

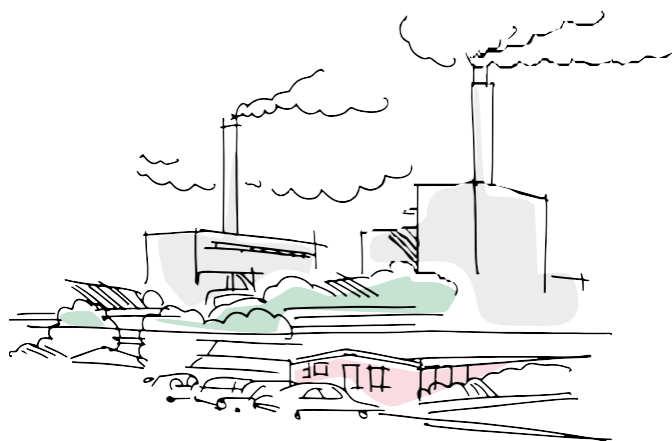
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ÅForsk

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Final report

Safe and sustainable processes in the forest industry



Images: Tinna Ahlander AB

Summary

The purpose of this project has been to analyze strategic and operational work of managers and leaders regarding safety culture where proactivity as well as safety and risk behaviors play central roles. The data collection includes three sets of data 1) document studies, 2) interviews and 3) observations. The strive towards a zero-vision for accidents in the forest industry is shown both on strategic level and on the operational level in the managers' and leaders' daily work. The results clearly show that the *safety-first* vision is on every agenda in the organization's meeting structure. The results also show that challenges related to the *safety-first* vision are (i) the traditional production orientation that is inherited and deeply rooted in the business culture of forest industry, (ii) the work division - who is doing what, (iii) leadership and self-leadership and (iv) and inclusive safety culture.

Background

Several actors in society point at the importance of having a sustainable and safe work environment. The Swedish government has formulated an updated work environment strategy for the future for the period 2021–2025 (Government letter 2020/21: 92). The Government states that the occupational injuries entail severe financial consequences at the individual and societal level as well as personal suffering for those affected. The work environment strategy for 2021–2025 focuses on the sub-goals (i) a sustainable working life - everyone must be able, strong, and willing to work a full working life, (ii) a healthy working life - working life must contribute to development and well-being, (iii) a secure working life - none should risk life or health due to the job and (iv) a labor market without crime and cheating. The organization Industriarbetsgivarna, which includes paper and sawmill employers, has formulated a zero vision for accidents and ill health in the workplace. The zero vision is based on three parts; leadership, participation and competence (Industriarbetsgivarna, 2016).

The forestry industry is one of the industries that in the last decade has had the most fatal workplace incidents (Swedish Work Environment Authority, 2020). It shows the key to studying work environment, safety, and culture in this industry. The Swedish Work Environment Authority (2020) believes that fatal incidents should be greatly reduced by companies pursuing a good safety culture and functioning systematic work environment work. It is therefore important to conduct

research and development work regarding safe and sustainable work processes in the forest industry.

Previous research shows that several factors have an impact on safety processes. In general, previous research shows that managerial and leadership behaviors affect safety and well-being regardless of the type of industry (Kelloway et al., 2017). A leadership with a focus on safety also have an impact on the safety climate and the outcome in the form of accidents in an organization (Clarke, 2013; Mullen & Kelloway, 2009). Working in businesses with high risks requires leaders to act proactively when it comes to risk management. Previous research shows that in cases where leaders worked to analyze previous events and learned from them, it had a positive effect on the management of future crises or accidents (Carmeli & Schaubroeck, 2008; Combe & Carrington, 2019). Leaders who are instead passive about security issues have significant negative effects on safety, contribute to an increased number of accidents (Kelloway et al., 2006) and reduce safety-related behavior in the organization (Smith et al., 2016). This means that employees with passive leaders themselves become less interested in engaging in safety activities. Leadership training, not only for formal managers but also for employees, has proven to be positive for both employee well-being and efficiency (Tafvelin et al., 2019).

The interaction between managers and employees regarding security issues also positively impacts security (Zohar & Polacheck, 2014). Previous research in the forest industry in Sweden has shown that if employers and employees have a consensus on e.g., safety culture, it is beneficial towards employee's well-being (Tafvelin & Hansson, 2019). Studies from the Finnish forest industry show that employee well-being is also positively affected by being able to participate in change work in relation to one's own work situation (Pahkin, 2015; Pahkin et al., 2011). Further, it has positive effects to work together with environmental issues, for example managers, employees, representatives from the unions and health representatives (Ulvenblad & Barth, 2021).

Shift work has also been shown to affect the health and safety of employees. For example, studies show that higher sickness absence is associated with three-shift rotation compared to two-shift rotation (Haapakoski et al., 2015) and that fatigue and insomnia may be an effect of shift work (Richter et al., 2016). Further, research also shows a link between fatigue and a higher frequency of accidents (Lilley et al., 2001; Salminen, 2016).

