

## Chapter 5

### Developing Critical Thinking in Teams

#### Case Two: The Target Zero waste minimisation programme

*Today most organizations embrace the notion of groups. Groups have become the core unit in many organizations. Part of this is based on the fact (supported by research) that groups are more effective in solving problems and learn more rapidly than individuals. Yet surveys will find that few organizations and few individuals in them are particularly satisfied with the way their groups are working...Few managers have training or knowledge of group dynamics; many are quite apprehensive about groups and pessimistic about their value*  
(Wertheim 2000)

#### 5.1 Introduction

Starting in the mid-1990s the Christchurch City Council (CCC) began investment in a comprehensive programme aimed at not only achieving significant reductions in waste going to the city's landfills, but also changing the resource-use behaviours of private citizens, communities and businesses. This became known as the Target Zero (TZ) waste minimisation programme, although over time it has been an evolving and diverse collection of initiatives as the CCC experimented with the best practices to deliver desired results in different communities and sectors.

This chapter tells the story of the introduction of a self-evaluation approach to help support the effectiveness of teams of people working in one of the CCC's key initiatives – the TZ company training programme (see Box 5.1). This programme used a team-based approach to promote cleaner production in manufacturing companies. The challenge for the CCC was to improve the ability of the teams to both deliver on the short-term projects they undertook as part of the training and become advocates for long-term organisational change. One way the CCC addressed this was to contract evaluators to help them understand what was supporting and limiting the teams in their work. In 2000 this led to the TZ teams' evaluation project – a bounded initiative where the researchers/evaluators (myself and CLEM colleague Will Allen) were contracted over 2 years to undertake work that would contribute to the development of the TZ programme.

### Box 5.1 Summary of Target Zero and the teams' evaluation project

**Location:** Christchurch

**Duration:** 2000–2002

**Synopsis:** Since the mid-1990s the Christchurch City Council (CCC) Waste Minimisation Unit had invested in a series of initiatives to reduce waste production and resource consumption in the commercial and manufacturing sectors, and by the general public. Among these was the Target Zero (TZ) company training programme, which enrolled companies in resource use efficiency training that ran for 6–12 months. The programme's aim was to upskill teams of staff (3–10 people depending on company size) in technical practices designed to improve resource use. This included measuring resource flows, detecting wasteful practices, and designing, implementing and monitoring changes. The teams attended seminars, had support from technical consultants, and took on in-house projects. The training programme had up to 12 companies taking part at any one time and teams also learnt from the experiences of others. CCC recognised that the teams were the primary means of initiating change in the company and were concerned to improve their effectiveness in this role.

**Evaluation activity:** The TZ teams' evaluation project took place over 2 years (2000–2002). The aim was to improve the effectiveness of teams involved in the company training programme at both completing specific waste reduction projects, and influencing resource use practices across their parent companies. It initially involved three phases: (i) contributing to CCC's understanding of how teams functioned and the role they might play in organisational change; (ii) reviewing strengths and weakness of the TZ programme as it had been experienced by five companies, and (iii) a two-stage self-reflective evaluation designed to built competency in five teams currently enrolled in the TZ training programme (the team's evaluation checklist).

The approach used in the team's evaluation project extended CCC's knowledge of how to influence the ability of teams to manage themselves, and become agents of change within organisations. The perceived success of the self-reflection checklist meant a fourth phase of the project was added: (iv) to embed the checklist as part of the TZ teams training. Overall this project highlights the potential role of evaluation in both programme development and supporting the learning capacity of groups. The opportunity to negotiate this developmental and learning role for evaluation was critical to the projects outcomes.

**Current status:** A few years after the team's evaluation project the CCC reduced its role as a training provider and shifted emphasis towards providing advice, access to networks and resources to companies interested in changing waste practices (see the CCC website Target Sustainability <http://www.target sustainability.co.nz/Services/>).

**Role in project:** Contract manager of the evaluation project, co-design and facilitation of the team's evaluations with CLEM colleague, Will Allen.

**Sources for case story:** formal reports (Allen & Kilvington 2001; Kilvington & Allen 2001; Horn et al. 2003); TZ programme evaluations and manuals (Aldridge & Hargreaves 1999; Hargreaves & Sargent 1999; Dolamore 2000); project notes; discussion with CLEM colleagues Will Allen and Chrys Horn; PhD research conducted on Target Zero available through publications (Stone 2000, 2002, 2006a, b; Brown & Stone 2007).

The TZ team's evaluation case story is an interesting contrast to the WCMP evaluation. The distinction lies not with the seemingly widely different scale and context of the projects, since in essence both could be regarded as facing very comparable challenges, i.e. getting collectives of individuals together to learn their way through complex problems and influence the overall community/organisational practices around them. Rather, in the case of TZ, we, as researchers, were able to negotiate a learning-based role for evaluation. More specifically we were given the opportunity to trial a way to promote reflection on group process and confront the predominant mechanistic approaches to group learning.

This case story starts with an outline of the CCC waste minimisation programme. It then follows the same schema of questions as Case Story One. Firstly, there is an analysis of the critical factors that frame the social learning challenge inherent in the TZ company training programme (scoping the problem). Secondly, it outlines how an evaluation approach was introduced to the programme to help address some of these social learning needs. This section includes exploration of the underpinning theory behind the approach, how it operated in practice and the outcomes in the case of the TZ programme. Using observations from this case study I conclude by highlighting a number of issues pertinent to the use of evaluation in building capacity for social learning.

## **5.2 Overview of the CCC waste minimisation work**

Just as the early 1990s was a time of growing enthusiasm for community-based environmental management initiatives, the same decade saw emergent interest in how to embed fundamentals of sustainability into business and industry, with a particular emphasis on cleaner technology and cleaner production. The overall premise of cleaner production is to minimise the environmental impacts of production and consumption, and as such it is underpinned by concepts and techniques such as environmental management systems, environmental audits and product life cycle analysis (Vickers & Cordey-Hayes 1999). As the skills, scope and sagacity of the cleaner production movement has developed, a variety of terms have been utilised, including waste minimisation, resource use efficiency, and sustainable business. This reflects at times divergent emphasis of different programmes but

also a fundamental pragmatism – different terms appeal to the different interests of target audiences.<sup>1</sup>

In 2001, a stocktake of activities in support of environmentally sustainable business in New Zealand by MfE identified 120 different initiatives across the country (Goldberg 2001). These included projects that disseminated information on cleaner production, developed networks to support learning and change, and promoted environmental management systems. While a number of partnerships existed between sectors and agencies, the cleaner production movement was dominated by three main groups. District or city councils were responsible for around 25% of activities, followed by community associations (mostly promoting employment or community development) and industry associations (ibid.).

The CCC has been foremost of those city councils proactive in the field of waste minimisation, and the TZ waste minimisation programme run by the CCC's Waste Management Unit (WMU) has been regarded as one of the most comprehensive in New Zealand (Brown & Stone 2007). Operating since 1997 it combines a range of intervention programmes for the general public and businesses, coupled with the establishment of the Recovered Materials Foundation to process and recycle a range of solid materials, from kerb-side and business collections<sup>2</sup> (ibid.) While other territorial authorities have engaged in similar activity, it has been on a more limited scale<sup>3</sup>.

The CCC's efforts on waste minimisation for business began in 1995, and a full-time commercial waste minimisation officer (Christine Byrch) was employed in late 1996. In 1997 the CCC work was strengthened by involvement in the first TZ programme, a 2-year-pilot cleaner production project initiated and managed by ECNZ (Electricity Corporation of

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<sup>1</sup> Unlike other spheres of sustainability practice there seems to be little more than pragmatism at stake in the use of different terminology. Cleaner production programmes have been known to change their titles as they discover terminology that has more or less appeal to their target audiences, e.g. Target Zero began as a cleaner production project, changed to 'waste minimisation' as its catch call, and in 2000 considered re-branding as 'business care'.

<sup>2</sup> The foundation was established in 1997 in response to collapsed markets for plastic, paper and glass, with the aim of developing sustainable end-uses for materials recovered from the waste stream (Brown & Stone 2007).

<sup>3</sup> Brown and Stone (2007, p. 722) contrast the landfill histories and GDP growth of the Christchurch and Auckland regions from 1984 to 2003. They attribute the comparative success of Christchurch (particularly decoupling GDP growth from waste volume) to: firstly, the integrated nature of the TZ programme which addresses resource use efficiency in both businesses and residential communities; secondly, management by a single local government agency (as opposed to four separate city councils and three district councils covering the Auckland Region).

