop certification programme was launched in response to this survey to deal with this situation of extreme neglect.

The Green Drop Certification programme identifies and develops the core competencies required for the sector that will gradually and sustainably improve the level of wastewater management in South Africa. Green Drop combines the existing goodwill of Water Services Institutions and government support programmes, to achieve excellence in wastewater management.

Who is this handbook for?

This book is for people working in a Catchment Management Forum (CMF), who want to help solve the problem of dysfunctional* WWTW belonging to the local municipality.

CMFs and their working groups are independent of government, and enable citizens to protect water resources by adding their interest and energy to the Green Drop certification process.

In this handbook, we deal with the threat that dysfunctional WWTW pose to water resources in local catchments.

This handbook uses the framework and inspections of the Department of Water and Sanitation (DWS) Green Drop incentive system and it supports local government in improving its performance in WWTW.

We ALL need to care for water because ...

1. The water resources of South Africa belong to the people who live here.
2. Users – including municipalities – are allowed to work with water if they return it to rivers in a clean condition.
3. The state, including local government itself, the DWS and CMAs, are the guardians and protectors of water resources on behalf of the people of the country.

The success of the Green Drop campaign depends on building trust between participants who may have been hostile and accusatory to each other before, because citizens and officials may have been fighting about WWTW failures. Building trust can contribute to building mutual understanding, and a participatory democracy at local level. It also makes full use of resources and knowledge available locally. Getting to the point of trusting each other in order to work well together may need skilful facilitation.

Why run a Green Drop campaign?

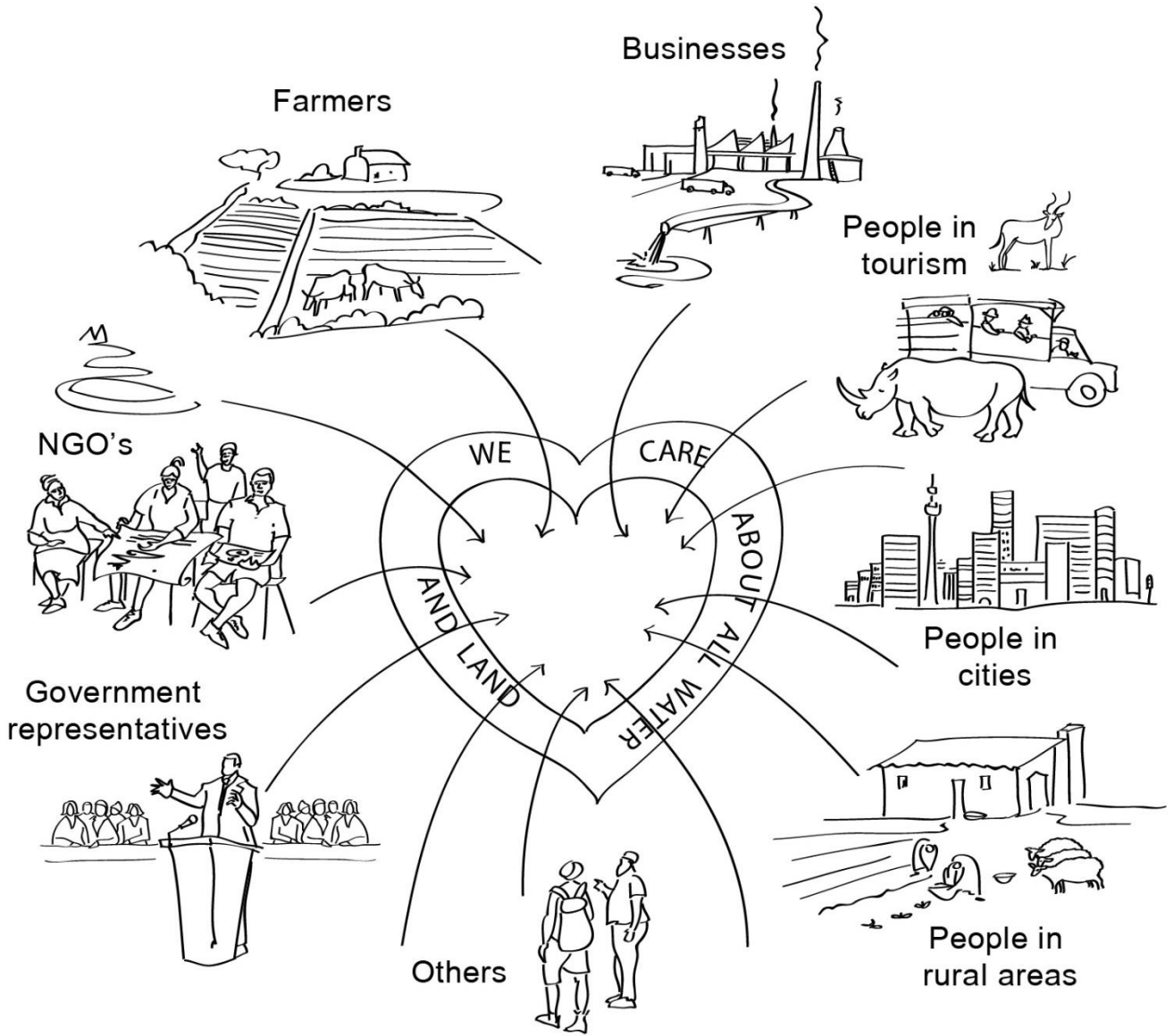
We need Green Drop campaigns because dysfunctional WWTW threaten

- the provision of drinking water,
- the safety of people who live downstream from WWTW and use the water directly,
- the health of aquatic ecosystems.

Research shows that pollution from South Africa's Wastewater Treatment Works (WWTW) has been a national problem for years. In 2008, the Department of Water Affairs and Forestry started the Green Drop incentive* scheme. But progress has been slow – babies still die of diarrhoea*, rivers are still polluted, plants and animals in the water still die.

Why?

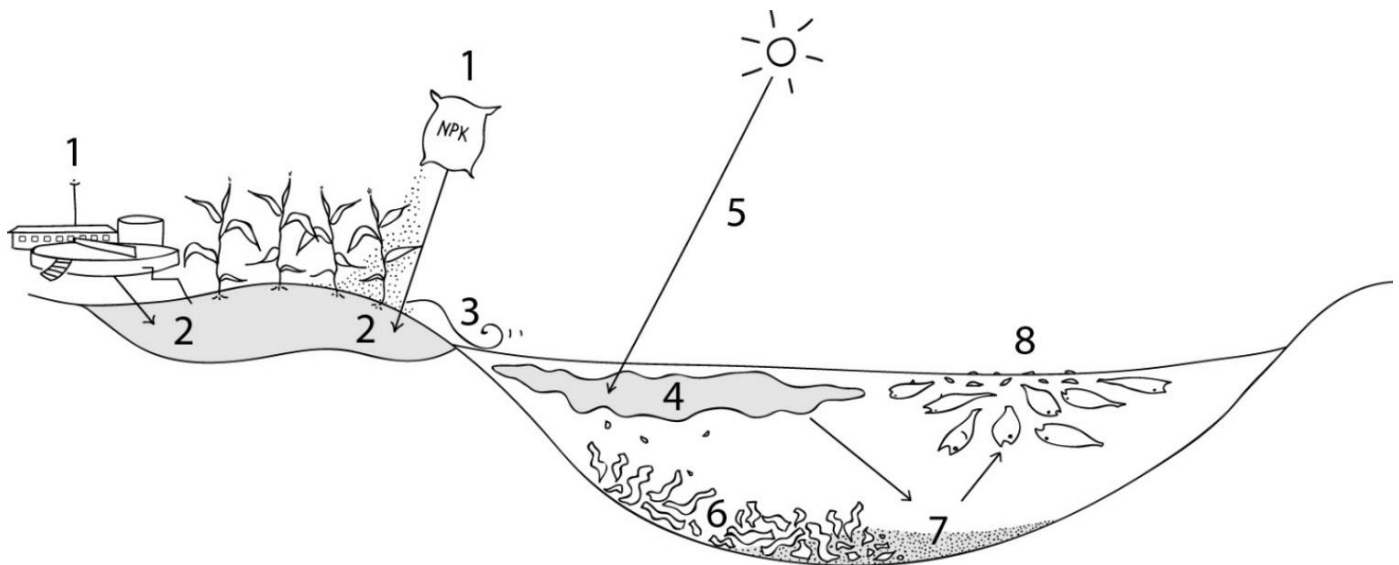
The national government has stressed how important the problem of dysfunctional WWTW is, but local government politicians and officials do not feel the same way. Local government has the constitutional right to provide and earn income from water services, including WWTW, all South Africans have the constitutional right to clean water. BUT ... the water resources belong to **all** of us, and we all – national government, local government, citizens of South Africa – have the responsibility to care for them. This is where civil society, in the form of CMFs, must intervene.



What happens when WWTW don't work properly?

Dysfunctional WWTW kill and impoverish*. There are three main problems:

1. Contaminated* drinking water is an important cause of diarrhoea. Diarrhoea is a leading cause of death in children between the ages of 1 and 5.
2. Eutrophication*. The untreated (or partly treated) wastewater is filled with nutrients* which makes algae grow too much, using up the oxygen in the water as it grows. The algae stop sunlight getting into the water, killing the plants underneath. The plants die and as they rot, they use up more oxygen. Fish and other creatures in the water cannot breathe, and they die. The river 'dies' – it can no longer clean itself.