Attitudes to safety play an important role in developing a sustainable safety culture (Stulen, 2015). The co-creation and ambition to work together is also important. *“Forest managers, contractors and their staff have seen the need to own the problem and work better collectively on solutions”* (Stulen, 2015, p. 12). It is also important that there is a match between machinery, systems, and behavior. The active involvement of personnel is highlighted in safety culture programs according to Ewing (2018). This means to give workers *“a voice in health and safety”* and by this help the forest industry to understand what is going on in their teams. However, *“there is still a lot of work to be done to make forestry a safe, sustainable and professional industry”* (Ewing, 2018, p. 41).

Methods

The project has been carried out in close collaboration with the companies Ahlström-Munksjö Aspa mill, Södra Timber Unnefors, Stora Enso Fors and Stora Enso Skoghall. The overall methodological approach has been to work in co-creation with different stakeholders with diverse competencies; personnel, managers, representatives from the unions, key persons identified in the process, working agency, business health representative, financier, and researchers (Ulvenblad & Barth, 2021).

Each of the phases are characterised by a procedure of planning, collecting data, analysing and reflection based on dialog in different forums, see figure 1. The plan of assessment has been discussed and agreed upon with participators, and data collections have been presented on regular meetings, such as pulse meetings and workplace meetings, but also together with representatives in the end of the phase where all data is presented and reflected on before taking the next stage.

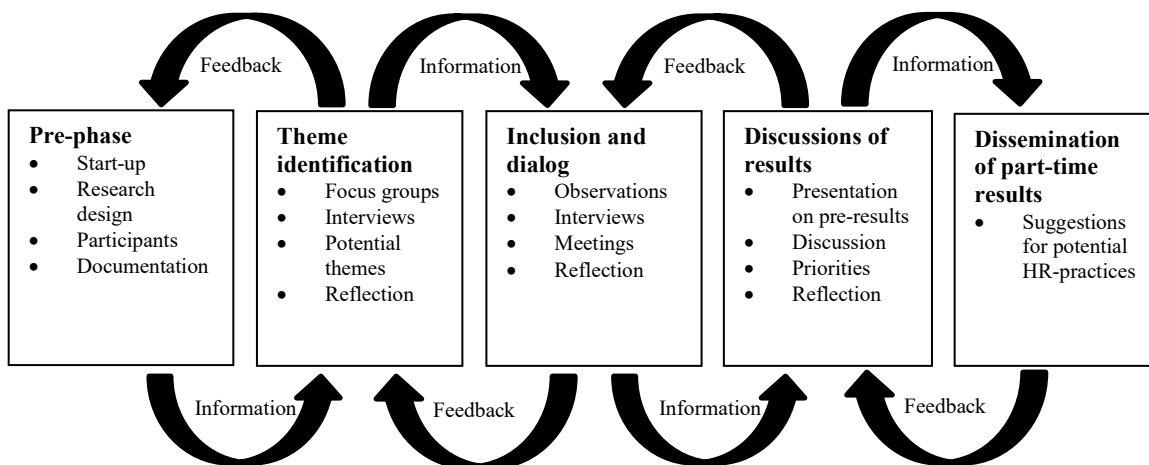


Figure 1. Overall research process (Ulvenblad & Barth, 2021)

The data-collection includes three sets of data 1) document studies, 2) interviews and 3) observations.

The *documents* have been collected during the spring 2021. This set of data includes strategic documents and operational documents such as workplace surveys regarding for example safety culture in the organization. These documents serve as background material for the interviews and observations conducted.

Interviews have been conducted with individuals responsible for safety and sustainability issues. We have also broadened the group of interviewees to include personnel like the union as well as the middle-managers responsible for work safety on a daily basis. In addition, we have interviewed personnel working in a risky environment. Altogether, we have conducted 67 interviews. Proactive and reactive behaviors have been studied as well as behaviors linked to both the risk of something happening and the risk when an incident actually happens. All the interviews have been conducted through Zoom or Teams due to the pandemic.

The *observations* have evolved as follows: First, information about observations, presentation of



the concept of daily observation and how it will be conducted. Questions such as - What will the researchers do? and - What will the managers be asked to do during the observations? Second, observations on site with 24 managers. Third, feedback to the managers.

The observations on site included the following routine. One researcher followed a manager for two days taking notes about each activity. The observations are based on a framework originally designed by Mintzberg (1973) chronology, containing contact and

mail records, but also include new and modified register specifically addressing communication, risk and safety.

Resources, Co-creation and Culture

The results, which are based on the conducted interviews, focus pro-active and co-creative behaviors. The results will be categorized and presented in three subgroups, (i) resources, (ii) co-creation and (iii) culture.