New Zealand) with support from CCC and Southpower<sup>4</sup>. The pilot TZ initiative looked at developing a model for implementing cleaner production within a region and establishing a network from which the idea could grow. It trialled the introduction of cleaner production into the workplaces of 12 companies, in two regions – Hawke’s Bay and Christchurch (Goldberg 2001)<sup>5</sup>. Based on the TZ experience the CCC developed its own programme promoting the cleaner production methodology to Christchurch businesses while retaining the Target Zero name (Brych 2000). This included a diverse array of activities ranging from workshops, networking clubs and programmes tailored to specific sectors such as retail, hospitals, and the construction industry (see Appendix 3 for outline of initiatives in the TZ programme) (Goldberg 2001; Brown & Stone 2007) and by 2003, the initial 12 businesses involved in TZ had swelled to in excess of 200 Christchurch businesses taking part in some resource-use-efficiency activity (ibid.).

### **5.2.1 The Target Zero company training programme**

From 1999 to 2004 one of the key initiatives of the work of WMU was the team-based resource use efficiency training programme for small/medium-sized manufacturing companies, which took the name of the overall programme, i.e. Target Zero. This 6-month training programme developed out of an initial 2-day intensive format. Its aim was to lift awareness of inefficient resource use practices and provide the basic skills necessary to undertake waste assessments, implement identified options, and monitor progress (Brown & Stone 2007). The established format was to get the participating companies to appoint teams of people from a range of key areas of operation across the organisation. These teams collectively took part in seminars, and site visits. Individually the teams undertook reviews (audits) of their company’s energy use and waste production, and worked through specific improvement projects, in which they were supported by TZ technical consultants. By mid-2000 there had been four rounds of the TZ programme and around 30 manufacturing companies had participated. These companies ranged in size from comparatively small (less than 10 full-time staff) to large production and export manufacturers with multiple sites across the country. The programme itself had also gone through several evolutions, with changes in format and delivery partners (see Appendix 4 for a summary of the different features of the TZ training rounds).

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<sup>4</sup> Southpower (later Meridian) is an independent electricity provider.

<sup>5</sup> TZ was the first New Zealand cleaner production project comparable with large, multi-sector projects run elsewhere, e.g. the Landskrona project in Sweden, and the Aire & Calder project in the UK (Stone 2006).

The TZ training programme was complex and posed many challenges for the programme initiators. These ranged from questions about how to best run the training workshops; how to develop the skills and knowledge of consultants and match these to the needs of companies; and how to set up the TZ teams within the participating companies that would initiate changes in practice and deliver waste reduction outcomes. It also included some questions on the overall methodology of the cleaner production programme. The WMU both debated these questions among themselves and sought external advice from researchers, consultants and other practitioners. In particular, the WMU commissioned evaluation reports which assessed programme delivery and impact and conducted follow-up assessments to check on the effect of any subsequent changes (Aldridge & Hargreaves 1999; Hargreaves & Sargent 1999). In this way, the WMU employed a continuous improvement approach applying iterative action and reflection thinking to its own programme development.

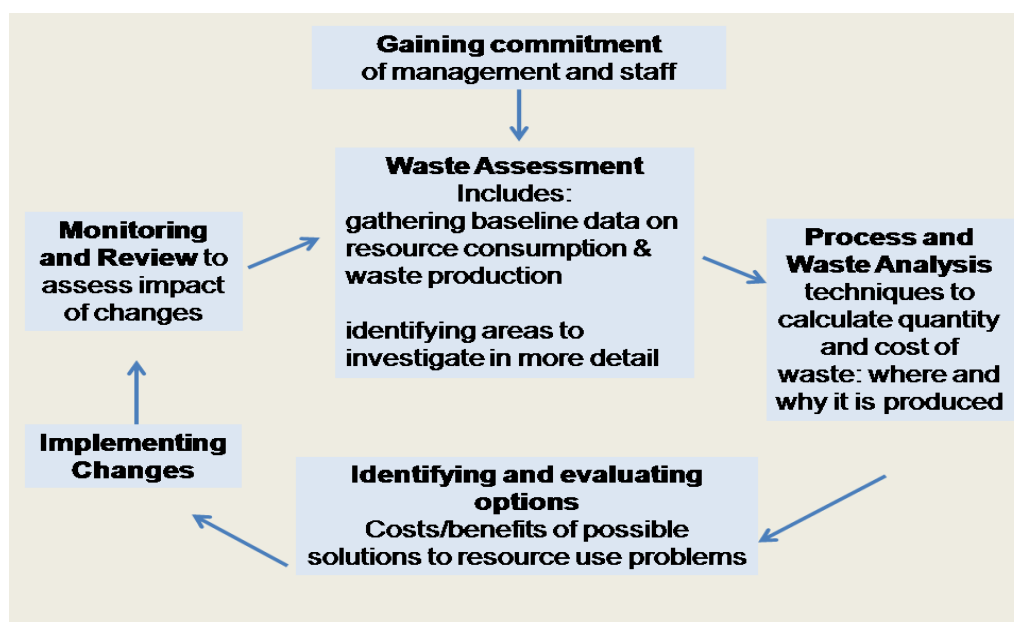
Through the regular evaluations of the TZ programme the WMU became aware that the programme was not delivering the long term change in organisations that it had anticipated. Principally they noted that companies either discontinued more efficient practices or ceased to make additional progress once the formal intervention had finished (Stone 2000). This was a catalyst for programme change and once again the WMU sought input from external researchers and evaluators. Earlier evaluations (Hargreaves & Sargent 1999; Aldridge & Hargreaves 1999) had drawn attention to the composition of the teams as an important component in both short- and long-term project success, and the WMU asked Will Allen and me if we could further this work and help the programme pull together teams within organisations that had the greatest likelihood of success.

### **5.3 Social learning challenges for TZ: scoping the problem situation**

In order to understand how a programme like TZ fits with ideas about social learning we first need to appreciate that TZ was anticipated to be an instrument for organisational change. The mechanism for this change was the company team, and the theory of action (unarticulated) was that a good strategy for getting organisations to change their resource use patterns was to draw together a group from across a company who would work together to learn new practices and act as conduits of new ideas. The missing realisation for the TZ programme was that this would require the group to not only become skilled in technical

knowledge around resource use efficiency but also to have learnt how to work together, and how to subsequently influence events across the company as a whole.

The overall framework of the TZ company training programme was based on current best-practice for cleaner production, and the methods used were consistent with those advocated in guides and manuals which had emerged from national and international case studies (Stone 2000). It had theoretical origins which match those of the Total Quality Management (TQM) approach to business management, particularly its emphasis on ‘continuous process improvement’ which increases the transparency and monitoring of company activities with a view to ensuring all areas of company operation focus on quality. The TZ framework was consequently based on six steps (illustrated in Figure 5.1), starting with (i) gaining commitment; and then working through stages of (ii) assessing waste, (iii) analysing causes and sources of waste, (iv) identifying and evaluating possible solutions, (v) implementing changes, and (vi) monitoring their effect.



**Figure 5.1 Overview of Target Zero, cleaner production methodology** (from Dolamore 2000).

Significantly, the TZ programme process (as it was run in 2000) relied on a cyclic approach to the review of the company’s waste generation. Teams were expected to go through several laps of waste assessment and problem analysis. For many participating organisations this represented a new approach to dealing with problems. Termed ‘measure to manage’ this effectively slowed down the process of instituting changes by inserting steps which caused

people to first assess the situation and then weigh up the options for addressing it. This meant not only a greater degree of likely success but also the ability to track the improvement and to learn from the process. Ideally this would become a continuous practice within the organisation.

However, while it is clearly stated that *gaining commitment of management and staff is one of the key ingredients for a successful waste minimisation programme* (Dolamore 2000, p. 4), in contrast with the cyclic learning approach to technical improvement, this was treated as a one-off event not requiring ongoing attention. This points to what was, in effect, a substantial deficit in the TZ programme, i.e. attention to organisations as social entities, and alongside this, a workable theory to support a change management process. In its primary reliance on technical and process innovation, the programme had incorporated little information on how organisations can successfully introduce changes, the social organisational norms and practices that influence this, and the mechanisms and skills important to any programme that is wrestling with changing how organisations and the people within them behave.

Similarly the programme's criteria for monitoring success (e.g. waste reduction, company cost savings) gave no feedback to the participating companies or the programme itself on likely long-term shifts in organisational behaviour<sup>6</sup>. Stone (2000) indicates this was a general feature of the national and international case studies on cleaner production, pollution prevention and other similar concepts that formed the basis of the TZ programme. The most common types of changes that are demonstrated by such case studies are changes to the type, quality or quantity of resources used; improved maintenance or housekeeping; equipment modification or substitution; changes to processes; and, more recently, changes to products and services. In Stone's view, while information on these technical types of changes is valuable, it is unlikely to be enough by itself to bring about cleaner production in organisations, and what is largely underexplored in these studies is the human dimensions of organisational change (ibid.).