1. Excess nutrients are applied to the soil (this may be from fertilizers, WWTW, etc.).
2. Some nutrients soak into the soil where they can remain for years. Eventually, they get drained into the water (river, wetland, spring).
3. Some nutrients run off over the ground into the water.
4. The excess nutrients cause an algal bloom.
5. The algal bloom blocks the light of the sun from reaching the bottom of the water.
6. The plants beneath the algal bloom die because they cannot get sunlight to photosynthesize.
7. Eventually, the algal bloom dies and sinks to the bottom of the lake. Bacteria begins to decompose the remains, using up oxygen for respiration.
8. The decomposition causes the water to become depleted of oxygen. Larger life forms, such as fish, suffocate to death. This body of water can no longer support life.

3. Economic impacts. There are many ways we suffer financially: impacts on our health (expense of medicine, visits to the doctor, pain and suffering of families), on livelihoods, and threats to products sold in South Africa and the rest of the world. For example, fruit and vegetables irrigated with polluted water should not be sold.

Death from diarrhoea

Diarrhoea is the third biggest killer in South Africa (Basson, 2009) and children are especially at risk from it. According to a recent NEPAD report, diarrhoea is a major cause of mortality for children under 5 years, killing between 65 and 70 children per 1000 births, per year (NEPAD, 2013:48).

The greatest impact and cost of bacteriological contamination on people's health is on those people who use the river water directly: poor people who have no access to treated water, farmers who use raw water for irrigation, fisher folk, children who swim in rivers, and traditional healers who baptize in rivers and use river water for mixing medicines.

In the Upper Olifants catchment, researchers who looked at seven pathogens* in the river water, found that "extreme levels of faecal pollution could in most instances be traced back to inadequate wastewater treatment" (Le Roux et al., 2012: 6587). They found that if a person drinks as little as half a cup of untreated water from such a source, they had a 26% chance of falling ill. In actual fact, WWTW release water that contains many more than seven pathogens, and in some places, the risk of infection was shown to be 80%, after being exposed to the water just once. (2012:6586)

It is clear that if WWTW function properly, everyone will benefit.

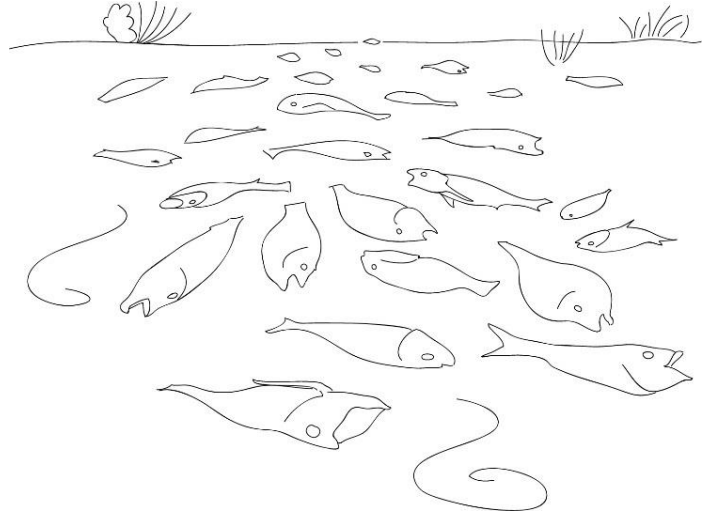


Repeatedly abusing ecosystems

Healthy aquatic ecosystems can clean bacteria out of water. But continuous eutrophication weakens river ecosystems, until they can no longer clean the water. Eutrophication damages river ecosystems through algal blooms*, which often results in all the oxygen in the water being used up. When this happens, fish and invertebrates* choke to death, the ecosystem structure is gradually ruined, and cannot recover.

Other problems created by untreated wastewater are:

- less light can penetrate the water, so plants underwater cannot grow;
- less plant variety in the river;
- extremely high pH levels which make the water more toxic* for fish and other creatures;
- extremely low pH levels which release the heavy metals* in the sediment* at the bottom of the river;
- changes in available habitat so that fewer species can find homes;
- little or no oxygen in the water;
- toxins released by cyanobacteria* (algae) which can poison the water;
- decrease in macrophyte* (plant) richness.



1. Economic and health costs

The Berg River catchment in the Western Cape was cleaned up because foreign countries threatened to reject the fruit grown there because it had been irrigated with poor-quality water. If the river had not been cleaned, many workers would have lost their jobs.

But this is not the only economic cost; there are other costs as well, such as health costs that the state and families who have been exposed to contamination must pay for.

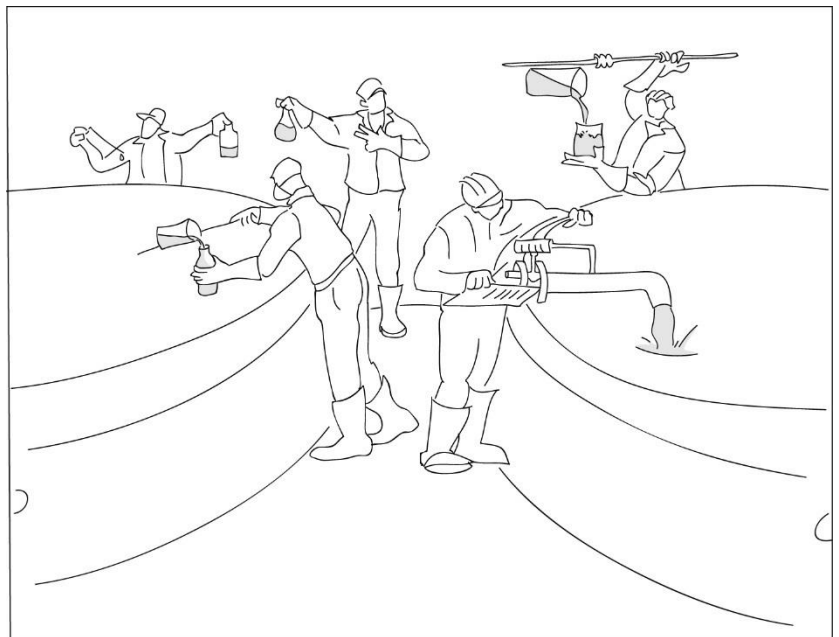
FRAMEWORK OF THE GREEN DROP SCHEME

The Green Drop scheme contains 11 criteria*, which are an excellent framework for identifying problems and finding solutions to WWTW challenges. Green Drop also emphasises public participation because the results must be made public through popular media, including local newspapers. Every year, the municipality should publish an account of its wastewater performance measured against the water-use licence, and design a publication strategy to reach a wide audience with this information. The Green Drop Campaigns assist municipalities in doing this.

Eleven criteria of the Green Drop scheme

Requirement 1: The municipality must understand the design of the plant and what kinds of staff are needed to operate it. The municipality must have the necessary paper work: the registration of the WWTW, showing its classification; registration certificates of the process controllers and supervisors; proof that a maintenance team is used for general maintenance work at the plant, and proof of an operation and maintenance manual specifically for that WWTW.

Requirement 2: There must be a wastewater quality monitoring programme in place. It must carry out the following kind of monitoring: operational monitoring, compliance monitoring and uninterrupted monitoring. This means that the staff must take samples of the wastewater while it is being treated (to see if the treatment is working well), to see whether the treated water meets the standards prescribed in the law, and that this monitoring should happen all the time. There must also be flow measurements for the past 12 months.



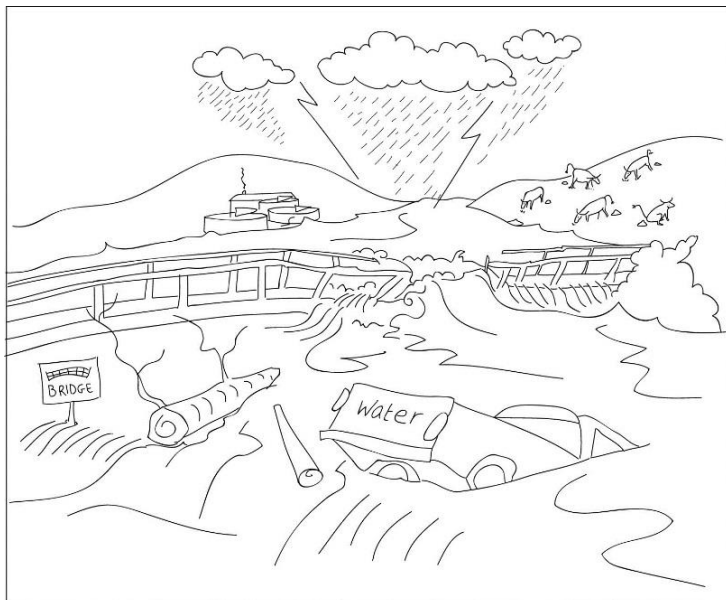
Requirement 3: The wastewater quality sample analysis must be credible*, so the samples must be tested by laboratories which have proof of accreditation, and the municipality must show how laboratory results change or improve the process of control.

Requirement 4: The results of the wastewater quality tests must be submitted to DWS. This is done by filling it in on a computer connected to DWS.

Requirement 5: The Municipality must provide proof that results meet license conditions 90% of the time.

Requirement 6: There must be a written protocol* in cases of wastewater failures (accidents, spills, etc.) and evidence that the protocol is followed.

Requirement 7: There must be a stormwater management plan and evidence that it is used. Stormwater can cause problems in WWTW because there is too much water coming into the system to clean it properly. Stormwater also brings in things lying on the surface, such as oil from cars and excrement on the surface from animals, that the WWTW has trouble dealing with.



