

## **Change Management as an Indispensable Component when Planning for NRW Control**

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# Change Management as an Indispensable Component when Planning for NRW Control

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## Abstract

For anyone who fights water losses, establishing reliable water balance is a prerequisite. However, implementing successful action plan and getting sustainable results is a must. Michel Vermersch and Alex Rizzo have recently explained how to create a successful action plan (Water 21, April 2008). They go further now: after reminding the three-dimension structure of the action planning they introduce management tools such as the analysis of the culture web, the stakeholders' grid and the change kaleidoscope. They show how these Change Management techniques may be successfully applied to NRW reduction project.

## Introduction

“Change” is a key word in modern culture. We all know that humanity, the environment, life and the very world itself are changing faster and faster with time. Science, technology, politics, culture and basic values are changing as well: we call this evolution. When the changes are not under control they often lead to disorder, sometimes chaos. When they are properly managed they may lead to pre-determined targets.

### The Change Management dimension in action planning to control for NRW

The importance of change management in water projects and water utilities may be evidenced at two different levels: audit and action planning.

**Audit:** The level of water loss from a water system, which can be represented by a water balance, is the combination of both the natural entropic deterioration of the water infrastructure and the actions and procedures implemented by the technical and commercial departments to counteract that deterioration. Either directly or indirectly, any deterioration in terms of water losses may be considered as a consequence of management failure. There is a need to identify these failures and explain them in terms of management and corporate culture.

**Action Planning:** The objective is to transgress from an initial level of loss denoted as A (this state reflects the current mode of management) to another level of loss denoted as B (that can be reached via a successful Action Plan). A and B are defined by initial and targeted Water Balances (Alegre et al 2006). But there are many different paths that can go from A to B.

The passage from Level A to Level B will involve many components; such as technical, human, organisational and even institutional factors. However, meeting the B target is not enough: since the management of the utility was one of the major causes of the initial A level, the B level will not be sustainable without a permanent and sustainable change in the corporate culture and governance.

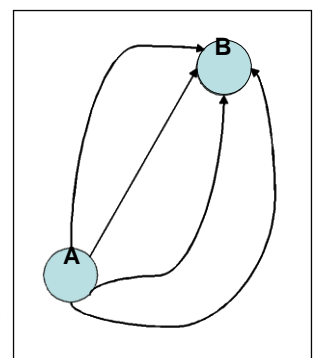


Figure 1: Change Management to go from Water Balance Position A to B

The conscious management of this change will help to ensure the success of the plan, but also - and above all - the sustainability of the results obtained.

## A Three-Dimension Action Planning Model

In a former paper, the authors have analysed the causes for success and failure in a sample of 60 action programmes to control for NRW.

Their conclusions are summarised in the following scheme. This scheme shows that Water Loss control projects need to be considered in a 3-dimensional manner: the change management, the project management and the operational management dimensions. Failure generally results from ignoring one of these dimensions.

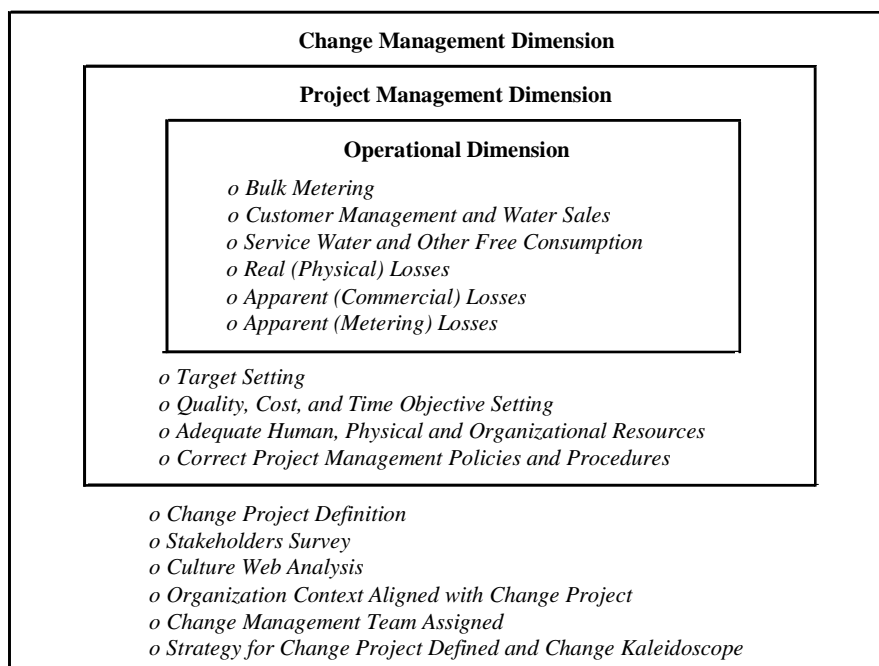


Figure 2: NRW Control as a 3-Dimension Structure  
(Source: Alex Rizzo and Michel Vermersch, 2007)

The operational dimension looks at the creation of a current and targeted water balance for the water utility. It defines the technical and operational activities that are required to transgress from the current to the targeted water balance, and clarifies the corresponding resource requirements.