Unlike community-based environmental management, cleaner production can draw on a readymade body of literature which has developed out of the need to understand and

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<sup>6</sup> This absence of support for social processes of change was borne out by an investigation into training needs for improving business environmental performance which asked a number of Christchurch businesses about their experiences with environmental and/or cleaner production programmes (Horn et al. 2003).



influence drivers for innovation in business, i.e. the social/psychological theory and practice of understanding how organisations function, learn and change (termed organisational theory, or organisational learning)<sup>7</sup>. However, at the time the TZ programme was developed it appeared that only a subset of this literature (management theory) had been applied to cleaner production programmes, through the introduction of management systems which established steps of creating policy, making plans; conducting audits, and the identification, assessment and implementation of options for improvement. The CCC Target Zero company training programme is based on such a management system approach (Stone 2000).

Advocates of paying greater attention to organisational theory in cleaner production programmes argue that it can provide so much more. For instance, not only can organisational theory offer insight into non-technical barriers to the uptake of cleaner production approaches in organisations, but organisational learning, and change management theory and practice can provide options for *how* they can be overcome (Stone 2006a). However, by and large cleaner production initiatives have employed mechanistic and hopeful rather than theoretical approaches to address the social processes of embedding their change message in organisations. Consequently, while the introduction of new management systems can significantly influence the uptake of cleaner production, these programmes are not well equipped to deal with barriers that may be linked to organisational culture and employee attitudes (Stone 2000) – the outcome of this being the failure of cleaner production programmes to deliver the organisation wide cultural shifts that proponents optimistically envision. Typically cleaner production programmes are naive around:

- Organisational barriers, e.g. non-involvement of employees, vested decision-making powers, emphasis on production, high staff turnover, lack of recognition
- Systemic barriers, e.g. poor record keeping and reporting, inadequate and ineffective management systems, lack of systems for professional development, ad hoc production planning

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<sup>7</sup> Organisational theory brings together many branches of organisational and industrial psychology and sociology. Together they cover areas such as organisational structure, and operating environment; decision-making and power; the character of personnel; and sources of opportunity and conflict; and, the way learning and development occur within organisations (Brown & Stone 2007)

- Attitudinal barriers, e.g. lack of good housekeeping culture, resistance to change, lack of leadership, lack of effective supervision, job insecurity, fear of failure (ibid.)

This critique of cleaner production programmes could be applied to the CCC TZ company training programme. In this programme the teams of participants undergoing training were regarded as vehicles for not only the successful completion of their specific resource-use efficiency projects, but also the wider dissemination of the sustainability vision within organisations. Teams were expected to champion work within the organisation, communicate upwards and across the organisation, and be able to initiate changes, armed with technical knowledge in resource use assessment, but not with any specific social or organisational skills.

It would be fair to say that, at the time, this expectation of the role the teams might play as ‘ambassadors’ and ‘change agents’ was not clearly articulated, rather anticipated as a natural progression of the TZ training experience. As such it was not planned for by the inclusion of any measures or activities in the training programme that were based on known approaches to organisational change. Nor were participants significantly prepared for their role in promoting actions that would run against existing organisational social norms and practices.

Following a review of the national pilot TZ programme Stone comments (2006a, p.7):

*If staff are inadequately equipped (particularly in terms of motivation, knowledge, skills and experience) and do not have the resources (particularly in terms of authority and support), they are unlikely to be prepared for the difficulties they will encounter during the course of what is likely to be a significant change programme. This is confirmed to some extent by the relative ease with which technical problems were able to be overcome in the TZ programme (most participants had technical backgrounds), in contrast to the difficulties encountered in overcoming non-technical problems.*

However, through the creation of teams, with membership (and potentially networks) ranging across the company, the TZ programme approach could be regarded as establishing ‘communities of practice’<sup>8</sup> – an increasingly recognised structure of value in organisational learning because of their capacity to link learning with practice in a way that is contextually

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<sup>8</sup> A community of practice is a formalised approach to learning and development among a group of practitioners with common learning goals (Lave & Wenger 1991)

relevant to each organisation. Rather than simply vehicles to carry out projects the TZ teams can be regarded as learning groups, which, with some support, may be able to influence Stones' (ibid.) critical factors for organisational change.

### Summary of the social learning challenges of the Target Zero programme

Figure 5.2 represents a summary diagnosis of the critical elements in the social learning challenge for the TZ company training programme. A strength of the programme was its learning-based approach to resource use efficiency. Company teams were given the means by which to unpack their own specific problems and construct solutions. However, because the TZ programme lacked overt recognition of the company teams as the vehicle for long-term organisational change, it had not yet incorporated any means by which teams could be prepared for this role. What the WMU observed, through several seasons of the training programme, was an uneven uptake of fundamental changes to resource use practice by the companies who took part in the training. Stage II of the teams' evaluation project, which reviewed the experiences of past TZ participants, suggested an answer to this: the more successful cases of significant change took place in companies that already had a strong commitment to learning and innovation. Thus the teams were encouraged and even already skilled in contributing to organisational development.

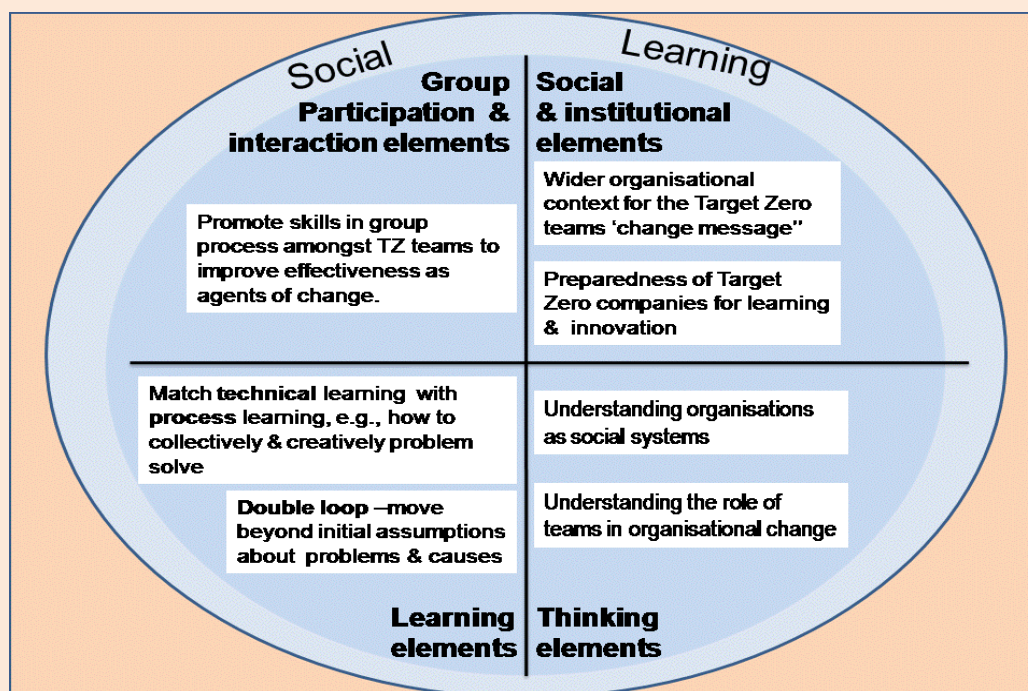


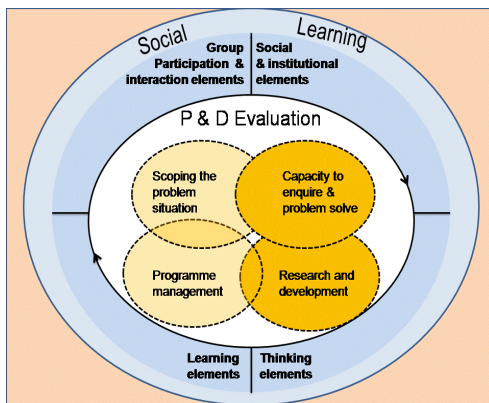
Figure 5.2 Components of the social learning challenge for the TZ programme.

The functioning of the teams is clearly central to the TZ programme's ability to achieve, and the programme placed emphasis on setting up appropriate teams. However, to enable teams to complete projects and foster change within their organisations required more than a mechanistic emphasis on getting the right team structure. Teams needed support to operate effectively as a group. Also, in addition to technical knowledge, teams needed skills in how to communicate and interact with others in the company around proposed changes. Thus the challenge to the TZ programme was to incorporate a way to build the capacity of the teams that gave them new skills in understanding group processes and managing themselves; and a means to interpret and work within the various institutional values and routines in their organisations.