Requirement 8: There must be proof that by-laws exist (and proof that they are used) to prevent businesses and people discharging untreated effluent (for example from chemical works, or blood from abattoirs) into the municipal system. The municipal system finds this kind of effluent hard to deal with.

Requirement 9: There must be design capacity documents that show what volume of sewage the WWTW can cope with. There should be a record of the actual flows for the last 12 months, and there must be plans to ensure there is sufficient capacity for treatment systems and the system of pipes and pumps collecting the sewage.

Requirement 10: The test results must be published so people are informed about wastewater treatment and how safe the river water is after the effluent from the works is released into the river.



Requirement 11: Wastewater asset management. There should be an annual audit report for collection and treatment infrastructure, the asset register, proof of Operations and Maintenance budget and use.



BUT ... measuring risk

... the Green Drop is a developing system. By 2013 it had moved to a more risk-based system and uses the Green Water Services Audit as a tool to regulate incentives and risks. The Green Drop process measures and compares the results of the performance of Water Service Institutions, and subsequently rewards (or penalises*) the institution, depending on whether they perform well or badly, according to the minimum standards or requirements that have been defined. WWTWs that get less than 30% for the Green Drop score are put under surveillance by DWS.

The Green Drop assessment focuses on the entire value chain (reticulation*, pumping, treatment, discharge) of the wastewater business within the municipal wastewater services, but the Cumulative Risk assessment focuses on the wastewater treatment function specifically. Cumulative Risk assessment helps the Regulator judge the treatment part of the wastewater treatment process, which is a high-risk part of the whole business of treating wastewater in the municipality. Risk-based regulation allows the municipality to identify and prioritise* the critical risk areas in its wastewater treatment process and to correct and control any problems.

The two main outputs from the Green Drop assessment are:

- A weighted Green Drop score for each municipal system; and
- A Cumulative Risk Rating for each municipal wastewater treatment works.

These assessments are sent to the municipality involved.

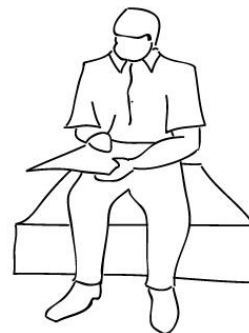
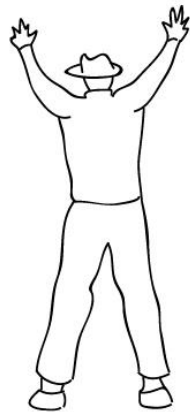
HOW TO GET INVOLVED IN MAKING YOUR RIVERS SAFER



THE GREEN DROP CAMPAIGN

Green Drop campaigns need public participation. Green Drop uses publicity to let the population of an area know whether the local municipality produces safe drinking water (Blue Drop) and water that is safe to release into rivers (Green Drop). When local people pay attention to water issues, municipalities are more motivated to look after their WWTW.

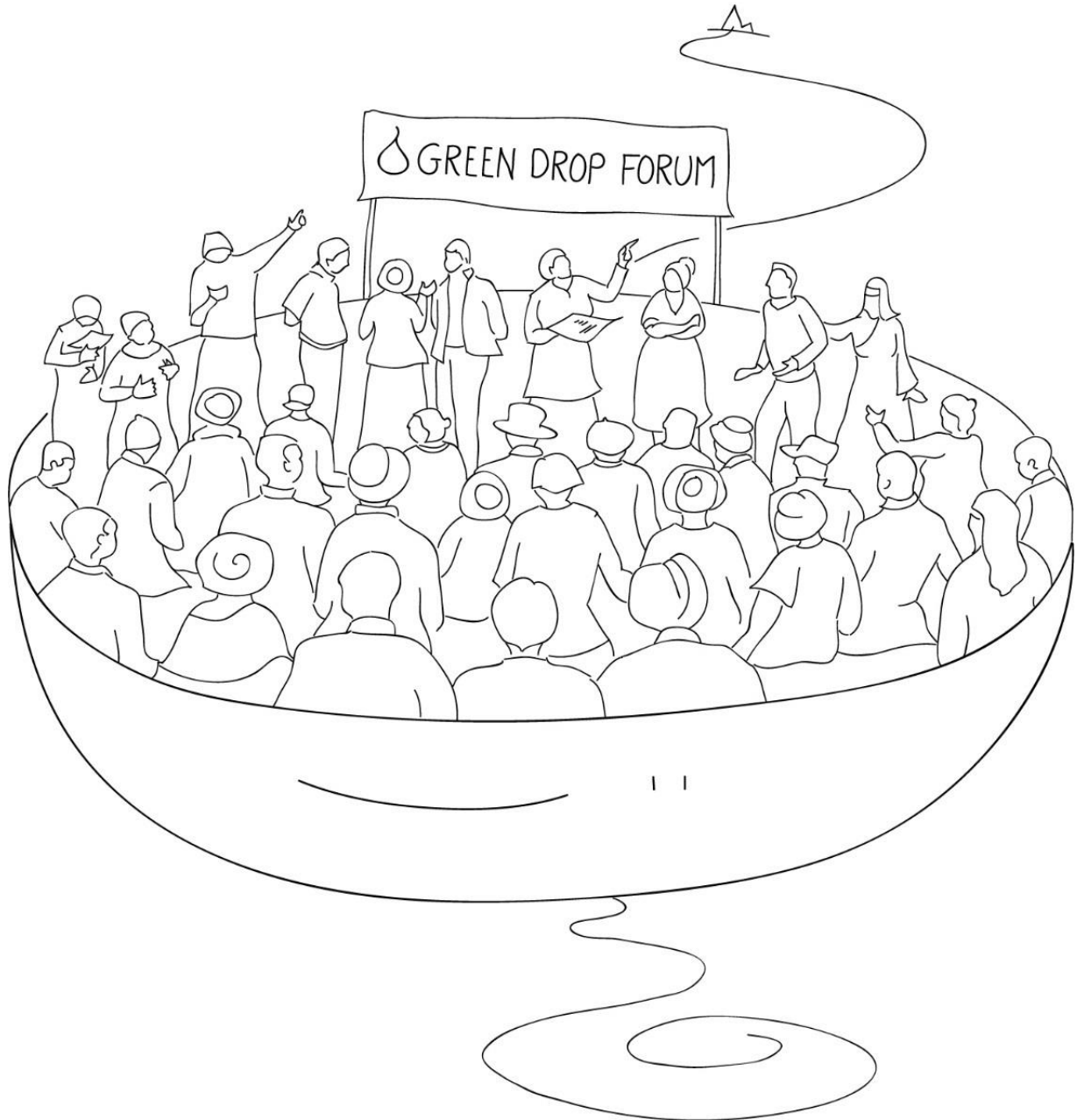
WWTW are not very visible and often they are not a priority item for local government. However, frustration with dysfunctional WWTW has been building. In June 2014, five babies in the Bloemhof area died as a result contaminated water, and the Mayor was fired. People are now concerned – and rightly so – about the safety of their water.



Creating opportunities

Green Drop campaign creates opportunities

- for the public to participate in supporting better performance in WWTW.
- to build better local understanding of how to protect our water resources, what the challenges are, how to support each other.
- to guide the energy of public dissatisfaction with WWTW into a co-operative process of (1) understanding the situation and the challenges, (2) building social co-operation to deal with these challenges and (3) confronting the challenges that lead to dysfunctional WWTW.
- to raise visibility and awareness of WWTW.



Learning from the Rietspruit and Crocodile Forum Green Drop Campaigns

This booklet is based on experience in two Green Drop Campaigns.

The first Green Drop Campaign was run in the Rietspruit CMF of the Upper Vaal (2009 and 2010), and supported by Mvula Trust, the Department of Water and Sanitation, and the Wildlife and Environment Society of Southern Africa (WESSA).

The second took place in the Crocodile River Forum (2014-2016). The Rietspruit CMF in the Upper Vaal formed a working group to respond to on-going failures of WWTW which were repeatedly reported to the CMF, as well as seven court orders obtained by the civil society group, Save the Vaal Environment (SAVE), against the local municipality. Unfortunately, these court orders did not change the situation. Instead, they increased the tension between civil society and the municipality. Mvula Trust, WESSA, participants in the CMF, as well as the Vaal Environmental Justice Alliance (VEJA) worked with the original 11 criteria of the Green Drop, and drew in broad participation from the forum, the DWS, as well as managers and workers of the WWTW. Unfortunately, the municipal leadership did not participate. In the end, the WWTW were placed in the care of the Rand Water Board, a technocratic decision that left the Campaign powerless. Plans do not always work out the way we want them to, but the Campaign succeeded in a different way: because water activists and WWTW got to know each other and work together. Activists understand the challenges the staff face. And staff welcome it when activists and community members report spills and other WWTW problems with sewage pipes and pumps, and act on it.

The second Green Drop Campaign took place in the Crocodile River Forum (2014-2016) and grew out of a Rhodes University research project on developing an integrated water quality management (IWQM) plan for the Crocodile River. Research for this plan showed that the dysfunctional WWTW along the river was a prime concern. The researchers offered to support the Crocodile River Catchment Forum in forming and facilitating a Green Drop working group, and regularly reported back to the Forum. The Green Drop Campaign also had the full support of the IUCMA, where the research project was based.