Co-creative and pro-active behaviors

All the interviewees emphasize that the most effective and sustainable method to work with safety issues is to engage and train the entire organization in pro-active behavior before any accidents or “near misses” occur. Since the organization as an entity must be engaged in the safety work there is a need for co-creative behavior such as learning on and between different levels in the company. Some examples of co-creative projects are the development of standards for maintenance of boilers and the work with protective equipment.

Resources

A critical resource when raising safety levels in an organisation, especially in the forest industries where many plants and activities are geographically separated, is the leadership of the plant managers. Another important resource is the managers on different levels in the company. If the company shall be able to strengthen the safety levels, the managers on all levels must be both competent and committed. Many of the interviewees found it very valuable that managers often start the company’s management meetings with the up-dated statistics regarding accidents and near miss. One manager said, “since our CEO starts every management meeting with the safety statistics, he sets a strong example for the rest of us”.

The human support functions, e.g., work environment engineers, safety specialists and human resource officers, are also important links in the safety work. One interviewee describes them as the two of the “four pillars of safety work”. The other two pillars are managers and employees. Another important type of resource is standardized procedures, often digitalised, that will function for all plants. Safety handbooks, policies, and routines can also reduce employees’ risk behaviour.



Further, all different plants and units share digital information about accidents and near misses. The plant managers are responsible for spread and analyse of the information, *”what happened and why? What can be done to prevent it in the future?”*

The human resources in terms of attitudes and behaviour and the system resources in terms of standards and procedures have been shown to be of vital importance in the development of a safety culture. The coordination of the human resources and behaviour is complex (Grant, 1991). Previous research has also shown the importance of leadership and management to take active part in the development of a safety culture (Clarke, 2013; Kelloway et al., 2017; Mullen & Kelloway, 2009). This means to act as role models, but also to analyse and learn from previous events (Carmeli & Schaubroeck, 2008; Combe & Carrington, 2019).

Co-creation

Openness and communication are very important factors when developing a safe work environment. One manager with many years’ experiences of the forest sector stated: *”safety is not the responsibility of an individual but the responsibility of everyone. If a colleague simplifies his work and takes a shortcut, the colleagues who see it must intervene and hit the red button, even if the colleague has seniority”*.

The learning from the central experts to the local plants are for example (i) standards and (ii) risk analyses. The learning from the plants to the central unit goes mostly via planned digital meetings. From one of the organisations, we quote one manager: *”We try harder to capture what has happened, for example, and spread this to other plants”*. Another manager said: *”we are quick learners in our company, and we learn from each other. If something has happened in a plant abroad, the information is spread very fast and shared with other parts of the company in other countries”*.

The digital systems regarding accidents and near misses are very powerful tools, which are used by all different units of the organization. The reporting process is accepted and appreciated by the organization, although some managers were critical to the system in the beginning, since they thought the system was criticizing them personally and their plant.

The co-creation between employer and employees regarding safety processes are very important for the outcome and often works well. However, the outcome is depending on the knowledge and interest from both parties – *“lack of knowledge leads to poorer dialogues - at all levels”*, stated one person representing the employees.

Openness and communication are important not only within the company but also when the company hires contractors from external companies. All contractors are supposed to take part in education and training before conducting their work. After this guideline was introduced, the accidents and incidents with contracts has diminished. In recent years, even customers have been engaged in safety issues. Some customers require certain safety standards and reviews the company’s safety processes.

These requirements of knowledge and interest as well as openness and communication are in line with the DART co-creation method developed by Prahalad and Ramaswamy (2004) which highlights *dialog, access, risk, and transparency*. The interaction between managers and employees also positively impacts security (Zohar & Polacheck, 2014) and consensus on safety culture is contributing to employee's well-being (Tafvelin & Hansson, 2019). It is also of importance to be able to participate in change work in relation to one's own work situation (Pahkin, 2015; Pahkin et al., 2011). In addition, it has positive effects to work together with environmental issues, for example managers, employees, representatives from the unions and health representatives (Ulvenblad & Barth, 2021).



Culture

Several plants in the forest industry have been running for many years and are situated in rural areas. Many of the employees have been working at the same company for many years, and often have one or both of their parents worked there before them. Hence, a strong connection to the company and the production are developed. It becomes very important that production is continuously up and running. This context contains a risk that production is prioritized before safety. One experienced manager said, *“both employees and managers have been used to cut corners keep the production going – it was in the DNA in most plants”*.