An approach to developing team capacity would need to foster the same critically observant practice to the challenge of working together and solving problems already applied to the technical aspects of waste minimisation, i.e. identify the problem areas, analyse and interpret these, develop options for resolving the problem based on the team's strengths and resources to hand, and monitor the effectiveness of the action. This practice, as in the technical side of waste minimisation, should aim to move participants beyond first assumptions about problems and solutions (double loop learning) In short the current emphasis on technical training needed to be matched by process learning that was similarly grounded in participants' own experiences.

Furthermore, to achieve change within their home organisations the teams needed more contextual support from the TZ programme. Beyond recognising the importance of senior management sponsorship within organisations, and acting to secure this in the recruitment phase of the programme, the efforts of teams needed to be backed up by company-wide messages that promoted cultural acceptance of innovation and in particular recognition of the resource use efficiency idea.

## 5.4 The TZ teams' evaluation project



Using the framework of intersection between evaluation and social learning (see Figure 3.3 repeated here), the TZ teams' evaluation project could be said to contribute to the needs of the TZ programme in two predominant ways. Foremost the evaluation was designed to promote **capacity to enquire and problem-solve** amongst the TZ teams. However, the first requirement of the evaluation as

set out by the WMU was that it would support **programme management and development** through **research** on critical factors about how the programme operated. This chapter review will also illustrate how the evaluation approach supported the TZ teams in their capacity to **scope the problem situation**.

The functioning of the TZ company teams is central to what companies are able to achieve during their participation in the programme, and one way to influence team functioning is to ensure certain factors are built in to their set-up. The original outline for the TZ teams' evaluation project, set by the WMU, was to verify and expand on earlier evaluations (conducted in August and December 1999) which focused on the structure and set-up of TZ teams, hoping to establish what would constitute an ideal team. The first report (Aldridge & Hargreaves 1999) noted:

*...for each company to maximise their success in the project, they need to have high staff commitment, minimal background activities that will impinge upon the project, and a cleaner production team composition including a mix of senior and middle management and production staff.*

While the second report (Hargreaves & Sargent 1999) made further recommendations:

*Use a template to educate/inform participating companies on the 'ideal' cleaner production team structure to optimise success and ensure information is passed to them. One suggestion includes:*

1. *Staff that have a personal commitment to waste reduction, recycling, etc.*
2. *At least one senior manager and/or middle manager*
3. *Production staff*
4. *Sufficient team members so that tasks can be shared, reducing the 'time burden' ...suggested is 2% of the total staff in the company.*

By establishing a team based on the four-point template suggested by the 1999 evaluations the WMU believed they were influencing: (i) enthusiasm for the project, (ii) the team's link to management, (iii) influence across key parts of the organisation, and (iv) manageable workload. However this one-off attempt at influencing team functioning had no means of assessing actuality against intention', i.e. were the teams operating the way they were intended or in the most effective way to achieve project goals? For instance does the management representative on the team actually provide the links to key decision-making that are needed? Is the team maintaining enthusiasm for their tasks? Is the team membership sufficient to manage the workload?<sup>9</sup>

The TZ programme needed to shift focus from getting the 'right team structure' to maximising the effectiveness of the team at doing its job. This in turn relies on knowledge of groups as dynamic entities that go through phases of development with different needs at different times, as well as some way of enabling both the project consultant and the team to assess how well they were going and what their changing needs might be.

By working through these issues with the WMU we [the researchers] were able to propose a change in the teams' evaluation project brief from advising on the best team make-up; to providing the WMU with information and tools to assess and improve the functioning of teams as they participated in the programme. What was subsequently agreed with the WMU was that there would be three parts to the TZ teams' evaluation project (with a fourth part added as a consequence of how the project evolved (see Figure 5.3). These were:

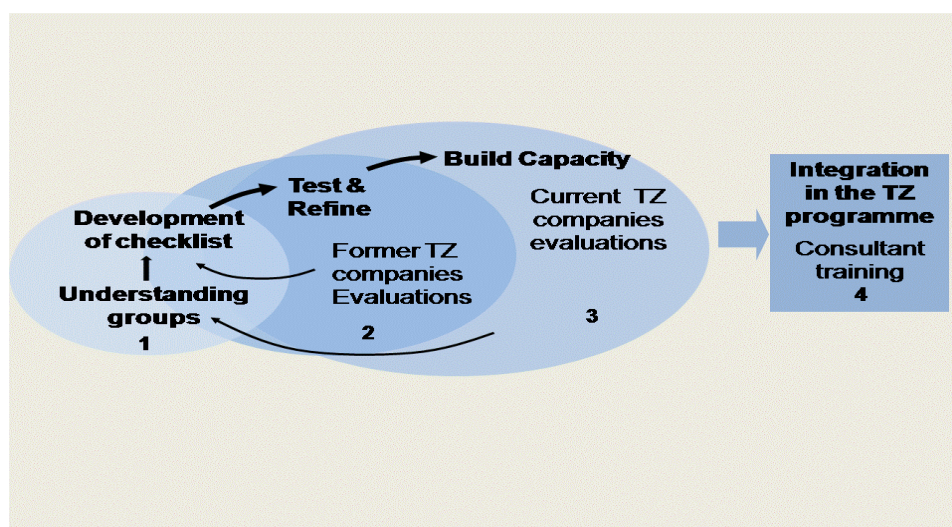
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| Stage 1 | Develop an understanding of groups in the context of organisational change and from this design a checklist-based evaluation approach as a basis for enabling consultants and teams to assess the strengths and weakness of their performance.   |
| Stage 2 | Trial the checklist through interviews with teams who had completed TZ company training in the past and with the TZ consultants. This would provide feedback on the evaluation approach, and also provide contextual information on the issues teams had faced going through the TZ programme. |

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<sup>9</sup> This has a parallel in multi-stakeholder environmental management initiatives, where initiators concentrate on ensuring there is representation of all relevant interests at meetings in the hope that this will guarantee all views on the issues are incorporated – not anticipating how existing power dynamics will affect this.

**Stage 3** Use the now revised checklist in a two-stage participatory evaluation with the teams currently enrolled in the TZ programme. The first session would be held at the beginning of the formal training, and the second, at the end (i.e. 6 months later) as they prepared to carry on independently.

On completion of stage 1 a report was presented to the WMU on why teams were regarded as important elements in achieving organisational change, and the ways in which they could be prepared and supported in this role (Allen & Kilvington 2001). At the end of stage 3 a report on the findings from the evaluations of past and current programme participants was also presented to the WMU (Kilvington & Allen 2001). This report included feedback on what the teams as a whole observed to be the major challenges and also outlined the role of the participatory evaluation process in strengthening the effectiveness of the TZ teams. Following these report-back sessions with the WMU a fourth and additional phase was added to the project. This was to help embed the evaluation approach as part of the suite of training and skills development offered to teams taking part in the TZ programme.



**Figure 5.3 Four stages of the TZ teams' evaluation project.**

Overall this new approach to the evaluation negotiated with the WMU included both a conventional review of relevant literature and a gathering of general information about the teams and how they were functioning. However, importantly, it was not just an assessment of the status quo but rather was designed to directly contribute to the awareness, learning and ability of the teams taking part. An important factor in establishing this new role was the openness of the WMU staff to different ways of learning about the TZ programme.

### 5.4.1 Developing an approach for working with teams and organisational change

As the TZ teams' evaluation was intended to provide generic information for the WMU about how teams were currently operating, as well as support the capacity of the participating teams, the design of the evaluation approach rested on theoretical understanding of two areas: (i) working groups and their role in organisational change, and (ii) P & D (participatory and development) oriented approaches to evaluation, particularly suitable methodologies for the TZ situation, where we would have to work with a wide range of teams, across very different organisational contexts.

#### Developing an understanding of groups

The WMU instinct about the importance of groups in achieving organisational change has wide support in organisational learning literature and practice. Many tasks facing organisations, including instigating waste minimisation improvements, cannot be implemented by individuals working alone. While a group approach is not always necessary, or even the most efficient way to deal with all organisational change issues, situations where problems and decisions involve a degree of complexity and uncertainty; where there is potential for misunderstanding and conflict; and where widespread acceptance and commitment are critical will call for group collaboration (Wertheim 2000).

