Accelerating organizations to deliver results!

"Enhancing Operational Performance by Best Practice Continuous Improvement"

A Best Practice Continuous Improvement Program is a powerful process for delivering financial results quickly and for improving long term competitiveness.

Is your Continuous Improvement Program working?

If you ask yourself the following 10 questions and answer "yes" to many of them, it is time to start or renew your Continuous Improvement Program.

Question	Yes
Is your ROCE under 15%?	
Is your operating profit decreasing year over year?	
Are your production efficiencies in the bottom 75% of global results?	
Are your idea boxes collecting dust and candy wrappers?	
Has it been a few months since you posted some KPIs?	
Are you embarrassed to post your KPIs?	
Have your investments under delivered on promised financial results?	
Are your resources drowning in programs and projects without financial targets?	
Would you like to have your shop floor employees more involved?	
Would you like to have all departments involved ? (Operations, Sales, Purchasing, Logistics, etc.)	

Figure 1: Sample Question Form

Best Practice Continuous Improvement Programs can deliver strong financial results and production efficiency improvements achieving top tier performance. A Best Practice Continuous Improvement Program is a very powerful tool that can deliver tangible results in a short amount of time (see Figure 2) and helps to improve long term competitiveness.

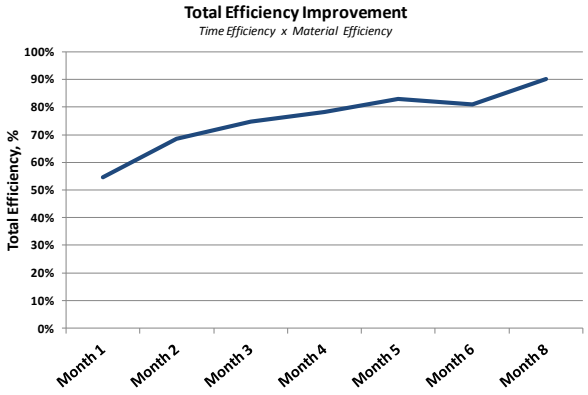


Figure 2: Efficiency improvements achieved

The Case for Best Practice Continuous Improvement in the Pulp, Paper and Packaging Industry

The industry can be characterized as capital intensive and is often not returning its cost of capital. Industry players are struggling to remain competitive in an ever increasing commoditized environment. Acquisitions do not often deliver expected synergy benefits. The graphic paper markets are in continuous decline due to substitution by electronic media. While some graphic paper machines are being re-commissioned into lightweight liner and fluting (medium) machines, packaging and tissue players see competition from new investment both locally and globally. The lack of profitability and available capital forces many companies to invest below the level of depreciation and to cut spending for services. Such cost cutting often causes loss of experience and talent, retains old worn out practices and procedures and results in further decline in performance and loss of employee morale. The failure to reinvest contributes to an ever increasing aging of the asset base.

Progressive industry players are seeing a requirement to reverse the negative trend through new ways of thinking. Leaders (re-) turn to Continuous Improvement Programs that leverage the collective brain power of all employees. Best Practice Continuous Improvement Programs focus on achieving global benchmarks of selected KPIs and subsequently improving operating profit. These Programs have been around for some time and can be re-launched to achieve significant results quickly.

Factors of Success

The essence of a Continuous Improvement Program is the spirit of continuity and building improvements one upon the other. To ensure that the desired change is sustainable and successful there are several success factors that need to be closely monitored.

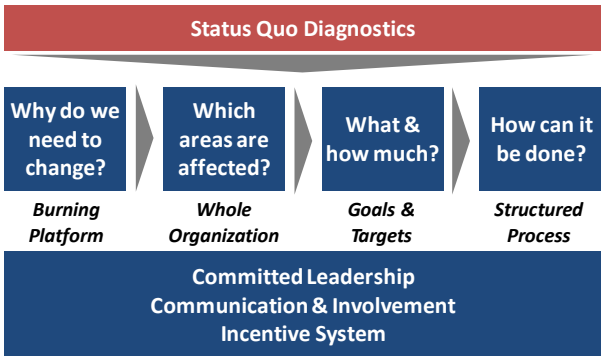


Figure 3: Framework of Success Factors

1. Burning Platform

(Why do we need to change?)