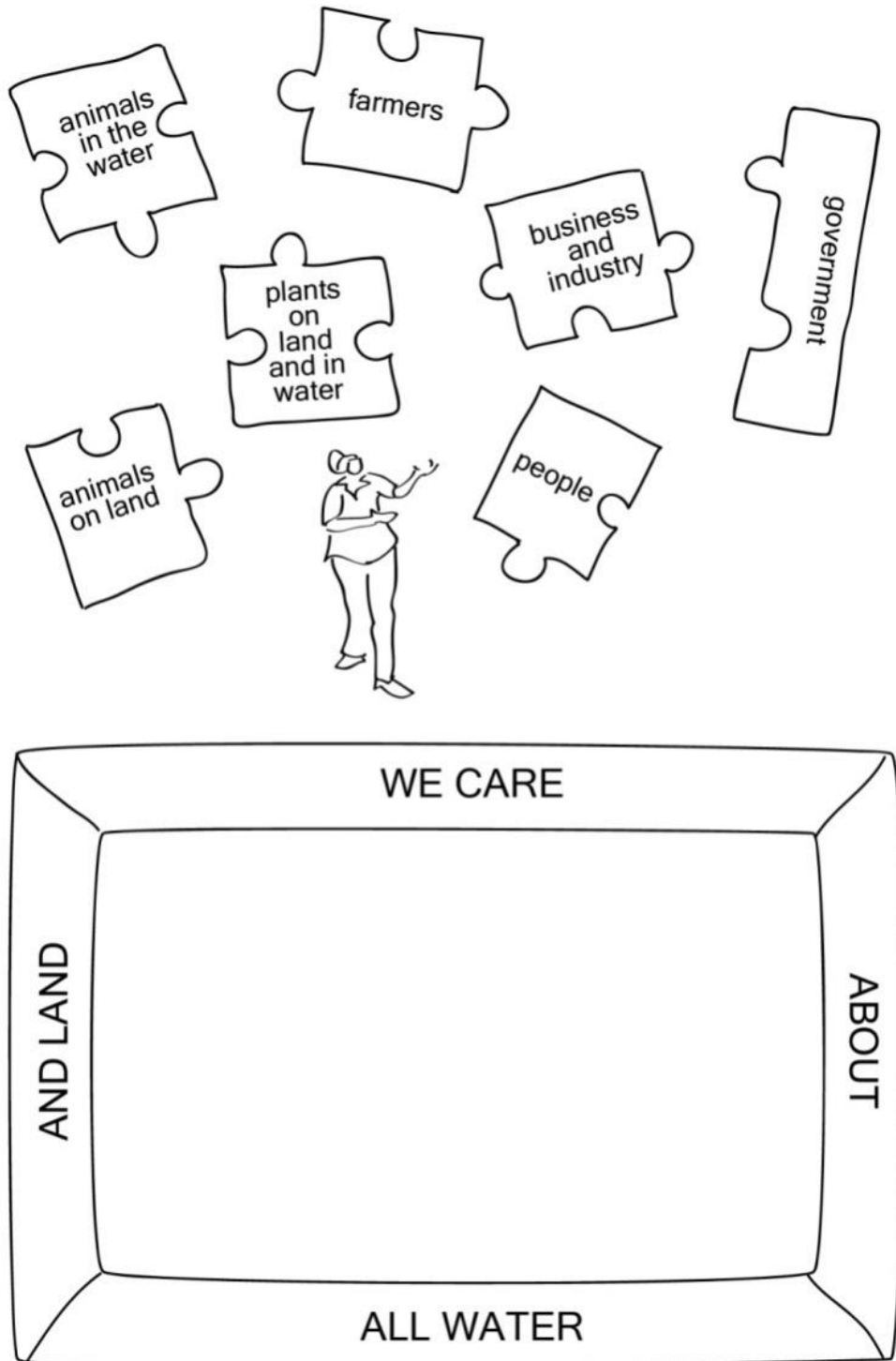
...but remember!

Each situation is different, with different resources and different possible solutions.

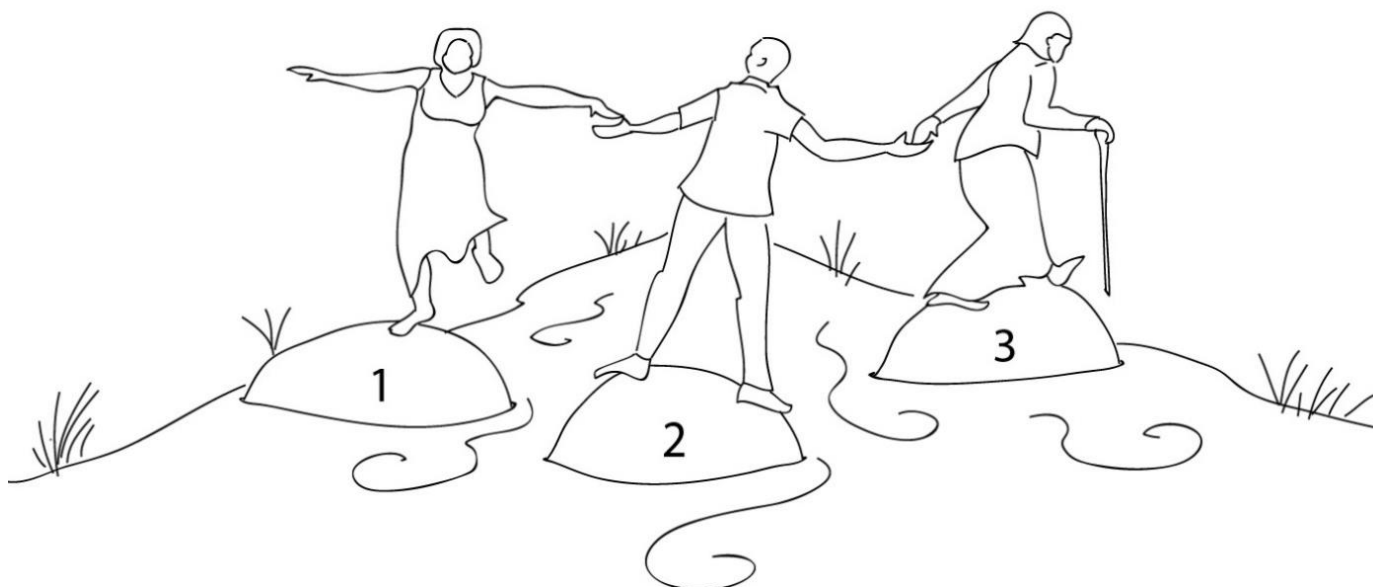


Borrowing Power

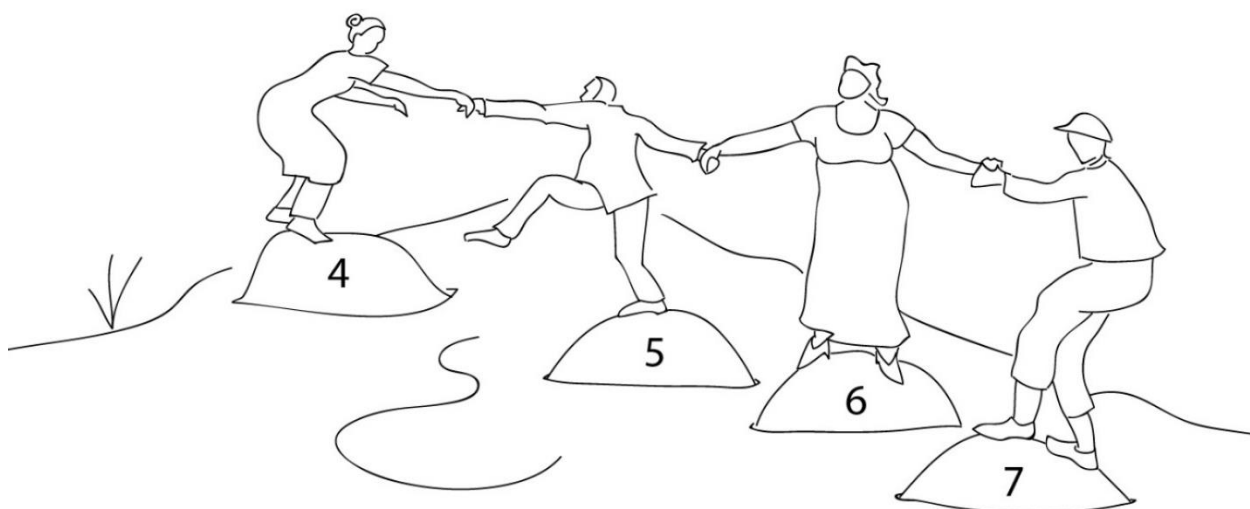
A Green Drop campaign needs to find resources within the catchment in where it is run. CMFs bring together a wide variety of stakeholders from different sectors. When they participate sincerely in the forum, these stakeholders bring the power and mandates* they have in their own roles. For example, a regulator who hears about a problem with WWTW can decide to find out what the situation is; or, an environmental manager at a big industry concern could decide to make some equipment or staff available to help a struggling municipality (this happened in the Crocodile Forum); or a community-based activist organisation can spread awareness in the community, or bring an issue to the attention of the media. This is what it means when we say that the CMF can “borrow power” from all of its members.