From conversations with the WMU and their consultants, review of programme material, and by attending TZ workshops, it was apparent that the programme suffered from a lack of dynamism in its approach to both teams and the organisational change process. Current interventions in the organisational change process were at two points. The first was when WMU promoted the possible benefits of the TZ programme to potential participant companies to elicit 'buy in', and the second when companies received instructions on how to set up a team (e.g. select members from across the company, include management staff). From then on teams were typically focused on the task of identifying and eliminating poor resource-use practices in company procedures. The training workshops for the teams included some generic material on likely obstacles they might encounter to the introduction of new ideas (such as examples of typical blocking tactics, e.g. *we've tried this before and it didn't work*), but the main thrust of the programme was to ensure the transmission of technical ideas about waste minimisation to the teams and support them in undertaking projects within their own companies.



**Table 5.1 A three phase model for understanding teams and organisational change**  
(Allen & Kilvington 2001, p. 6)

A model for a team-based approach to organization change		
Phase 1: Getting started	Phase 2: Teamwork	Phase 3: Evaluation and adjustment
<ul style="list-style-type: none"> <li>• Organisational needs analysis</li> <li>• Executive approval and alignment</li> <li>• Establishing the team</li> </ul>	<ul style="list-style-type: none"> <li>• Setting goals and objectives</li> <li>• Clarifying roles</li> <li>• Managing the team</li> </ul>	<ul style="list-style-type: none"> <li>• Evaluating progress towards goals</li> <li>• Evaluating team process</li> <li>• Adjust strategies</li> <li>• Communicate progress and new goals</li> </ul>

The programme needed a way to understand how teams fit with organisational change, and how they could develop a team's ability to promote changes in practice that reached beyond their own specific projects. To this end the TZ teams' evaluation project offered the WMU a simple model (Table 5.1), which described a group approach to organisational change in terms of three phases: (i) getting started, (ii) team work, and (iii) evaluation and adjustment, (Allen & Kilvington 2001).

*Phase 1 – Getting Started* brings attention to issues that need to be examined at a management level before organisational change is initiated. These include identifying and agreeing to the need for change, aligning the new cultural values with the organisational structure, and getting the right people on to the change management team. This phase is about recognising that **the team** is one component within a wider organisational approach to support the change process, and not the whole process itself (ibid, p. 6). The implication for the TZ programme is that team efforts in championing waste minimisation at different levels of the workplace needed to be complemented by efforts that build a supportive environment within which the teams will work. Examples of this include widespread company messages about waste minimisation (e.g. switch-off-power programmes), and open acknowledgement from senior management of both the need for, and value of the change effort.

The *getting started* phase also includes consideration of how to set up the team, addressing questions such as 'who should participate?' and 'what resources will be needed?' A set of points to consider in setting up a TZ team were also offered to the WMU (ibid., p. 7). These were posed as prompts for reflection rather than templates, in recognition that companies need to consider the appropriateness of their own responses rather than settle for off-the-shelf answers. For example, under 'who should participate' several questions were included, such as 'What are the pros and cons of calling for volunteers? Who is good at networking in

the organisation? How long is the team required for – is it a permanent structure or intended to be flexible and adaptive?’

From our experience interviewing and conducting evaluations with companies taking part in the TZ programme, at best only half of the factors listed for setting up teams were taken into account and the team composition was rarely revisited once team projects and goals had been determined. Most teams were allocated time and facilities for meeting but this was not always negotiated throughout the company and team members might find that their supervisor or immediate colleague had not been informed or steps taken to accommodate the employee’s temporary absence. Rarely, if ever, was access to decision-makers and organisational decision making processes considered as a resource for the team.

***Phase 2 – Teamwork*** draws attention to activities needed to enable the group of people brought together to function as a viable team with established norms of behaviour and a workable level of personal trust. Teamwork requires clarification of both team vision (a reminder of the team purpose and direction) and goals (targets that may be met and reset during the life of the team). Some thought also needs to go into the allocation of roles and tasks and the division of labour. At this point it might become necessary to relook at the team membership asking ‘how well do the tasks meet the skills of the team?’

Another important aspect of teamwork is supporting the different stages of group development. It is now widely accepted that groups, despite differences in makeup and purpose, share stages of ‘getting started’, ‘getting to work’, ‘maturity’ and ‘ending’<sup>10</sup>. Active facilitation is often necessary to support groups through these phases, particularly the forming stage where groups question purpose and look for leadership. Unaddressed issues at this stage can lead to a need to revisit as the group loses sense of direction (ibid., p. 11)<sup>11</sup>.

Understanding vision and goals, allocating roles and tasks and facilitating through group development stages are standard practices for fostering groups towards the achievement of their ambitions. Less common, but also important for teams involved in initiating changes in organisational practices, is the need to foster the group’s capacity to bring in knowledge that

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<sup>10</sup> This is often referred to as *forming, storming, norming/performing and dorming* (Hunter & Bailey 1992).

<sup>11</sup> Material prepared for the WMU on group processes included a table of facilitation needs for different stages of group development (Allen & Kilvington 2001, p. 11).

enables them to consider the situation from a new perspective and challenge their habitual frame of reference. Encouraging new thinking within a group is not a straightforward matter. As the evaluations of the TZ teams revealed this was influenced not simply by the availability of new information but by the confidence expressed by team members to try out ideas – itself dependent on the openness and trust built within the group.

*Phase 3* covers the *evaluation and adjustment* components of the team-based organisational change process. Monitoring, adaptation, and review are at the heart of the TZ programme – at least in regards to understanding and mitigating wasteful resource-use practices. Phase 3 highlights the need to monitor both task and process, i.e. to track the **task** of changing production processes to minimise waste and the **process** of developing a successful long term change programme within the organisation. This includes finding appropriate measures for intermediate stages along the way to achieving the larger vision, which in turn relies on the understandings developed in phases 1 and 2 (e.g. how clearly the goals of the team have been articulated and how much thought has gone into team structure). Evaluation, as an integral part of the change management process, can be regarded as a positive learning tool, and a means to problem-solve that fosters the ability not merely to identify right and wrong practices, but to isolate important issues and work through them.

### **A participatory developmental evaluation approach**

As we went about researching for the WMU how the effectiveness of teams could be improved we were conscious that we wanted to work **with** teams, rather than just ask them questions. Thus, referring back to Duignan's (2003) conceptual levels of evaluation terminology (Chapter 3, Table 3.1) the value orientation of the evaluation approach was that it should be empowerment and collective-learning based (i.e. in line with evaluation approaches aimed at change and development, outlined in Table 3.2). Specifically it should provide participants with knowledge about their own strengths and weaknesses as a team, as well as provide consultants and the WMU with information on cross-team issues for improving programme design and management.




Information derived from stage one of the TZ evaluation project (developing an understanding of groups) provided a theory basis for considering what was important to group functioning and performance as they worked to support organisational change.

However, the challenge was how to introduce this dense theory about groups to teams of people who were most interested in the practical, i.e. ‘getting on with the job’ and quite likely to be short of time. As discussed in Chapter 3 (section 3.5.2) checklists can be an economical way of portraying large amounts of information that is easy for stakeholders to engage with. With this in mind we set about rendering the information on teams – their structure, skills, resources and ways of working – into a checklist of factors grouped in four sections (see Appendix 5):

- |                             |                   |
|-----------------------------|-------------------|
| 1. Results and productivity | 3. Team operation |
| 2. Team structure           | 4. Team skills    |

However, it would not meet our goals of providing teams with knowledge they could work with, or the WMU with a way of supporting team development, to simply hand over the checklist to the consultants or the WMU. Nor would it be sufficient to use it as a basis for questioning teams as external evaluators to assess how well they were performing. Instead we decided to couple the checklist with a facilitated team reflection process that would help teams themselves identify what aspects were relevant to their situation, so they could review their own performance. In designing this process we again looked for a way to appeal to practical busy people. What was required was an approach that was straightforward, but had sufficient of the inspirational quality of good questioning (Chapter 3 section 3.5.2) that would allow for a fluid interchange between participants which can surface assumptions, unpack problems, uncover options, and thus prove transforming.

We subsequently came up with a workshop process that took 1 to 1.5 hours (see Appendix 6). It began with a team review of their goals, following which the checklist of factors important to teams was introduced, and the teams were prompted to discuss each factor, decide whether it was relevant to them and, if so, how well it was currently being addressed. Team members collectively ranked each factor using a simple traffic-light system:

-  **G**     *This aspect is well covered*
-  **Y**     *We need to think about this as it maybe a limiting factor*
-  **R**     *This factor needs to be addressed as it is limiting team performance*

At the end of the session the team were then invited to discuss strategies for addressing the areas where they had greatest concern. The discussion around the checklist was intended to

guide thinking about the key things that make teams work. It was not designed to rate how effective each team has been, rather it was to help participants critically reflect on what had been effective for them and what they would like to do differently in the future (Kilvington & Allen 2001).