Identifying your "burning platform" is crucial to give a clear signal to the whole organization that change really is needed in order to regain or secure long term competitiveness. Often there are fundamental performance gaps that have been identified and that require short term improvements. A structured top-down diagnostics and analysis phase is recommended before starting a Continuous Improvement Program in order to provide a baseline for the collaborative improvements.

Everyone must understand the need for change and the reasons why a Continuous Improvement Program is being undertaken. Without this, employees will not be persuaded that change is necessary and the required "thinking-outside-the-box-attitude" will be missing. This burning platform must be communicated directly by senior leadership in a program kick-off along with the desired goals and targets.

2. Involve Whole Organization

(Which areas are affected?)

Involving all levels of the organization from top level management to the shop floor is a key element. Operators involved in the day-to-day processes are often the source to finding necessary solutions to existing problems. The key is to involve both the operational and management levels with the right facilitation approach. While these programs often start with top/middle management in order to define the targets and gaps, it is essential to quickly move on to involve the whole organization on all levels including operators and other shop-floor employees. As not everyone understands the need for change in the beginning of such programs, it is important to conduct change readiness assessments and to identify agents of change who can act as internal promoters of the Program on all levels.

3. Goals and Targets

(What & how much?)

The specific and measurable goals need to be communicated to highlight the gap between current and targeted performance (see Figure 4). Goals must be clearly tied to business requirements, such as EBIT improvements, and KPI targets should drive the business in the right direction, e.g. OEE and its components - Time Efficiency, Material Efficiency and Speed. Assigning goals and targets is only the first step. During the Program, performance must be frequently evaluated and communicated to participants. This provides a clear picture about the status of the Program and gives a sense of direction for everyone.

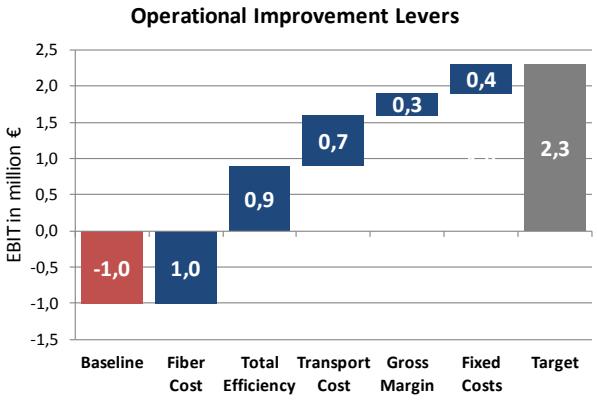


Figure 4: Illustrative Operational Improvement Levers

4. Structured Process
(How can it be done?)

Since targets to be achieved with Continuous Improvement Programs are typically significant, a structured process is the backbone of success. Hundreds of improvement ideas are brought up and evaluated according to potential savings and associated risks. In order to manage the Program, a structured process is necessary to remain focused on the overall targets and prioritize activities. Without this structured process, programs run the risk of becoming inefficient and time-consuming.

The StepChange methodology (Figure 5) for a Continuous Improvement Process not only results in identifying a vast amount of improvement projects but also helps in developing solution-based proposals and implementation plans which will turn these opportunities into tangible results. The process is accompanied with a set of supporting tools. Additionally this structured process can be used to prioritize and sign-off investment projects as well.

Figure 5: **StepChange Continuous Improvement Process**

5. Enabling Thought and Analysis
(How can it be done?)

As mentioned before it is essential to conduct a supporting and impartial analysis and Benchmarking of the business before starting the Program. This will help to pre-det orities based on potentials and initial improvement pr tified. This analysis builds the foundation to the process. Members of the Continuous Improvement Organization need to have access to this analysis and relevant data in order to calculate the potential savings of their improvement proposals and subsequently keep track of the success of every initiative. A project and idea repository will help to manage the multitude of initiatives and will provide guidance from generation to implementation. Furthermore, it is crucial that the whole organization understands corresponding KPIs and their impact on the financial targets (e.g. EBIT). Ideally Finance/Accounting, or another relevant function, provides periodic business analysis in order to support the overall program progress.

6. Clearly Defined and Dedicated Organization
(How can it be done?)

The process is enabled through a clearly defined and dedicated project organization, which must have clearly defined roles and responsibilities. A typical organization consists of a dedicated Steering Committee, Project Manager, Improvement Teams (with team leaders and members), support functions and neutral facilitation. The talent level and interpersonal skills of participants need to be carefully considered during team design and, where necessary, training for dedicated skill building and facilitation should be provided.