OUTLINE OF THE SEVEN STEPS OF A GREEN DROP CAMPAIGN



<p>Step 1: Check – Do we need a campaign? Develop a theory of change</p>	<p>Check with stakeholders and potential participants why the campaign is necessary: Are dysfunctional WWTW an important problem? For whom? Check what types of civil society, water sector, local government and other actors are in the area and may be drawn into the campaign. Specifically, what is the catchment management set-up? Are there CMFs and possibly a CMA? Develop a ‘theory of change’ to answer the question: Will must we do to make the change we want?</p>
<p>Step 2: Establish a working group that includes as wide a range of people as possible</p>	<p>Establish a mandated, representative group, balancing class, race, geographical spread, interest groups, etc. The group needs to be established within the CMF. Agree on campaign objectives and working group rules and approach. Build capacity, especially knowledge of WWTW, the Green Drop criteria, and a shared scientific language, based on shared knowledge in which the working group can discuss and understand the issues. (Good materials are available, starting with the WRC publications like Boyd and Mbelu (2009). Guideline for the Inspection of Wastewater Treatment Works. <i>Water Research Commission Report no TT 375/08</i></p>
<p>Step 3: Involve WWTW staff</p>	<p>Involve the WWTW operators. Share and understand their challenges. Get to know and understand the specific WWTW at issue, if possible by visiting them. This will help to establish a “safe space”, that is a space in which people trust each other and feel free to say what they really think. People in a safe space need to be protected by an agreement that they won’t be identified to outsiders as the ones who named the problems, for example a comment like this would not be acceptable: “John was the one who said the municipality does not pay its laboratory bills on time”.</p>



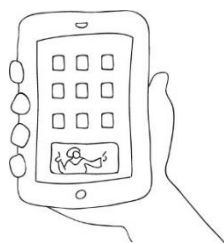
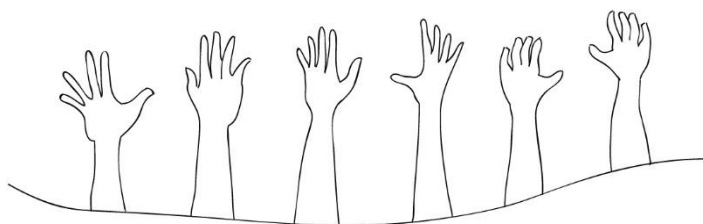
<p>Step 4: Build understanding</p>	<p>Once a safe space is established, get to understand the WWTW/local government issues. Ask questions like: What is the nature of municipal support (or lack of support) for WWTW? Test the current performance against the Green Drop criteria. How is the Green Drop process going? Which criteria were met in previous evaluations, and which were not met, and why?</p>
<p>Step 5: Develop solutions</p>	<p>Develop solutions and implement them. Use a wide range of tactics, including close engagement with local government; small circle engagement in problem areas; publicity, and engaging allies and other sources of influence. This is the wrestle* phase and it demands courage, creativity and patience from participants. What happens in this phase depends very much on the context. Situations and the actors in them will differ from each other. It will be up to the participants in the campaign to decide how to handle this. However, we can still learn from the examples of others.</p>
<p>Step 6: Analyse and acknowledge successes and failures</p>	<p>Analyse the reasons for success, or failure. If the campaign did not succeed in improving the performance of WWTW, did it perhaps succeed in creating a better understanding of the problems and obstacles? Or perhaps it created trust between stakeholders and WWTW staff, or strengthened the experience and capacity of the CMF to form and operate as working groups on a specific issue? Consider how to make the situation sustainable (e.g. does it need ongoing monitoring from the catchment, or does each WWTW need a citizens' committee – like landfill committees – and regular reporting?) Should there be a standing Green Drop support group? Or is it possible to keep an eye on the WWTW as part of the normal business of the CMF without having a working group? Congratulate all those who have contributed to Green Drop successes.</p>
<p>Step 7: Link, scale up, replicate</p>	<p>Link with and support other CMFs and other institutions that have the same issues with dysfunctional WWTWs. Feed experiences into broader CMA policy and implementation, and into local government policy. Examine what lessons you have learned about sector collaboration and DWS's role as a regulator, and the role of citizens' monitoring.</p>

SEVEN STEPS IN DETAIL

Step 1: Check – do we need a campaign? How much support is there for a campaign? Develop a theory of change. Checking the situation, working out whether there is a need for the campaign, and what resources and allies are available.

Make sure whether the campaign is really needed. Is it important enough for catchment citizens? Is it a priority for local government? What are the contradictions between the concerns of citizens and national government, and the importance that local governments give to the Green Drop?

Are there enough people willing to get involved and contribute time, knowledge and other resources? Are there adequate resources within the catchment to have such a campaign? Are there resources that could be brought into the catchment (for example, knowledge from the national or provincial DWS office, or within the CMA) on a temporary basis, in order to build an independent, local structure to deal with the issue in the future? Does the working group have people who can facilitate well and create a safe space for discussion? As explained above, a safe space is a meeting or discussion in which people feel safe to say what they really think. One reason it is safe is because other participants have agreed not to reveal which individuals said what. The other reason is because participants, especially staff, experience that what they say will be listened to and that they won't be attacked and embarrassed. The minutes should not contain the names of "who said what", otherwise individuals may be at risk.



In the Rietspruit, the (2009/10) working group had been almost identical with the CMF, because the same people took part in both sets of meetings. It also met in the Sebokeng WWTW, where all the forum meetings took place. There was broad participation from the CMF. Rand Water played a crucial* role in the CMF meetings by providing water quality monitoring data in addition to that of DWS and the municipality. Staff in the municipality, from DWS national and provincial, provided technical support. The Mvula Trust and WESSA provided process facilitation support. Consultants provided technical and training input on a volunteer basis. The working group had strong participation from civil society in the form of VEJA, which had had a long engagement with water quality issues.



The Crocodile CMF supported the working group which met separately, but which included the Croc Forum chairperson. The Inkomati Usuthu Catchment Management Agency (IUCMA), who are a well-capacitated, active and dedicated water quality team, co-operated with the Croc Forum and established one of the first CMAs in the country. The IUCMA provided information and a meeting space. It published an overview of all the WWTW in its jurisdiction (IUCMA 2014), and provided secretarial and logistical people. Facilitation – that is careful chairing and facilitating of meetings in order to create and maintain a safe space – support was given by researchers from the Rhodes University Crocodile River THRIP project, financed in part by industry stakeholders, housed in the IUCMA water quality team, and run by Rhodes University. The current WRC project provided resources to conduct further interviews, attend crucial meetings, and compile research reports. It is important to check what sources of support are available from researchers in a local university, or support from local business and non-government organisations.

The IUCMA, which is one of only two operational CMAs in the country, is still acutely aware of the problem of dysfunctional WWTW and spends much of its time on this issue. The IUCMA played an important role in the Campaign.

Obviously, an effective, active CMA is important, but effective Green Drop campaigns can take place even where a CMA does not yet exist. In the Rietspruit (Upper Vaal), there was no CMA, although institutional capacity was available – and did participate – in the form of Rand Water (which has a reputation for taking responsibility for catchment management) and the regional DWS office, which actively supported the Rietspruit CMF. This type of support is available in most forums, often from Water Boards and universities. It is important to get them on board and access their resources.

In both the Rietspruit and the Crocodile GDSC, there was therefore ample institutional capacity to support the working group: from Rand Water, the IUCMA, and as a result of active participation by DWS regional and national offices responsible for the Green Drop. The main impact of the Green Drop Campaign was to bring these resources together in one place with a focused goal and mandate.

What must we do to lead to the change we want?

It is important for any campaign to develop a “Theory of Change” which asks: “How will the actions we are undertaking lead to the change or improvement that we want?” The “Theory of Change” for the Crocodile River Forum Green Drop Support Campaign was formulated like this:

1. WWTW will achieve a higher profile locally, in public and with the municipality (councillors and officials). This will prevent the current practice of reallocating WWTW budget to other priorities midyear, and inappropriate and inadequate procurement practices.
2. Civil society will be more supportive towards WWTW, because they understand why WWTW are important and how they function. Staff responsible for WWTW will not be under general attack by civil society and other catchment stakeholders; instead efforts will be focused on identifying what is preventing us from achieving a better Green Drop score, within the Green Drop programme.
3. There is clear support from national and regional DWS, and a focus by the IUCMA, but the working group, with its broad stakeholder support, needs to receive and orient the support into productive channels, to avoid perverse incentives*.

Step 2: Establish a mandated, inclusive working group and build capacity in Green Drop frame. Establish the working group and build capacity to deal with issue



The group should consist of people from different backgrounds, races, geographical areas, interest groups, and classes. What brings them together is their shared concern about solving problems of WWTW. Working groups are an accepted and familiar way for CMFs to deal with technical issues, where more time is needed than is available in the regular forum meetings (usually held every two months), and where a smaller, focused group can be more effective.

Once established, this group's capacity needs to be built, by learning about how WWTW function, and their place in the management of rivers and water; understanding the Green Drop criteria, and learning the correct terms in which the group (working group) can discuss and understand the issues. This usually means explaining the science of wastewater management, both in English (if that is the language of the forum) and in other languages that people should feel free to use. In some cases, it may mean holding extra workshops and asking experts to volunteer their time and knowledge.



The Rietspruit working group had a strong membership from nearby communities, many of them members of the Vaal Environmental Justice Alliance (VEJA). They were already involved in capacity building on water quality issues, and the WWTW issues were added to these. Good materials for training were discovered: Dr Pieter van Eeden's training pack "Introduction to Environmental Water Quality Management"; Boyd and Mbelu's (2009) "Guideline for the Inspection of Wastewater Treatment Works. Water Research Commission Report no TT 375/08". In the Rietspruit, civil society representatives insisted on learning "the proper terms" and not the "baby language" as they felt it affected their ability to interact authoritatively with other forum members. This is an important lesson for other engagements.