The process needed to allow for at least one cycle of reflection-action-reflection so that the teams could revisit any of their main issues to assess the effectiveness of their strategies to address them. Consequently the facilitated sessions were run at the beginning of the TZ training; and 5 months later towards the end of TZ programme. All teams received copies of the notes taken of their evaluation that were confidential to them and not copied to the TZ programme coordinators or to their companies. Alongside the self-reflective evaluation processes, interviews were held with consultants working with the teams in the TZ programme. This was to give further context to the generic information on findings common across teams provided to the WMU.

Aspects of three branches of evaluation theory and praxis discussed in Chapter 3 were made reference to in the design of the TZ teams' evaluation approach. Firstly, the use of group theory (in particular the role of groups in organisational change) formed the basis for the checklist. The use of theory, not just to understand how well a programme functions but to better inform the theories of action upon which the programme is based, is a fundamental tenet of theory-based evaluation (Weiss 1995; Brickmayer & Weiss 2000). Secondly, a principle of participatory evaluation (particularly empowerment evaluation) is the transfer of the learning potential of evaluation into the hands of the programme participants (Fetterman 1996). Thirdly, FG evaluation establishes a legitimacy for evaluation practice which is based on the importance of context and individual interpretation of knowledge (Guba 2004). Arguably the TZ teams' evaluation was also a formative evaluation since a way to both capture generic cross-team information for the further development of the TZ programme, and to pass this on to the WMU, had been built into the project.

## **5.5 Outcomes of the TZ teams' evaluation<sup>12</sup>**

During the TZ teams evaluation project nine different company teams took part in at least one checklist-based reflection exercise. These teams were divided into two groups. Group 1

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<sup>12</sup> This section uses letters to denote teams. Appendix 7 lists teams and their letter code. Reviewers copy only.

was made up of five company teams who had been involved in past TZ training rounds. Group 2 included those four companies just beginning their 6-month training. Follow-up reflection exercises were only held with companies currently involved in TZ training (see Table 5.2). Overall the evaluation highlighted three areas where teams needed support in order to play a useful role in influencing organisational change within their home companies:

1. **Task** – the ability of teams to achieve during participation in the TZ programme
2. **Process** – development of teams during and beyond participation in the TZ programme
3. **Environment** – the interaction of the team with the rest of the organisation, and their networking with those outside the company.

**Table 5.2 Teams involved in TZ teams' evaluation**

<b>Group 1</b> – Company teams involved in past TZ training programmes	<b>Group 2</b> – Company teams involved in current TZ training programme
<b>Ravensdown Fertiliser Co-operative</b> <i>First Target Zero programme</i>	Also involved in current TZ training programme
<b>Tait Electronics</b> <i>First Target Zero programme</i>	<b>BICC General Cables NZ</b>
<b>Reflex Products</b> <i>Second Target Zero programme</i>	<b>AEP Flexipac</b>
<b>GL Bowron &amp; Co.</b> <i>Second Target Zero programme</i>	<b>Quality Bakers</b>
<b>Canterbury Spinners*</b> <i>Second Target Zero programme</i>	<b>Canterbury Laundry Service</b>
<b>The Christchurch Star</b> <i>Third Target Zero programme</i>	
*Phone interview with team leader only	

### 5.5.1 Task – ability of teams to achieve during participation in the TZ programme

The overall set-up of teams and provision of training and advice through TZ was designed to help teams operate successfully and to achieve during their time with the programme. Teams were particularly well served by the 'step by step' process applied to problem solving; provision of consultants who ensured regular meetings took place and maintained momentum on work; bringing teams together in workshops where projects could be discussed and new information sourced; and not least, the CCC acknowledgement of the success of the team projects which offered encouragement that was not always echoed within their own companies. Moreover it revealed that many teams were developing skills,

ideas, and strategies in a range of areas beyond technical expertise, including how to combat defensive behaviours in response to their proposed changes, and ideas about what kind of staff it was important to recruit into the team.

Motivation, for task completion and ongoing activity, was the greatest challenge for the groups. It was a tenet of the programme that *seeing ideas translated into action* and the realisation of savings for the company influenced the sense of achievement of the team itself. Furthermore, that the communication of these successes to management will encourage the continued support and expansion of resource use efficiency throughout the company, and lead to a positive attitude among other staff towards TZ work and waste reduction in general. However the need to '*have a few achievements under our belt*' to maintain team motivation was not always a direct match with higher company goals to make major savings. One company we interviewed stated that their senior management held little regard for the small \$2,000–\$3,000 savings that had been made, while yet another stated that the size of their organisation meant that savings of \$18,000 were considered negligible – a view echoed in different forms by others. The emphasis on money saving as the primary goals for TZ meant that little was done by teams to celebrate small steps and less glamorous activities, even though the visibility of an activity, even at small scale – such as kitchen waste recycling, increases staff involvement and awareness and ultimately satisfaction and can play a role in spreading a culture of acceptance around waste minimisation and resource use efficiency.

### **5.5.2 Process – development of teams in the TZ programme**

A number of models exist that describe group development. Pretty and Frank (2000) offer a way of measuring group maturity which is based on the degree to which groups move from *dependence* and task focus through *independence* and an emergence of new capabilities and networks, to a stage which they term *interdependence*, where the individuals within the group are self-reflective, and the group as a whole is involved in shaping their own trajectory using self-generated networks and resources. The group stages are progressive (i.e. one stage can lead to another) but progression is not taken as inevitable. Teams need deliberate and conscious effort to develop to a stage where they self-maintain let alone develop to a point where they are more aware of the value of the group itself and its capabilities to problem solve, become capable of developing responses to shape their future, and continually look to strengthen their collective abilities (ibid.).

From our evaluations it was clear that monitoring team performance (i.e. process issues), as opposed to team achievement, was an area that few teams, and even consultants, were comfortable with. The consequence of this was that while the TZ teams commonly thought they had a good relationship between the identification of tasks and the skills and capacity to complete them, they were typically unaware of the need for a wider set of skills such as how to foster a learning environment at team meetings and what steps to take to catalyse even small-scale change within their organisations.

When asked during the evaluations ‘how’ or ‘if’ they paid attention to team functioning the common response was *we get things done, so there is no need to worry about it*. However, the counterpoint to this is that it is equally important to find ways of improving the efficiency of how a team operates as it is to form a team to improve the efficiency of the way a production line uses resources. For those teams that were pilots for further spread across the company, or as in some instances, where team goals included upskilling team members to subsequently become leaders of their own teams, it is clearly important to be able to identify what were problematic and successful aspects to how the teams functioned. During interviews with TZ consultants we learnt that companies could register more than one team to successive rounds of TZ training and these teams could vary substantially in their performance – one being highly motivated and successful and another failing to complete projects. Without awareness of team performance issues and how to address them this variance was a complete mystery to the teams, company and the WMU!

From our interviews and evaluations we encountered only one team that had successfully developed beyond a dependent and task-focused phase (Team B). In this situation original team members had themselves gone on to become leaders of their own teams, passing on the methodology and approach to waste minimisation problem solving developed through the first round of TZ training. Furthermore, these new teams spawned subgroups that developed and managed their own projects. This example and indeed this team were exceptional in a number of ways. During the evaluations, we judged them the most reflective on their performance; and they were the only team that did not cite maintaining motivation as an issue. The parent company of this team is highly reliant on innovation to maintain its market edge. This hints at a finding in Stone’s research (2002) that cleaner production programmes made the most long-term gains within organisations with an existing culture that was receptive to change and learning.



### 5.5.3 Teams and their environment

The strength of relationships between the team and the parent organisation (from all levels of company operation through to management), and externally with associates that are able to contribute creative ideas and even act as collaborators, is a fundamental ingredient in how effective teams can be in influencing wider organisational change. These networks effect both task achievement and team development. In Pretty and Frank's (2000) model of group development mature, *interdependent* groups are characterised by the skill with which they build and utilise contacts within the system in which they operate.

While teams commonly responded confidently about the strength of their internal connections during the evaluations, these somewhat glib responses were often later negated by stories of lack of management interest and support, or difficulties in securing the cooperation of co-workers. Indeed, during the TZ programme teams were clearly learning the value of networks, sometimes through a failure in a project. For example, one team relayed the story of uncovering a source of waste that could be addressed, thereby significantly reducing the quantity of product that needed to be used, but they failed to ensure this information was passed on to the person responsible for purchasing!