The Steering Committee sponsors the overall efforts, provides direction and signs off on resources necessary (people, capital, etc.). In case of bottlenecks and other deviations or major risks, the Project Management acts to raise these issues to the Steering Committee and recommends decisions necessary to get the Program back on track.

7. Committed Leadership
(How is it supported?)

Active and visible involvement of top management in the Continuous Improvement Program is critical. This will have the effect of highlighting the importance of the Program to the organization and will increase the level of buy-in and motivation. Management needs to set the expectation that involvement and serious efforts by all participants are essential to the success of the Program. Communication needs to be continuous and supported by a corresponding incentive system that fosters operational excellence and the willingness to continuously improve and try new approaches.

8. Strong Communication and Involvement
(How is it supported?)

Ongoing multi-channel communication is a precondition to create awareness, gain acceptance, maintain the motivation of employees and update the whole organization about the progress of the Program. Additionally it provides the platform to communicate early success to generate further momentum for change.

9. Motivation & Incentives

(How is it supported?)

Implementing a Continuous Improvement Program will require temporarily higher workloads for the organization to initiate and sustain the efforts until first successes are harvested. Motivation needs to remain high to ensure the program momentum is kept up.

To further bolster motivation, an incentive system that is tied to target achievement will support the overall success of the process. Additionally it helps to foster a performance culture and nurture overall cultural change.

Operational improvement levers

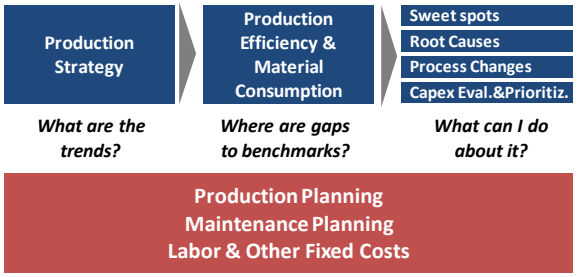


Figure 6: Operational Improvement Framework

1. Production Strategy

A solid production strategy, with a time horizon of 2-5 years, is an important driver for any Continuous Improvement Program. It should give an overall view of how the company will achieve its mission and concretely describe what kind of products the company will produce, with which machinery and sell to which customers. A successful strategy should take into consideration the organization's own resources and capabilities (e.g. sweet spots) as well as its competitive environment and expected changes & trends within the industry (e.g. lightweight trend in packaging papers). The goal is to achieve the best fit between internal strengths and capabilities and external requirements.

2. Production Efficiency

Increasing operational productivity is at the heart of any manufacturing business, especially in such capital intensive industries as Pulp, Paper and Packaging where economies of scale and process innovations are essential. The main parameters to measure and define operational production efficiency are:

(1) Time efficiency
(2) Material efficiency
(3) Speed efficiency
(4) Overall Equipment Efficiency [OEE = (1)x(2)x(3)]

To identify improvement potentials for production efficiency, a benchmark with similar facilities (e.g. machine manufacturer Benchmarking) and an expert check should be conducted. This analysis will then be used to set targets and identify the key areas for improvement. One possible way of outlining the main areas where the organization is lagging behind its peer group is presented in Figure 7.

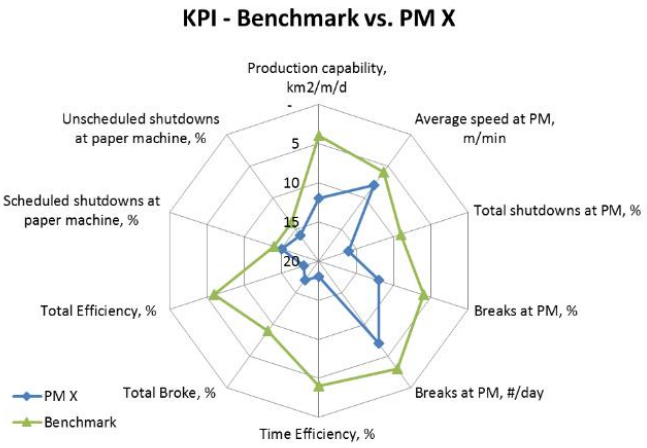


Figure 7: Illustrative KPI Benchmarking

Production efficiency can be improved through process change, capital investment or a combination of both. Within a Continuous Improvement Program both types of opportunities can result in significant improvements in efficiency levels. Even if ideas relating to process improvements seem small, the total cumulated savings can be substantial.