The project management dimension. Genuine project management requires a project champion, a committed team, quantified objectives, time scheduling, resource commitment, and adequate tools and techniques for the project to be successful.

The change management dimension. This dimension looks at the readiness or willingness of the water utility to tackle NRW project issues, such as institutional and stakeholders' support, a clear mandate, and an established project strategy. Many action plans have failed for having ignored the essential change management dimension, the study of which should always be considered as a prerequisite for a NRW reduction program.

The present paper only focuses on the change management dimension.

## A General Approach to Managing Change

In our ever changing world managers need to have an ability to manage change. Change management has become a specific and important matter in terms of management of any organisation.

So, one may ask, why is it that the change dimension is not taken seriously into account in so many NRW control projects? Actually there is a diffuse awareness that many things have to be changed in the utility but, unfortunately, this is often considered as a somewhat philosophical concern. Too often, the management team believes that the use of new tools and the definition of new procedures will be sufficient to automatically change mental attitudes and corporate culture. This common mistake leads to failed planning and to unsustainable results.

It is clear, for example, that employee training would be enough if one wants to develop new leak detection instrumentation and techniques within a utility. However, the problem is much broader than that, we are talking about strategic change management at a corporate level. Before developing the concept further, it is useful to revisit some basic definitions and tools that are often utilized by change management practitioners and academics.

### **Managing Strategic Change**

Managing strategic change is a complex matter: there is no miracle formula and no one method to deal with this concept. At first it is essential to understand that change is mainly about changing people, not organisations; people are an intrinsic part of the change process. Major changes require a shift in the underlying culture of the organisation, and therefore the attitudes and behaviours of the staff.

The authors do not intend to cover all the aspects of change management here, but would like to focus on some basic tools that are considered as essential to understanding the change and to deal with it successfully. The authors intend to show that these tools can be applied successfully to support a NRW project within the water sector.

Three interesting and useful tools are presented at this point. These are: the culture web; the change kaleidoscope; and the stakeholders' grid. The possible application of these tools to NRW projects is then summarily described.

### **Culture Web**

Corporate culture is based on stories, symbols, routines, paradigms, power structures, control and monitoring procedures, and formal and informal operational structures (as shown in Fig. 3). Anyone who has worked in a large water utility will appreciate the significance of this corporate culture.

At an audit level, the "culture web" enables one to detect the positive and negative factors in the frame of the change strategy. The main objective of the audit is to identify which factors need to be changed, and how to carry out this change. Put in simple terms, a review is required of the cultural factors that drive the water utility, as these factors will support or undermine any attempted NRW project. An audit can be carried out formally, through an official assessment of the organization's behaviour, or more informally, by working within the organization for a while. An example of one of the dimensions of organizational culture is the various sources of informal power within the organization. For example, the CEO may sanction a NRW project, but the real power source, the Financial Controller, may pull back valuable project funds as soon as cost cuts are requested. Understanding the organization and buying in the support of the Financial Controller (in this example) would determine the success or failure of the NRW project.

### **The Change Kaleidoscope**

Once the organization's culture is understood, one can move on to utilize the change kaleidoscope to design a context-sensitive change project within the organisation.

The kaleidoscope is shown in Figure 4. It contains three rings:

The outer ring relates to the wider organisational strategic change context: Why would the organization want to change? What instigates the necessity of a NRW project?

The middle ring represents aspects of culture, competences and situation that should be considered when studying the change process.

The inner ring looks at the range of options that a change agent may choose from when selecting an appropriate change approach: changing path, start point, style, interventions and/or roles. The change agent is essentially the person championing the change, as “every change needs a champion”. Attacking a NRW project without an identified change champion, one who has a strong source of formal and informal power, will most probably lead to failure. Ideally, the change agent would understand what NRW is all about, and would be well experienced in both Real and Apparent water loss control. Only in this way will he or she be able to convince the decision makers of the importance of the project, and constantly seek support for the ongoing implementation of the project.