It was common that the task of communication within the company was not assigned to anyone within the team; there was an assumption that when necessary this would somehow get done. However, communication of project outcomes, team goals, and overall programme aims across the company cultivates the ability of the team to continue and the work to expand. Furthermore the demands of communication can often be too complex to rest on ad hoc arrangements. Many companies operate across multiple sites, and run 24-hour plants. Some of the companies were extremely large, with up to 450 staff on one site. The TZ teams therefore often face both geographic and temporal communication issues, and the marginalisation experienced by teams not based in head office sites was evident.

During the life of the TZ training the teams were conscious of the benefit of being able to interact with teams from other companies, visit their sites and attend talks on waste minimisation work. This external networking almost universally diminished after the TZ training was completed. Although the CCC offered companies membership of the TZ club, attendance at these meetings tended to be limited to management level rather than the full spectrum of team members.

#### 5.5.4 Response to the evaluation approach

As researchers trialling a new approach to team evaluation we were keenly interested in the team responses to the process we used. As with so many of the findings from the evaluations, this was highly variable from team to team, and dependent on both the openness already established in the group and the familiarity with some form of reflection activity.

Looking across the teams it was apparent that those in what Pretty and Frank (2000) refer to as the *dependent phase* (the majority) were focused on task achievement and regarded process issues (e.g. relationship building, networking, monitoring performance) as a distraction to the ‘real job’. Because of the self-reflective nature of the evaluation, this lack of interest in process could lead groups to rate themselves highly on their performance in **all** areas of team activity – reflecting an attitude of ‘if it doesn’t seem that important we are probably doing just fine’. In contrast, teams that were aware of both task and process issues were more interested and aware of their shortcomings and looked for areas in which to improve. Accordingly, they tended to rate themselves more in need of improvement. Thus ironically, Team B, which had shown the most impressive use of the initial TZ training by using their new skills in team work and waste minimisation to drive initiatives across the rest of the company, were among the most self-critical during the teams’ evaluation – seeing numerous areas in which they could improve their performance.

The challenge this presents is best illustrated by two contrasting team evaluations. Team H and Team I came from comparable sized organisations. The parent company of Team H regarded their enrolment with TZ training programme as a pilot for potential use at other sites, and the team goals included developing team skills, and having an influence across the company. Team I regarded senior management interest in their work with some uncertainty, sensing there was an expectation that they would deliver but not necessarily trusting they had the support to do so. Team H seemed to regard TZ as an opportunity while Team I saw it as an extension of work they should be doing already and had no wider goals for influencing change in the organisation.

Team H used the evaluation as a chance to have an open and positive discussion about important elements of their functioning that could be improved, in particular to critically reflect on their leadership. Their current team leader was an important link to management

but was too stretched to perform other leadership roles associated with running the team and getting projects going. Following the evaluation they repositioned their leader as an *advocate* and distributed other leadership roles within the team. This presented a strong contrast to the Team I evaluation, which was dominated by an individual that was clearly uncomfortable with the idea that the group should expose any weaknesses and was a 'blocker' to group discussion. The team had insufficient trust and openness as a group to discuss any issues, and presented to us as unsure what value the evaluation offered. During the evaluation they did not rate any issue as worth further attention. Their team self-score had the highest number of 'green lights' and yet this team was among the least successful in the training round at delivering on waste minimisation projects.

From the second round of evaluations (with companies in group 2) it was apparent that some learning about teams and team process had gone on. Generally we noticed that the teams we interviewed were more self-critical and less glib about their potential and the difficulties they might face in working together. We came across specific examples of teams having changed what they were doing as a result of thinking through a problem uncovered by the evaluation process. Two teams mentioned they considered the first evaluation we had undertaken with them to be a *training experience* that got them thinking about teams. Team A regarded the evaluation exercise as a chance to undertake planning and develop strategy – something they had not previously done as a group. There was also an increased acknowledgement that monitoring processes goals, i.e. keeping track of how well they were doing as a team (something not thought of before the evaluation), would be useful.

However, we also observed that when a team made a discovery that something was not working this did not necessarily lead to doing anything about it. In our observation the degree to which a team was interested and motivated to take on issues that became apparent to them through the evaluations was influenced by the degree of responsibility and commitment they had towards the TZ initiative, and the degree of self-direction and trust the team granted within their organisation.

The evaluations also revealed that the members of the TZ teams were motivated by many other goals than those of making cost-savings and reducing resource use and/or increasing production efficiency that were regarded as the primary goals the company had for signing up with the TZ programme. These included learning about resource use and waste in their

companies, being environmentally friendly, building project management, and team problem-solving skills, being a vehicle for sharing ideas, keeping the company in touch with new technologies, and creating a paradigm shift beyond the team, described by one member as *...changing the culture within the company from creating waste, to recycling waste, and ultimately to avoiding waste in all areas of work*. Team F clearly regarded the programme as an opportunity to counter imposed changes from elsewhere in the company. *If we don't make changes someone from Auckland will come down and do it for us and they don't really understand how we work down here*. This highlights the complex nature of intervention programmes entering social (organisational) systems where there are already existing agendas and concerns. Clarity over the multiple goals of a team can be important to reduce the risk that they may subvert or work against one another – but also because when they are acknowledged there is greater likelihood of incorporating them in the project and satisfying all team members.

## **5.6 Evaluation as an intervention in the TZ programme**

As researchers, evaluators and facilitators we ourselves were interested in what we could learn from the experience of running the TZ teams evaluations. We consistently 'debriefed' after evaluation sessions and reviewed the facilitation approach, the checklist material, and the response by the groups participating.

In our view one of foremost strengths of the checklist-based team self-assessment is the degree of flexibility inherent in the approach. Generic issues of team activity are covered in a way that is unique and specifically relevant to each team. The process causes participants to reflect upon their own performance rather than study a list of 'how-to' that might seem self-evident and would be unlikely to be retained. The process also worked with the goals the teams had set for themselves rather than those assumed to be theirs because of the overall structure of the TZ programme.

The material included in the checklist went largely unchanged through the evaluations. As Wertheim (2000) comments, *There is no absolute checklist for what makes a group effective*, and with this in mind during the checklist design, elements were selected because of their potential to stimulate discussion in the teams, and questions were posed in a way that implied no right or wrong answer. Each question was therefore an opportunity to open a window into the teams' functioning. As an absolute measure, the scores the teams allocated

themselves on the checklists could not be taken literally. The traffic-light ratings were as much a reflection of the degree of self-critique and ambition in the team as their actual competency. In fact almost an inverse relationship could be concluded. In later evaluations using the checklist we exploited the idea that self criticism was, in our experience, associated with better performing teams, to incentivise greater reflection among more sceptical teams.

Given the reflective rather than assessment-based orientation of the evaluation approach, the facilitation of the process was highly influential on the outcome. As we carried out a number of the evaluations we learnt how to motivate discussion, and how best to challenge assumptions and responses. In our first design of the process we had planned for individuals to personally rank the factors before bringing them to the group. The divergence and commonality of these responses could be a prompt to discussion, and this might better channel ideas from team members who were less inclined to comment in front of their colleagues. However, we quickly learnt that the teams preferred to run the entire discussion as a group, and the process was adjusted accordingly. We also added a stage to the beginning of the evaluation session. Following on from reviewing team goals we invited teams to identify their achievements to date – even comparatively small ones, as this was often the only time the group had reflected on these, and it was both encouraging and an aid to further assessment of their work.

The teams and the companies were extremely diverse, ranging from small to substantive operations, with a range also in the organisation orientation toward innovation and learning. It was clearly important that in facilitating the evaluation we paid adequate attention to how the team wanted to interact with us. Equally important was the cultural fit between the process and the organisation (something of importance for the entire TZ programme). Many of the workplaces we visited were toxic, noisy, and unaesthetic – a daunting environment to enter with thoughts about group process and reflection. Our credence as facilitators was greatly influenced by the WMU backing of our role as being an integral part of the TZ programme. However, it was still important to find a convincing introduction to the idea that evaluating team performance was a useful way to spend an hour. I personally often used

a rugby team analogy – *a successful team works not just on strategy to win the game but on how to make the most of their strengths and how to address weaknesses*<sup>13</sup>.

Team reflection could clearly be pushed to greater or lesser extent dependent on the trust and culture of inquiry within the group. Facilitation needed to be active i.e. not allowing teams to get away with their first casual responses; encouraging groups to identify assumptions behind their responses and then to challenge these assumptions (double-loop learning) (see example Box 5.2). However, this was not possible with all groups, or with all the questions on the checklist. For instance, while prompting from facilitators could elicit more thoughtful response around questions such as ‘does the team have effective leadership?’ teams were reluctant to acknowledge the need for ‘ways of dealing with conflict’. Since managing disagreements is an inevitable part of the experience of working in teams, some other approach (or wording) was clearly needed to address this issue.