In the Crocodile catchment, the theory of change (the three hypotheses referred to above) and evidence from the Rietspruit experience in 2009/2010 were presented at the Crocodile Forum (29 November 2013). At the time, the Crocodile Forum had been using a confrontational approach with local government. After debate about whether the forum was prepared to change this approach, the Forum agreed to experiment with a new approach in the form of a working group called the Crocodile River Green Drop Support Campaign (CGDSC).

There have been a number of presentations and report backs at Crocodile Forum: the first CGDSC took place in January 2014; the seventh in February 2015. The Campaign met approximately every two months and attendance grew with each meeting. It involved most relevant stakeholders: TSB Sugar, the White River Irrigation Board, manganese mines and industries, Mbombela frontline staff, IUCMA water quality team, DWS Green Drop staff (national and regional), the South Cape farmers Association, Rhodes and Wits University researchers, and all four municipalities, with senior managers from two of them. The initiative was strongly supported by the Crocodile Forum chairperson, Mr Theo Dormehl.

The municipalities own the WWTW and play a crucial role. The specific approach the Campaign followed was to work from the ground up, by first inviting the frontline staff, in the belief that

- the frontline staff were interested in their jobs and could do them well under different circumstances;
- the frontline staff needed help from the broader community, including national structures, and
- good relationships between frontline staff, civil society and other water users would lead to solutions, instead of the hostility at the time.

In the first meeting, the group agreed on the following approach or principles:

1. Understand each individual WWTW and its challenges. Understand Green Drop requirements in relation to the individual works (GDIP and W₂RAP).
2. Know and support the frontline staff.
3. Develop collective empowerment at process controllers' level so that they can support each other.
4. Develop healthy challenges between municipalities.
5. Understand the dynamics in the municipalities and get ward councillors on board.
6. Work with the willing, attract the unwilling, look for sticks for the unwilling, e.g. in the Berg River, farmers were affected economically and made a strong lobby group.
7. Use the media as a stick (Name and Shame) when patience with local government runs out.
8. Use tools from regulations, and pressure from central government.
9. Approach rapid response unit for financial needs.
10. Encourage industry and civil society to adopt a neighbouring Wastewater Treatment Works.

In both the Rietspruit and Crocodile cases, participants were driven by the urgency of the problem.

Getting to grips with citizens' science

Citizens' science can mean two things:

1. Citizens learn about science and how to use it; for example, the science behind wastewater treatment and monitoring.
2. Scientists use their knowledge to serve citizens. In practice, we need both these in order to protect our water resources.

In the case of the Rietspruit, the campaign was first driven by a civil society organisation within the working group (VEJA). VEJA started because of an industrial water pollution crisis for the neighbours of a local steel factory. VEJA participants were therefore trained in water quality issues as part of their organisation, and specifically in issues for WWTW. In the working group, responsible WWTW managers explained the workings and the challenges of the works to the participants.

In the Croc Forum, many participants already had extensive knowledge of WWTW, and thus quickly moved onto discussions of what the challenges were. Green Drop officials from DWS head office and provincial office joined in the campaign and provided valuable knowledge about not only WWTW but also the Green Drop system itself.

Step 3: Get to know WWTWs and operators' challenges. Get to know and understand the situation on the ground

Knowing something out of a book and knowing from experience are two very different things. Visit the WWTW, meet the people in charge, begin to understand how WWTW work and the challenges they present. This creates an atmosphere of trust in which the operators of the WWTW feel safe enough to share their problems and frustrations. Combine site visits with working group meetings.



Experience in the Crocodile Forum showed that (1) there may be varying levels of technical knowledge as well as familiarity with the WWTW, and (2) the logistical feasibility of visiting various WWTW must be taken into account. However, it remains important to work directly with the WWTW and know directly what the conditions there are.

The IUCMA compiled a detailed report on all the WWTW in the IUCMA. This formed an authoritative reference and basis for future action (IUCMA 2014). That kind of support from the CMA is an element that can be copied in other Green Drop working groups.

It was possible for IUCMA to prepare the report because it is actively involved in the regulation of the WWTW. In the Rietspruit, Upper Vaal case, Rand Water had played a similar strong role by providing accurate, continuous information about water quality, undertaking capacity building in meetings (for example, explaining water quality monitoring data in an understandable way and answering questions to encourage participation). This type of support is crucial.

In both Green Drop Campaigns, the same main problem was identified: a lack of understanding between WWTW and frontline staff, and local government's top triangle (municipal manager, technical manager and finance manager). Staff were held responsible for Green Drop performance, but did not get budget or support. When they did badly, top management held them responsible. This was very frustrating, and it was not working.

Facilitation helped to create a safe space and build trust. Skilled facilitation was important to steer people away from confrontation towards building understanding. Once everyone agreed on principles, there was a change from a confrontational to a co-operative approach. Both the facilitation and the agreement on rules should be taken into account when copying this approach.

Creating a situation in which it was possible to discuss the real obstacles to Green Drop improvements was gradually achieved as more municipal staff joined in the discussion, and became more honest and open about their experiences. We were guided by the Chatham House Rule:

At a meeting held under the Chatham House Rule, anyone who comes to the meeting is free to use information from the discussion, but is not allowed to reveal who made any comment.*

This rule protects the confidentiality of participants' contributions. The minutes are kept without referring to participants' names. At first, municipal employees were nervous, but this disappeared over time as the group identity grew stronger.



Facilitation does not have to mean external, professional facilitation, although that may be useful. Members of the working group may well be able to facilitate. In the end, it is all the participants together who establish the culture of the working group, including whether this group achieves social learning together.

As participants, we need to keep in mind that the obstacles to well-functioning WWTW are complicated and multi-layered, and look different to different people depending on perspectives, histories, and in which institution you are.

Support frontline staff

Local staff and operators are generally keen to do their work, but they work under very difficult circumstances, for example:

- not enough support from municipalities, resulting in no chlorine,
- delayed expansions where works were too small to handle the volume of sewage,
- key positions like administrative staff not filled, resulting in absence of filing of documentation.

It is important to listen to how the staff explain their situations, what their needs are, and where the obstacles are from their perspective. Operators who work under difficult circumstances find the interaction and sympathy from the group very therapeutic*, with the added bonus of meeting other officials in similar situations.

Step 4: Use Green Drop inspection process for analysis and action.

The regular Green Drop assessments create a situation in which puts pressure on local government to do well, and as a result municipalities welcome support at this particular time. The assessments create the opportunity for positive support, not criticism. At the same time, they deal with problems that can be identified using the Green Drop framework.

Step 4 focuses on testing current performance against the Green Drop criteria. How is the Green Drop process going? Which criteria were met, and which were not met? Why? Why not? This begins a process of building a detailed understanding of relationship between the WWTW and the local government: What is the nature of municipal support (or lack of support) for WWTW?

Step 4 starts with checking the readiness of municipal WWTW for assessment or inspection. It can evaluate the situation from previous reports. Staff from the three WWTW in the Rietspruit were perfectly prepared to share their information with the working group, identify challenges, and look for solutions together.



This step is focused on testing current performance against the Green Drop criteria. How is the Green Drop process going, which criteria were met, and which were not met, and why? It starts a process of building a detailed understanding of the WWTW/local government interface: what is the nature of municipal support (or lack of support) for WWTW?

In both the Rietspruit and the Croc working groups, officials from the DWS responsible for the Green Drop programme joined in the meetings. They explained very clearly what was expected, including where the emphasis would fall in the coming inspections. This made participation in the working group attractive for responsible WWTW staff.

However, the working group did have some problems to deal with:

- the DWS had decided not to release the overall Green Drop results, but to only give each municipality their own results. Municipalities could decide to share their results or not. These actions of the DWS seriously undermined the public nature of the Green Drop scheme, and made it difficult to work in those circumstances.
- it was sometimes difficult to engage local government managers (municipal, finance and technical managers) in the process. Municipalities may feel that the Green Drop simply is not a priority, since there are many other more important and urgent things for municipalities to do, and high level managers are overwhelmed by the demands on them. Politicians (the councillors) will always invest in improvements that are visible to their constituents, like roads, clinics, schools and streetlights ... and not in WWTW.

The Green Drop working group should not be disheartened by such problems. Expecting problems allows you to prepare for them, and find solutions.



Step 5: Develop solutions together. Use a variety of tactics.