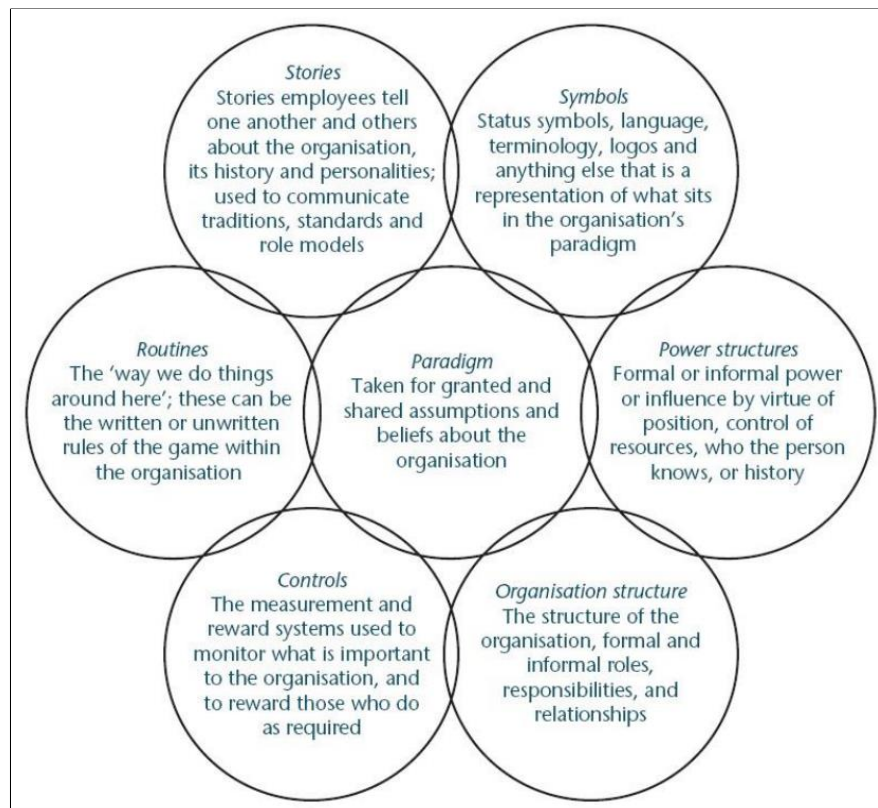


Figure 3 : The Culture Web Structure  
(Source: adapted from Johnson and Scholes, 1998, Balogun 2001)

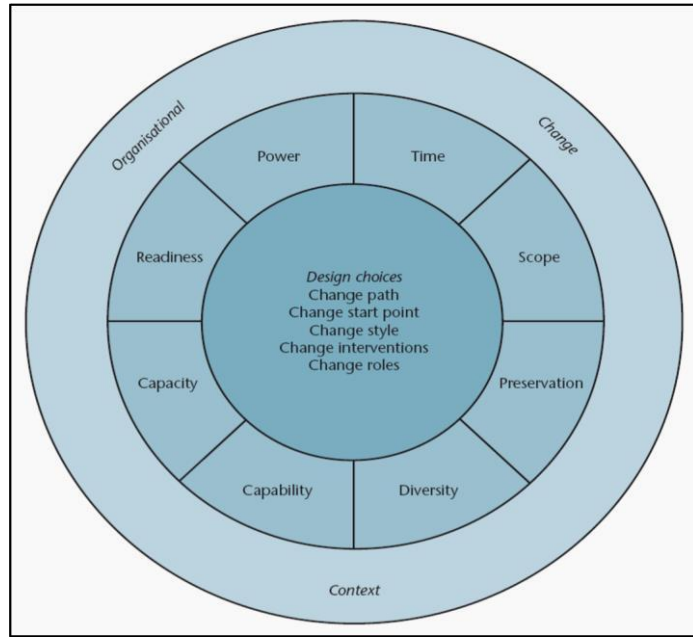


Figure 4 : The Change Kaleidoscope  
 (Source adapted from Balogun and Hope Hailey, 1999, Balogun 2001)

**The Stakeholders' Analysis**

Analysing and forecasting change management within the Utility is not enough: many external stakeholders may have an influence on the final targets. The concept 'stakeholder' refers to a party who affects, or can be affected by, the Utility's actions. Stakeholder theory identifies and models the groups who are stakeholders to a corporation.

Stakeholder theory argues that there are various parties involved, including governmental bodies, political groups, trade associations, trade unions, communities, associated corporations, prospective employees, prospective customers, and the public at large.