For illustration, these kinds of improvement proposals may be connected to

- Increasing speed levels closer to design speed (Figure 8 presents an example of speed analysis, illustrating speed variability in production of jumbo reels for a paper grade.)
- Understanding reasons for breaks and consistently reducing breaks across shifts
- Alterations of machine settings to reduce waste levels
- Reduction of downtime through better preparation and execution of planned shuts
- Enhancement of predictive and preventive maintenance practices
- Reduction of raw material usage in production processes
- Adaptations in production planning to reduce changeover time and material losses

3. Root Causes to Production Efficiency Shortfalls

Root cause analysis is used to identify the origin of identified problems in contrast to simply addressing symptoms. Root cause analysis can be considered as an iterative process and is often integrated with Continuous Improvement Programs in identifying solutions for efficiency shortfalls.

4. Process Capability & Consistency

The question "Are we capable of performing this process at the required level, and can we do it consistently?" is answered through capability analysis and process control. Goal setting along with an analysis of current performance will show the gap between current performance and targeted performance. When a high enough level of process capability is attained, unnecessary variation can be reduced and targets can be achieved consistently. Both of these aspects form part of the day-to-day work of the Continuous Improvement Program teams through continual monitoring of the relevant KPIs. Analyzing the KPI-performance of different shifts (see Figure 9) supports the identification of development potentials and necessary process adaption to improve process capability and consistency. Using the Continuous Improvement teams to compare shift performance, identify differences and define a common set of rules and standards across shifts typically leads to significant improvements of machine time efficiency.

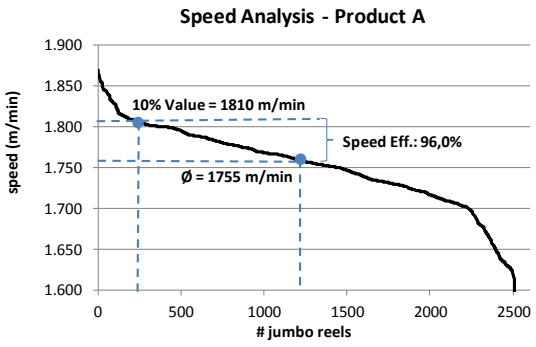


Figure 8: Illustrative Speed Curve Analysis

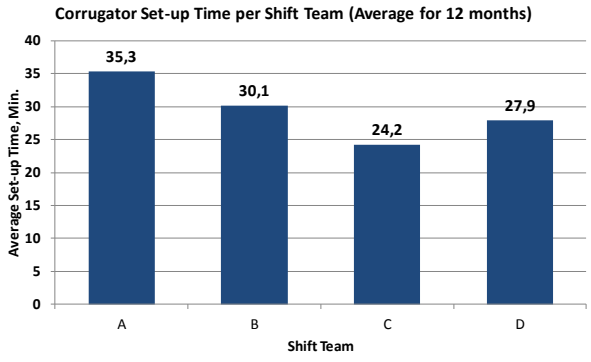


Figure 9: Illustrative Set-up Time by Shift Comparison

5. Sweet Spot Identification & Portfolio Optimization

Sweet spot identification is an important tool in defining a production strategy. The result of a sweet spot analysis is a portfolio optimization tool that maximizes contribution margin based on factors relevant to the facility

- Time, material and speed efficiencies
- Machine limitations (e.g. machine speed, drying capacity)
- Production costs

The sweet spot analysis aims at maximizing contribution margin per hour as this is the ultimate performance indicator in a production environment. Using only contribution margin per ton as a decision criterion can be misleading.

Consider this example: Product A has a contribution margin per ton of 50€ and product B of 100€. However, output per hour of Product A is 20t while only 8t for Product B. Thus, contribution margin per hour for product A equals to 1,000€ and 800€ for product B. This example shows the importance of contribution per machine hour optimization.

Sweet spots need to be matched with actual market demand, however they provide the necessary rank in order to fill a machine. This is illustrated in Figure 10 where the dark blue circles represent grade/grammage combinations with the highest contribution margin per hour.