**Box 5.2 Example of three-level reflection based around the teams checklist**  
(hypothetical)

<b>Facilitator questions</b>	<b>Team response</b>
<i>Does the team have good internal networks? (question 3.3)</i>	<i>Yes they're fine</i>
<i>Why do you think your internal networks are good?</i>	<i>Well we all come from different parts of the organisation so we know all the different areas of operation that are important to the project.</i>
<i>So does your team have all the right people on board the team itself to carry out the changes your project suggests are needed?</i>	<i>Well no... We don't have anyone from finance here...and also the maintenance crew come in at night so they won't know anything about what is going on... I guess we will have to find out some way of talking to them.</i>

Questions and prompts can then continue to help the team build a response to the now-recognised problem.

A group evaluation such as this is clearly reliant on willingness to reflect, and difficulties emerge when either an individual or the entire group blocks discussion. This is essentially a manifestation of ‘culture capture’ and is a recognised risk of highly contextual, participatory-based evaluations. One of the likely causes of ‘blocking’ in the TZ evaluation

<sup>13</sup> Those who know me will find this amusing. I won't speculate how convincing I was but sometimes even making a joke of yourself can be an important facilitation technique!

was when one or more members of a team regarded the evaluation as a judgment on the value of the group. One of the challenges of implanting programmes like TZ which rely on active inquiry is the performance and compliance orientation of the business environment, where people are measured on the degree of adherence to protocols; and it is difficult to find fault without according blame.

Furthermore, teams' evaluation could all too easily be associated with the kinds of organisational assessments that are ultimately linked with restructuring and job losses. Evaluations and evaluators frequently suffer from a negative reputation based on such uses of their work. While we took pains to use non-threatening language and explain the confidential and developmental orientation of the evaluation, it was not always possible to override suspicions and ingrained distrust of such processes. The consequence of distrust was a lack of willingness to countenance the notion of deficit in any area of team performance. It manifest as: limited debate over questions, short 'quick fire' responses remaining unchallenged by other team members, and a difficulty in pushing teams beyond these.

### **5.6.1 Embedding evaluative learning in TZ training**

Following our completion of the three initial phases of the TZ evaluation programme we ran a short workshop with the WMU staff and the TZ consultants on the work. One of the questions which emerged for the WMU was how to support teams and team development. This was a newly acknowledged gap,, as to date the TZ programme had put most effort in being effective at the task-focused elements of cleaner production training, i.e. the cyclic stages of assessing and analysing waste, implementing and monitoring changes, and in particular supporting teams to identify projects where they could make easy gains. The tension in the TZ programme between emphasising process and task is common to change-driving programmes in general. Many programmes oscillate from one perspective to the other, first emphasising 'getting the job done' and then swinging back to a process effort in order to develop more capacity for the long term (Kilvington & Allen 2001).

The WMU recognised that most of the technical consultants they employed to work with the teams had little or no experience in supporting social process elements of change. At the same time, the WMU were also aware the TZ teams' evaluation process had been generally positively received by participating teams, two of whom commented that they regarded it as

useful part of the training they received through the TZ programme because *it got people thinking*. Following this feedback the WMU asked us if we were prepared to continue with the teams' evaluation process as an integrated part of the TZ training. We proposed a process where we would pass on the checklist approach as a training tool to the TZ consultants and partner with them in their first round of evaluations. However, our assessment was that this was of limited success. As with the TZ teams themselves, the competency and confidence with this aspect of team work varied with the consultants. While some indicated they could happily see themselves integrating this into their ongoing work with companies, others felt the depth of expertise needed to adequately facilitate a truly reflective group evaluation was beyond them.

Subsequent iterations of the TZ programme experimented further with ways of supporting both teams and organisations to achieve long-term sustainable business practice. Most recent generations of the manufacturing company programme have seen it revert to a technical advisory approach to waste minimisation.

## **5.7 Summary – evaluation and social learning in the TZ programme**

The TZ teams' evaluation was designed to improve knowledge about how teams were functioning, and to uncover barriers and success factors for teams as agents of organisational change, for use by the CCC to improve the long-term impact of the TZ company training programme. Most importantly it was oriented to set up a process that enabled teams to examine their own situation, and become more aware of their achievements and limitations and empowered to affect their own productivity.

The TZ teams' evaluation project illustrated a significant degree of success was possible in increasing the capacity of teams to both manage themselves, and their tasks, and enable them to investigate areas of the operation that were important to how effective they could be as instruments of change within an organisation. The use of a checklist of key aspects of group process, when coupled with a structured opportunity to assess these on a group-by-group basis, was a compact way to introduce teams to substantive learning about group processes. It ensured the reflection process was grounded in real experience and consequently immediately meaningful to the teams.



A substantive criticism of resource use efficiency and cleaner production programmes is their failure to appreciate organisations as social systems and consequently their tendency to take a mechanistic approach to supporting innovation (e.g. concentrating on structural elements of teams, or relying on simplistic recipes for behaviour change). The TZ programme already encouraged thinking about organisations as technical systems; the teams' checklist evaluation expanded this to thinking about the organisation as a social system. In particular it encouraged practical self analysis of the groups themselves, their behavioural norms and practices and their relationship to the organisation. The teams' evaluation approach therefore illustrates a way to link both technical and process management and support an overall questioning approach to problem solving that uncovers hitherto unthought-of non-technical influences on the change process.

Facilitation of reflection was critical to the effectiveness of the checklist review approach. This reflection process rested on both the skills of the facilitator and the position of the evaluation as an integral event in the training programme, i.e. coupling it with the same processes of analysis and review that were the mainstay of the 'measure to manage' approach to the TZ programme. A limitation of the self-reflection-based approach is the difficulty of overcoming existing resistance to reflecting on performance. The propensity for learning and development was different in each of the teams and often a manifestation of the capacity for innovation inherent in the organisation itself. The impact of such interventions as the TZ team's evaluation can be magnified or minimised by the overall context in which they sit.

Another limitation of the TZ teams' evaluation approach is its dependence on expertise within the programme to carry out the role of facilitating the enquiry. In the teams' evaluation project we were unable to pass on the checklist-based teams evaluation to the existing consultants employed in the programme, despite the success of the approach in supporting team development, because they were foremost recruited for their technical expertise in waste minimisation, and either lacked skills or interest in extending their role to incorporate social process training.

The teams' evaluation checklist was made freely available via the CLEM website. Over the following years a steady stream of interest in the approach has been evident from extremely diverse audiences, ranging from large commercial companies (e.g. Hewlett Packard) wanting to use the approach to support learning groups/teams within their organisation, to a

most recent enquiry (March 2010) from the American Academy of Family Physicians, whose intention was to use the material in training to enhance the practices of family physicians.

Overall the TZ teams' evaluation performed several roles, which match the four potential areas in which evaluation can support social learning outlined in Chapter 3 (see Figure 3.3). In the first instance it was able to support the company groups and their development as effective vehicles for change in the organisation. This occurred in two ways: firstly the checklist self-reflection approach offered the teams new techniques to **enquire and problem solve**; secondly, the teams' evaluation checklist, through its grounding in the social aspects of organisational learning and change, is an example of how evaluation can link participants to conceptual understanding that helps them to diagnose the social learning challenges they are likely to encounter and develop strategies to respond to these. In other words the evaluation approach enabled the teams to **scope the problem situation**.

Thirdly, the teams' evaluation projected collated information about how teams were working in general. These were discussed in meetings with the WMU and were thus instrumental in supporting the WMU learning about how the programme was working (**programme management**). Finally by linking ideas about how groups work with organisational change the teams' evaluation extended the knowledge about how training initiatives like the TZ company training programme can meet their wider goals of increasing the uptake of cleaner production and adoption of resource use efficiency approaches across organisations (**research and development**).

Three particular points of interest about the potential of evaluation to support social learning emerge from the TZ programme. The first of these is the importance of being able to negotiate a learning-based role for evaluation. This in itself was reliant on the existing responsive and adaptive capacity of the WMU. Similarly, and secondly, the TZ teams' evaluation was able to utilise an already existing orientation towards developing a new learning capacity in participants, and was therefore not philosophically at odds with the programme in which it was operating. Thirdly, the project, as in the WCMP case story, illustrates that limited skills in consultants and programme managers can be a real constraint in embedding reflective, learning-based approaches in environmental management programmes.