Organisational stakeholders are plotted onto a grid on the basis of their attitude to change and their degree of influence. An example of a stakeholders' grid for a water utility is described below:

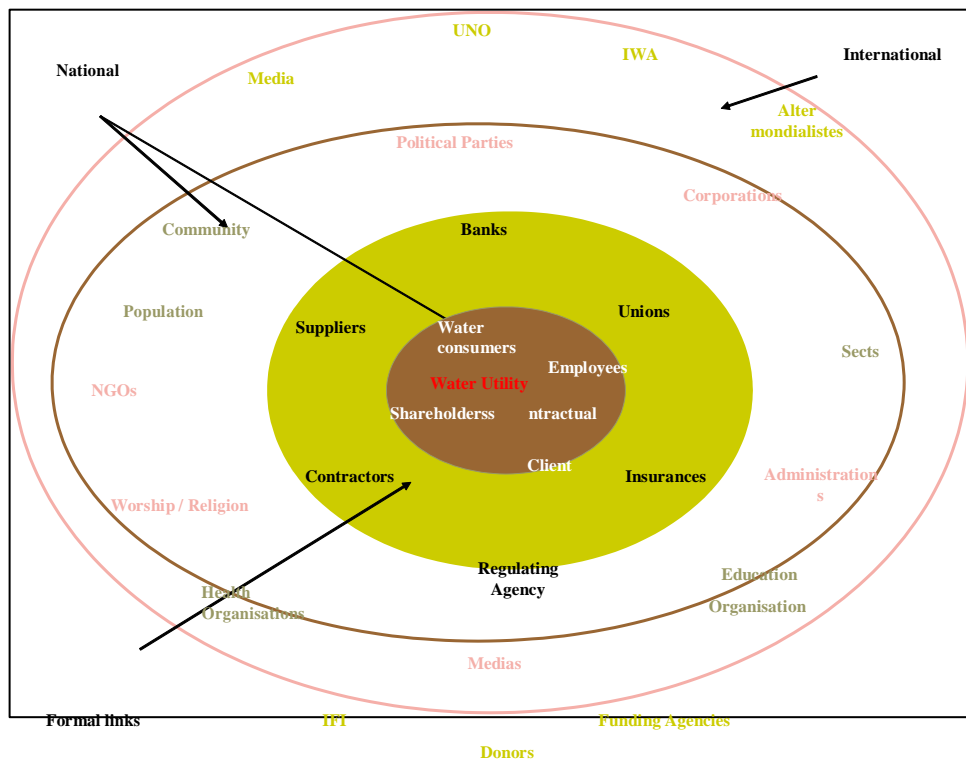


Figure 5 : The Stakeholders' Grid (Source: adapted from Brailowsky, 2008)

The utility and its shareholders, employees and customers constitute the core of the stakeholder grid. The second ring relates to the stakeholders that are formerly linked to the utility such as the regulating agency, banks, suppliers, contractors, insurances, union, etc. The third ring relates to national bodies and organisations with no formal links (but continuous formal interaction) to the utility such as political bodies, communities, institutions, NGOs, and so on. The fourth ring relates to international stakeholders.

The stakeholders' analysis is necessary at the design stage, but only after the organization's culture has been adequately mapped out. Whilst essentially the culture describes the internal environment to the water utility, the stakeholders' analysis defines its external context. As an example, consider a water utility that has failed to map out its external environment, and has subsequently failed to notice the gaps in the labour market with respect to skilled technical personnel. An attempt to employ leakage technicians at a later stage in the project implementation may fail due to this important oversight.

There is also often a need to change the culture of the customers and their perception of the water utility. Ultimately, the customer is the water utility's most important and inevitable stakeholder, as well as its source of finance.

## **Implementing a change management approach**

### **Starting the NRW audit**

This is not the object of this paper to remind what the steps of the audit are but, as far as the change management is concerned, it must be stated that the establishment of the *culture web structure* and the *stakeholders' grid* needs to be analysed at this stage. This must be part of the data collection stage of the audit.

The audit may be carried out in-house or by an external consultant. When the audit is carried out in-house, the Utility management may think that this stage is useless, arguing that he knows perfectly well how the Utility is run. This is a very common and basic mistake for two reasons: (i) the management team and probably the former management teams are directly or indirectly responsible for the level of water losses in the first place, and (ii) the existing management may not be competent enough to analyse their own culture and its relevant weaknesses. An external approach is generally more effective.