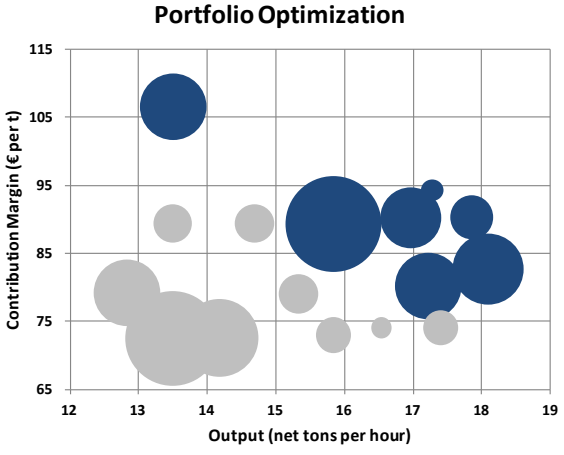


Figure 10: Portfolio Optimization by Sweet Spot Definition

6. Production Planning

Having identified the optimal product portfolio, the organization now needs to optimize production planning which is to ensure that the required quantity of finished goods is produced on time & in a cost-efficient manner. This involves both planning sales demand as well as resource demand, such as raw material supply, chemicals, labor, etc. The key here is in finding a balance between customer service levels, manufacturing productivity and profitability; all of which require communication and collaboration between sales, production and logistics. Production planning must be closely aligned with customer service levels and transport planning.

7. Variable Costs

The Pulp, Paper and Packaging industry is resource intensive both in capital and materials. The main input factors are fiber, energy, chemicals and water. A frequent analysis and evaluation of all main input factors should form part of a Continuous Improvement Program as they determine the major part of the cost structure. A reduction in consumption of all resources is a major improvement lever for which several methods of analysis can be used

- Data analysis
- Internal and external Benchmarking
- Process analysis
- Review of customer specifications
- Usage reduction or substitution
- Innovation
- Expert checks

Benchmarking the use of input factors against similar operations assists in identifying potential areas to focus on and in setting reduction targets. Ideas in this area span from improvements in moisture levels, avoiding production above targeted technical specifications to replacing input materials with more efficient alternatives.

Ideas related to recipes and technical specifications require the collaboration of multiple departments (e.g. Production, R&D,

Sales) which is often difficult to coordinate. Here, the Continuous Improvement Program also serves as a structure that enables such cross-departmental cooperation, e.g. via regular project meetings with all involved parties.

Overall the total variable costs per unit of all input materials need to be scrutinized for improvement opportunities. Wastages can be reduced and the direct usage of input materials for a given product can be questioned. Innovation and external reviews can help to provide additional input for minimizing these costs.

8. Maintenance

In a resource intensive industry, adequate maintenance is important in order to ensure

- Production efficiency
- Reduced consumption
- Minimized maintenance spend

With the Continuous Improvement Program, teams can focus on improving maintenance performance by targeting preventive and predictive maintenance & planning processes and overall cost control.

"How do we increase uptime?" is a typical question. In many instances, organizations focus heavily on reducing scheduled maintenance outages. Reducing planned maintenance by 1 hour per shutdown with 2 shuts per month only yields 24 hours per year, i.e. 0.27% uptime improvement. On the other hand, unplanned maintenance often makes up a much larger portion of controllable uptime improvement and can yield higher and quicker improvements in a Continuous Improvement effort.

9. Labor & Fixed Costs

Fixed costs, including labor, are one of the major areas of improvements that are attainable through the Program. However, it is not simply a question of slashing costs as any Continuous Improvement Program must have sustainable improvements in order to succeed. To ensure that not only production processes are improved but also those within the support functions, several tools exist

- Process mapping
- Workshops
- Cost driver analysis
- Assigning accountability for fixed cost reduction to the teams

Fixed costs are often driven by personnel costs. However, the levers to reduce personnel costs are not only tied to headcount reduction. Often overtime and other indirect personnel costs can be analyzed for improvement opportunity. In case of a turnaround situation, Continuous Improvement Programs should not categorically exclude restructuring ideas although it is difficult to conduct a headcount reduction while asking employees for their ideas, collaboration and input. Therefore, it is recommended to conduct the necessary restructuring efforts independently and in a separate effort to a Continuous Improvement Program.

Summary

The industry is under constant pressure to improve and increase levels of profitability. Improved profitability can be achieved by more than the traditional focus on capital investments alone. A combination of a thorough performance diagnostic and gap analysis with a Best Practice Continuous Improvement Program effort can yield quick financial improvements and build the foundation to long term competitiveness.

An up-front Diagnostics, Benchmarking and gap analysis is fundamental to proper initiation of the Program. Essential to success is a strong focus on operating levers that drive financial results in order to prioritize the right areas for improvement.