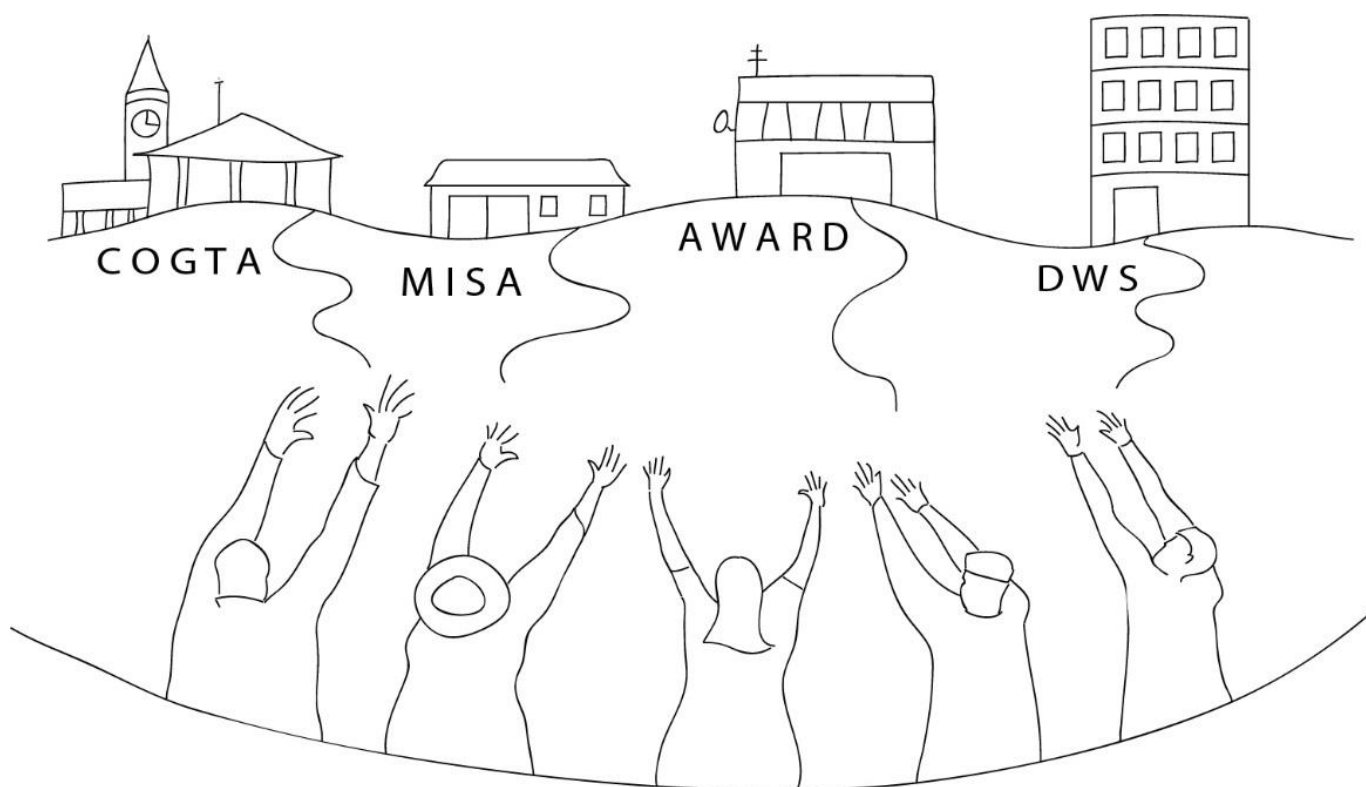
Step 4 *diagnoses the problems* and obstacles to proper functioning of the WWTW within the Green Drop framework; Step 5 *develops solutions* to the problems.

Step 5 was not fully explored in the Rietspruit case, as the WWTW were handed over into the care of Rand Water. If followed to its logical conclusion, this option would remove WWTW from local government and hand them over to water boards. That would mean that stakeholders will lose the possibility of putting pressure on local government. It is not clear whether this is constitutional.

Participants develop solutions together, within the principles laid down at the beginning of the campaign. A wide range of tactics can be used, including close engagement with local government, small circle engagement in problem areas (for example focusing on a single WWTW or municipality). It could include publicity, although this may run the risk of threatening the trust that has been built up. An interesting option is to “borrow the power” of other actors, in particular the relevant national government departments.

“Borrowing Power” beyond the CMF

There are organisations and people beyond or outside the CMF who are responsible for protecting water resources, as well as overseeing the activities of municipalities. The working group decided to “borrow the power” of these national departments, and investigated the possibilities of doing this.



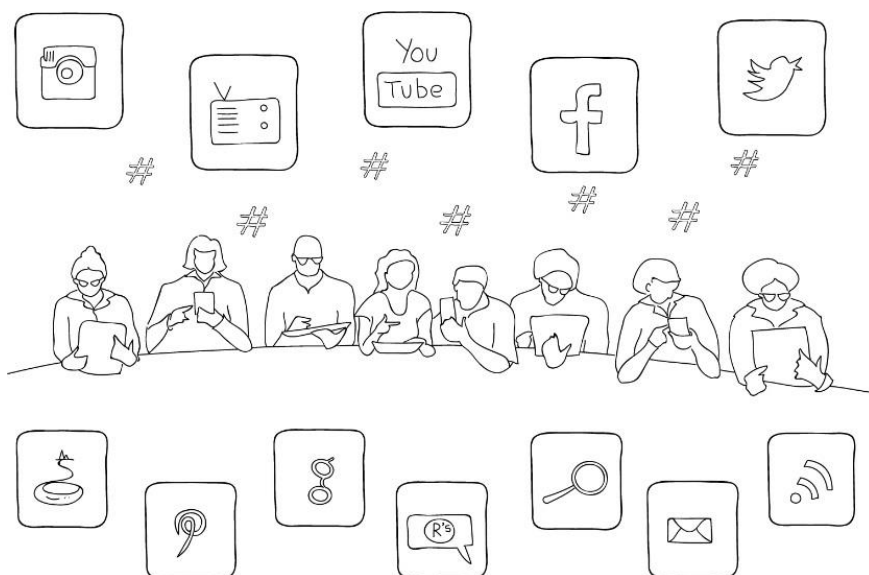
The team linked up with the Association for Water and Rural Development (AWARD) to undertake a series of interviews with the Treasury, DWS, COGTA (Cooperative Governance and Traditional Affairs), MISA (Municipal Infrastructure Support Agent) and Public Works. It is important to understand what power these departments can exercise over local governments in terms of the Green Drop issues, and under what circumstances they would wield such power. The interviews with national government departments revealed the following:

- Treasury was reluctant to intervene. They focus on money, and therefore the quality of the effluent and other technical issues were not visible to them. However, they were very interested in Green Drop developments, from a “value for money” perspective. It may be possible to involve them more immediately.
- The Department of Co-operative Governance and Traditional Authorities (COGTA) had undertaken a “Back to Basics” programme, which promised to motivate better performance of WWTW. You can read more about this programme at http://www.cogta.gov.za/cgta_2016/wp-content/uploads/2016/06/The-Presidential-Local-Government-Summit.pdf.
- The Municipal Infrastructure Support Agency (MISA), a supporting agency within COGTA, can only intervene with municipalities if municipalities ask them to.
- DWS probably has the most responsibility and opportunity to intervene. DWS officials pointed out that a number of directives had been issued against municipalities, and had produced results. In addition, DWS had embarked on a Municipal Services Strategic Assessment (MuSSA) programme, in which municipalities self-report in a number of risk areas, including Wastewater treatment.

All the national departments are bound by the constitutional autonomy of local government. Our country’s constitution says that local government is equal to provincial and national government and has the right to earn income from providing water and electricity services, which it defends jealously.

Publicity – a tricky question

Publicity is central to the idea of a Green Drop Support Campaign, but it must be used carefully or it may harden attitudes between civil society and local government. Publicity is an important weapon in the hand of civil society, and CMFs are themselves open to the public and the media. However, decisions about when to use publicity in a Green Drop campaign also depend on whether it is appropriate to use diplomatic or confrontational tactics. Such decisions are difficult and should be debated openly and sincerely. A Green Drop campaign working group could decide not to use the weapon of publicity if it will destroy trust or chase away some participants.



Step 6: Understand reasons for success and failure. Analyse success and failure, acknowledge contributions. Revisit theory of change.

The working group needs to take time out to analyse the reasons for the success or failure of the campaign. This should take place throughout the campaign, and not just at this specific step.

How do we judge success or failure? Perhaps the campaign did not succeed in improving the performance of WWTW, but did succeed in creating a better understanding of the problems and obstacles, or created trust between stakeholders and WWTW staff, or strengthened the experience and capacity of the CMF to form and operate as working groups on a specific issue? Those are all successes, even though they may not be the one you were aiming to achieve.

It will take more than a Green Drop campaign to change the threats to our water resources. Participants should not be discouraged if the group does not achieve everything they hoped for.

HOW TO MEASURE SUCCESS

Five levels of forum functionality

These five levels are a good framework for testing the success of a Green Drop campaign.

Level One

If a Green Drop working group exists, it has achieved this first level of functionality. The group can now ask itself these questions:

- Is the group able to meet physically, and exist as an ongoing institution – can it deal with issues like transport, logistics, invitations and providing lunches? These are important in order to get inclusive and representative participation. If a Green Drop working group exists, it has achieved this first level of functionality.
- How inclusive is the working group?
- Has the group succeeded in keeping forum members on board?

Level Two

- Are participants able to voice local issues and concerns, from their own, authentic perspectives?
- Are people able to draw from their experience and propose solutions that are within their reach in the Green Drop campaigns? Or were only certain voices heard, and other voices and agendas remain silent? This is where the role of facilitators, external or internal, becomes important.

Level Three

- The working group is functioning as a community of practice, learning from each other, developing norms and rules for working together, and able to absorb lessons from the outside. Inputs from the outside can be brought in and absorbed into the activities of the working groups.
- Knowledge is shared freely and new understandings of the situation arise.



Level Four – critical questions:

- Does the CMF and its working group have the power to **act**?
- Has the working group achieved its objective of improving municipal WWTW effluents?
- Has this been the result of the campaign, or has it happened independently? Sometimes this question is difficult to answer, as the following examples show: In the Crocodile River, one of the municipalities had an excellent WWTW manager, who constantly improved the performance of the works in her care. She was a regular participant in the campaign, and received support from it. She reported back the improvements in her municipality to the group. On the other hand, the national Green Drop inspections did not take place as expected, and thus it was simply not possible to tell whether the working group's efforts had led to any improvement.