### **Designing NRW reduction programmes**

When the water balance and the targeted water balance are established it is then possible to design the action plan, which generally consists in a set of actions that have been described as the operational dimension of the 3-dimension scheme (Fig.2). Budget and human and material resources have been defined and the time-schedule of the project as well.

It is then necessary to check the feasibility of the project that requires 3 main categories of analyses: the managerial level, the project level and the operational level. The analysis of the feasibility will use the data collected to establish both the culture web structure (what needs to be changed?) and the stakeholders' grid (which stakeholder will support the project and which may create obstacles if they are not properly dealt with?) To carry out this feasibility analysis the change kaleidoscope will be used at various levels: the general project and each component of the project. Actually, each action in the NRW reduction programme is supposed to generate a specific change. The change kaleidoscope enables the designer to identify the points to be strengthened for each component of the project: readiness, capacity, capability, diversity, etc.

This analysis will concern a very large range of items: from "Is the government ready to support the project and allocate funds enough?" to "Does the technician use the leak noise correlators properly?"

## Summary

We all have heard this kind of comments: “My action plan was perfect but it has been jeopardized by the Utility staff and the finance officers! “or “ As a consultant we met the targets but I am sure the Utility will not be able to cope with the situation after our departure!” After reading this paper, anyone should understand that these comments only show that the approach of the problem was not a holistic one. Some important external stakeholders have not been involved in the process. NRW reduction planning is not about engineering only; it is also about social sciences and management.

There are many possible causes for a NRW project to fail, or not to meet the targets, or not to produce sustainable results. Whatever the efforts and the holistic approach that has been developed there is always some political risks that cannot be taken into account, such as the replacement of the general manager of the Utility by another one who is not convinced it worths spending so much money to reduce the loss. This is one more reason to work on sustainable change in the mental attitude and capability of the staff.

Change Management is the highest and inevitable dimension for any NRW reduction planning to control NRW. The Change Management attitude and the holistic approach of the NRW topic strongly increase the chance for meeting the targets or ensuring sustainability of the results.

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Appendix: Following table is based on a case study. It summarises some problems the Utility had to cope with and the relevant solutions; many of them evidence the important role of the external stakeholders.

Topic	Stakeholder	Case	Effect	Solution
Installation of DMAs	Internal	There were no DMAs in the city and the conditions to install DMAs needed to be defined.	Better control on losses	Decision was made when all required conditions to operate the DMA system in a sustainable way were met.
Maintenance of the water facilities in low income areas – Revenue collection from low income areas	Low income community	Low income areas were poorly supplied and people did not pay their bills. In the past, the Government and ONGs had installed water facilities in these areas but did not provide any farther maintenance.	After some years, most of these facilities are out of operation and the population is vainly waiting for new governmental assistance. Non-managed low income areas generate high level of losses, both real and apparent	Install a community participation program. Community needs to maintain the facilities and need to be empowered for that. It presently works and low income people are paying their bills.
Poly-ethylene pipes	National Technical Standard	The audit has proved that there was a high level of leakage on new polyethylene service connection pipes; the quality of the material was responsible for these leaks.	In the past, huge amount of money had been wasted to replace old GI pipes by new PE pipes without any impact on the level of real losses	The national standards for manufacturing PR pipes have been changed
Water meter replacement	National Regulation	As in many countries the period for water meter replacement was defined by national bylaws. These regulations are not always convenient and do not follow the technological progress.	Actual ageing impact on meter uncertainty was unknown. Imported meters were replaced after a short period whilst the period is longer in other countries for the same meters	Bylaws on meter replacement have been modified
Work organization	Unions	Unions have obtained so many advantages for the staff that no improvement in efficiency was possible	Leaks could not be repaired in due time and the backlog was increasing.	Union's commitment is necessary. Union's agreements were renegotiated.
Digging permit	Ministry of Civil Works	It usually takes 3 months to get a digging permit in the city: this completely jeopardizes the leak detection and repair program. All the causes for this delay for digging permit obtaining were not respectable and acknowledgeable	Many former action plans to reduce real losses had failed because of the repair delays. The backlog of leaks to be repaired was very high.	Necessary agreement with the ministry in charge.
Procurement procedures	Contract regulation	The lower cost always wins the tendering process.	This is in favour of poor equipment with shorter life expectancy.	New criteria have been accepted by the ministry for the evaluation of the tender documents.
Water supply of worship location	Religious affairs	Places of worship received water supply free of charge, without meters.	Actual consumption of these places was unknown.	Water meter were installed (but not for billing purpose).