A broad based improvement effort requires involvement from the whole organization and employees on all levels. The heart of the Program is tapping into the collective brain of the organization to generate improvement projects and identify new processes and ways of thinking. The Program needs to be supported by the right Project Management structure, processes and facilitation approach. A clear program structure and corresponding progress reporting with the ability to drill down to the level of each initiative will govern the organization to achieve the goals according to plan and help take the necessary decisions in case of deviations.

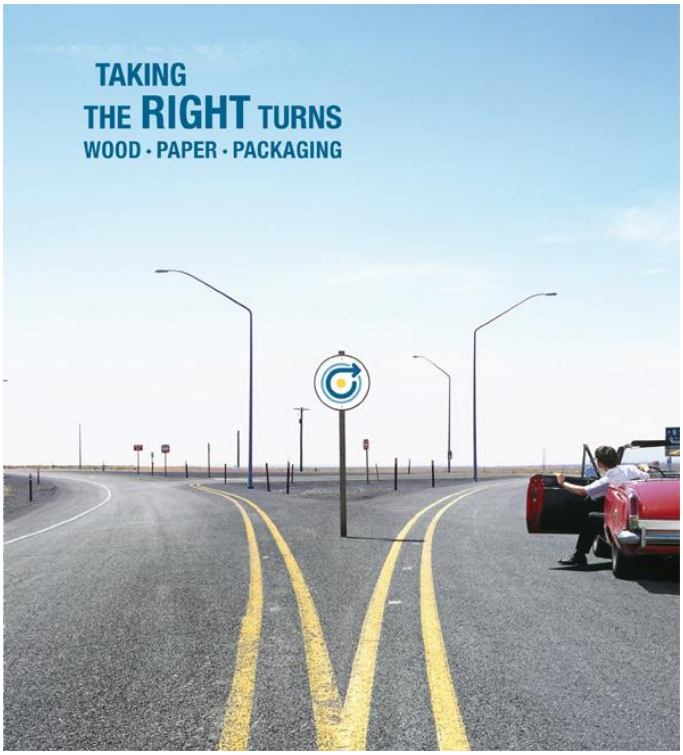
Careful consideration needs to be given to the selection of the right talent and required skills of those expected to manage the Program. Furthermore it is essential to assess change readiness of those heading the efforts in order to have change agents spearheading the Program and create a positive climate for change.

The project structure needs to have an internal dedicated project manager who is knowledgeable and accepted by the organization and willing and open to drive the necessary change. Additionally, impartial analysis, expert checks and additional facilitation of the Program by external resources helps to enhance and accelerate the effort with process discipline, proven methodology, solution development, enabling thought and change management skills. In addition to promoting change through the right individuals, an incentive system should be installed that aligns company targets with personal goals.

Underlying the Program is the need for top management to initiate and sponsor overall efforts in form of a Steering Committee. Sponsors need to remain involved, continuously demonstrate the importance of the Program, and highlight and reward success. Walking the talk is imminent to creating a performance culture and creating the imperative for change.

Continuous and multi-channel communication using various platforms needs to accompany the Program in order to ensure that messages are consistent and that the organization is updated about the status of the Program frequently. These communication platforms should also be used to highlight early achievements, celebrate success and emphasize individual and team results to create further momentum for change.

Overall, a Continuous Improvement effort combined with dedicated external expertise can deliver tremendous results in a short amount of time. While the methodology has been around for ages (originating from Kaizen), it still remains a powerful process to drive change to deliver results and improve competitiveness.



About StepChange Consulting

StepChange is an industry focused and independent management consulting company with a proven track record in supporting clients to achieve sustainable value. StepChange provides support to top tier organizations in the industry from strategy development to implementation of operational improvements. With an international team of industry experts StepChange can hit the ground running. StepChange provides innovative and yet pragmatic solutions, placing an emphasis on delivering measurable business results.

For further inquiries and comments regarding this Point of View please contact us at *leapfrog@stepchange.com*.

Steven E. Smith is Senior Expert at StepChange Consulting with over 30 years of line operations, supply chain management and consulting experience in the pulp, paper, tissue, packaging, and forest products industries.

Michael Kiennast is a Project Manager at StepChange Consulting and has broad experience in group wide collaborative operational and productivity performance improvement initiatives in the pulp & paper and retail industries.

DRIVING **CHANGE**
TO DELIVER RESULTS