Level Five

- Does the group have institutional resilience? This means: can the forum, or its working groups, defend their mandate against bigger institutions such as local governments, water boards, provincial and national government? In most cases this is not a “for-or-against” situation, but a situation of creating alliances to work together, or “borrowing power” successfully.
- The group should check the “Theory of Change” they proposed in Step 1, and see whether their theories were in fact tested; whether the theories held good, or were found to be mistaken

Both Campaigns, in the Rietspruit and in the Croc, were able to create co-operative relationships with national and provincial government. In the Rietspruit Campaign, the working group faced serious difficulties in getting access to local government. When local government cancelled a meeting with the Campaign at the last minute, Campaign members refused to move and continued the meeting – until local government officials eventually joined them.

To illustrate how a reflection at the end of a Green Drop campaign may go, look at the following notes on the Crocodile Green Drop campaign:

Theory 1: WWTW will achieve a higher profile locally, in public and with the municipality (councillors and officials). This will prevent the current practice of reallocating WWTW budget to other priorities midyear, and inappropriate and inadequate procurement practices.

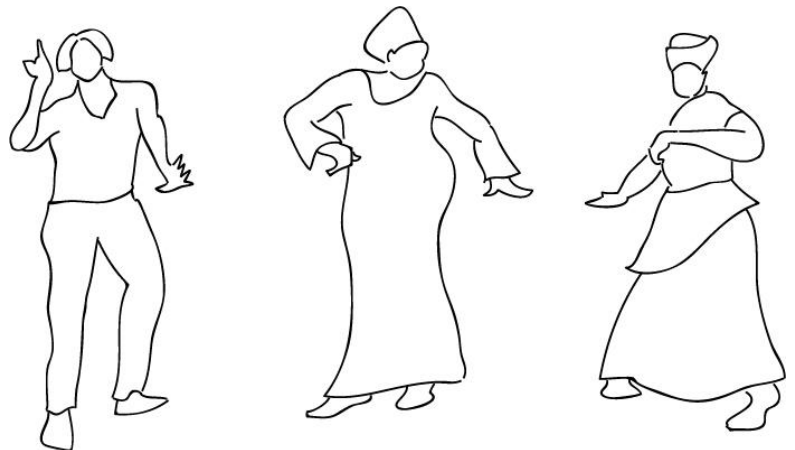


The WWTW along the Crocodile River achieved a higher profile locally, in public and with the municipality (councillors and officials).

But it is not clear whether this prevented the current practice of reallocating WWTW budget to other priorities midyear, and inappropriate and inadequate procurement practices. It may be possible to check this, but for that the working group would have to have a closer view of municipal budgeting practices.

Theory 2: Civil society will be more supportive towards WWTW, because they understand why WWTW are important and how they function. Staff responsible for WWTW will not be under general attack by civil society and other catchment stakeholders; instead efforts will be focused on identifying what is preventing us from achieving a better Green Drop score, within the Green Drop programme.

The second part of the theory worked. Civil society did adopt a supportive attitude towards WWTW, on the basis of an in-depth understanding of their context and functioning. Staff responsible for WWTW stopped being under general attack by civil society and other catchment stakeholders; instead efforts were focused on identifying the bottlenecks in achieving a better Green Drop score, within the Green Drop programme.



Theory 3: There is clear support from national and regional DWS, and a focus by the IUCMA, but the working group, with its broad stakeholder support, needs to receive and orient the support into productive channels, to avoid perverse incentives, which would not solve the problem but only mean that the municipality gets extra funding.



Getting state support for struggling municipalities was a more difficult than anticipated. National government departments were reluctant to intervene, and local government officials were

suspicious of the agenda and mandate of the working group to intervene in incentives for better performance. It remains an area to be investigated further.

Success

Campaign participants need to define their own criteria of success, and be realistic about what can be achieved over the short- and long-term. There are often political and personal agendas involved in dysfunctional WWTW, and it is not always easy to change these.

Sustainability

Participants need to consider how to make their achievements sustainable. For example, they could make sure that the performance of the WWTW is regularly reported on in the CMFs, and municipalities are held accountable. They may want to propose that WWTW need on-going forum monitoring. In some cases, the Green Drop Campaign should be a permanent group.

The Green Drop Campaigns have also learnt that the causes of eutrophication and bacterial contamination go beyond the WWTW. To protect our water resources properly the following need to be attended to:

- sewage lines, both the pumps and the pump stations.
- the lack of sanitation provision in many informal settlements.
- surface run-off from un-serviced informal settlements, which causes serious pollution of waterways completely outside of the whole WWTW system.

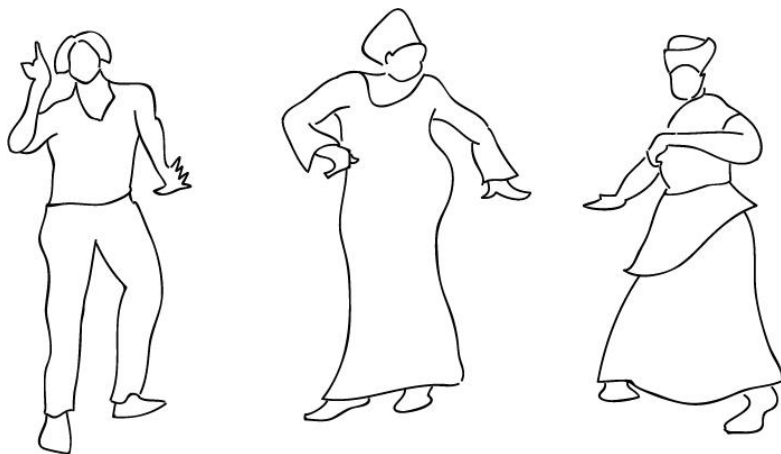
An alternative approach to WWTW?

During the Green Drop Campaign the question arose of whether the conventional WWTW is still the best choice in an era of climate change, electricity interruptions and sometimes limited capacity on the side of local government. Alternative systems that may be more appropriate have been developed, for example the Advanced Algal system which is climate friendly, easier to manage, and produces clean water, as well as fertilisers which can be used commercially.

Step 7: Link more widely, share with others

Share with working groups in other catchment forums the lessons that have been learnt. Share “What works”, both in content and in tactics.

Green Drop Campaigns may encounter many difficulties, but these difficulties are also lessons for other groups, because they show what the dynamics are, and what to avoid.



If the Campaign has resulted in improving municipalities' Green Drop scores, the municipalities and others that produce such success should be acknowledged as a way of also inspiring others, bringing visibility to WWTW and earning the Green Drop a place among municipal priorities.

So far, the Green Drop Campaigns have been shared through the Water Research Commission, the Water Institute of Southern Africa (WISA), at the Forum of Forums, a WRC research project, and in

the South African Water Caucus. We hope that sharing it in this guide will inspire participants in CMFs to experiment with what is possible in CMFs and their working groups. There will eventually be nine Catchment Management Agencies and a few hundred CMFs. It is important for citizens to participate in these emerging spaces, and shape them through participation in, for example, working groups like the Green Drop Campaign.

We also recommend that you look at other handbooks in this *How to ...* series.

Conclusion

The work of CMFs is to protect water resources on behalf of all people who live in the country, and of generations to come. It is also a way of building the strength of the forums, which are a relatively new tradition in our country. In the end, it is also a way of building a democracy where everyone can participate.

The Seven Steps of the Green Drop Campaign used in this handbook present a way which CMF groups will find useful for any campaign.

Step 1: Checking the situation, working out whether there is a need for a campaign, and what resources and allies are available.

Step 2: Establish the working group and build capacity to deal with issues.

Step 3: Get to know and understand the situation on the ground.

Step 4: Build understanding between actors around the problem, with the working group as core and drawing in actors.

Step 5: Develop solutions, interventions.

Step 6: Understand reasons for success and failure. Analyse success and failure, acknowledge contributions. Revisit theory of change.

Step 7: Link more broadly, share with others.

GLOSSARY

Chatham House Rule – At a meeting held under the Chatham House Rule, anyone who comes to the meeting is free to use information from the discussion, but is not allowed to reveal who made any comment

contaminated – polluted

credible – believable

criteria – a principle or standard by which you can judge other things

crucial – very important; decisive

cyanobacteria – microorganisms that are related to bacteria but are capable of photosynthesis. They are blue-green in colour and are part of the eutrophication process

dysfunctional – not working properly

eutrophication – is a process when water bodies, such as lakes, estuaries, or slow-moving streams receive too many nutrients that stimulate excessive plant growth (algae, nuisance plants, and weeds)

heavy metals – these are metals like aluminium, chrome, cobalt, copper, lead, iron and manganese. They can poison fish, animals and people.

impoverish – make someone (or something, like a river) poor

incentive – the promise of a reward or benefit for doing something well

invertebrates – an animal without a backbone, such as an insects, mussels, bugs, and many small animals that live in water

macrophytes – plants that grow under in, and next to water. They provide food for fish and wildlife and are a sign that the river is healthy because they are involved in 'cleaning' the river water.

mandate – command and authority to act in a particular way in a specific situation

nutrients – 'food' for plants

pathogens – viruses, bacteria, any germs that cause diseases

penalises – punishes

perverse incentives – sometimes municipalities who do badly, receive money to help them do better, but they learn that doing badly is rewarded by more assistance and more budget. This outcome is the opposite of what the government is trying to achieve.

pH levels – how acid or alkaline the water is

prioritise – to decide the order of importance of things

protocol – rules of conduct; rules about what to do in an emergency

reticulation – a network of pipes used in irrigation and water supply

sediment – the mud and sand at the bottom of the river that is made up of weathered rocks, decayed plant material, etc.

therapeutic – related to healing

toxic – poisonous

wrestle – to struggle with someone or something in order to win

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