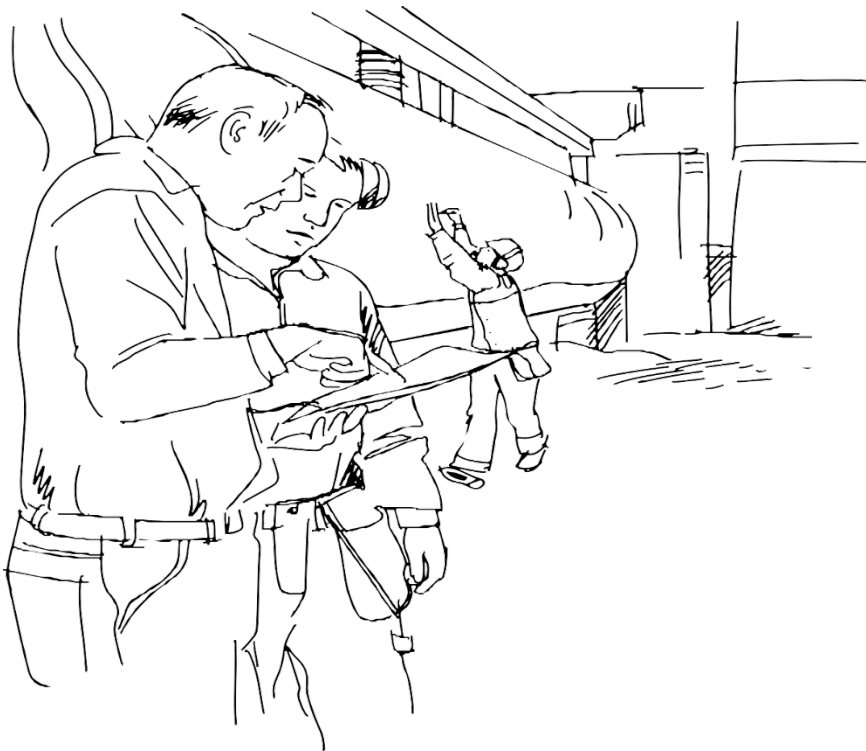
One manager remarked, *“within our business, over 90% is shift work. There is a culture of working hard and intensively. There is often very low staff turnover and very large commitment from the employees. However, it can be difficult to give negative feedback - there is always pride and commitment”*.

Another one said that the maturity of the company is very important. He continued; *“a good safety culture requires that we see each other as individuals. We need a connection in the company, a community between employers and employees. If the company has developed a sound and safe culture, the employee will be able to tell the more experienced colleague or manager that they are not working within policy.*

Attitudes to safety play an important role in developing a sustainable safety culture according to Stulen (2015). To see each other as individuals is also to give each other “*a voice in health and safety*” (Ewing, 2018, p. 41).

Operational work – the managers’ and leaders’ daily work

In the daily work there are indications on a well-developed digital reporting system of accidents and potential risks, including communication between involved actors. Challenges address knowledge transfer and competencies from experienced workers to younger workers, in combination with the technological transition towards more automated manufacturing processes. *"One goal is to train personnel so that they themselves become competent to carry out measures... that you connect person and activity as closely as possible when something happens."*



It is also relevant to have a work division between strategic and operational work. *"I'm not the best at printing cardboard or producing pulp - that's not my role and that's what others can do"*

The time management is something the managers and leaders are working actively with. *"What are my most important work tasks today? Have I set aside enough time to complete the tasks?" "I don't want to go home for the day if it's not ready*

for tomorrow. I also enter and set aside time in the calendar if it's preparation for a meeting or a presentation I have to give." "I join and listen [teams meeting with others] while I work on some other tasks and check the email".

During the observations the focus on safety aspects are clearly focused. *"Everyone makes a difference in security", "It becomes safer in the team when several people know the same thing".* Furthermore, on all observed meetings safety is first on the agenda and many times the leader for the meeting ends by saying *"We wish you a calm and safe afternoon"* or *"stay safe out there".*

In addition, the discussion about safety culture is present in relation to the external entrepreneurs. *"Our own staff must be properly dressed, but people do not wear helmets during machine stops"* and *"We are too little present when the contractors are working, there will be no penalties for wrongdoing. We have to start making demands."*

Health issues are also more focused now, such as diet, exercise, and sleep, after the pandemic situation, especially for shift workers. Furthermore, remotely work and hybrid workplace are more challenging than traditional risk management framework that focus on onsite aspects.

Challenges related to the *safety-first* vision and success factors

Challenges related to the *safety-first* vision are (i) the traditional production orientation that is inherited and deeply rooted in the business culture of forest industry, (ii) the work division - who is doing what, (iii) leadership and self-leadership and (iv) and inclusive safety culture.

The traditional production orientation that is inherited and deeply rooted in the business culture of forest industry is a challenge. It is so deeply rooted so there is a mutual will that the production should be ongoing. However, the work with safety-first is working very well and it seems that it has positive implications.

Also, the work division is of importance - who is doing what. It is important that not everyone runs around if something happens. There are needs to “know your place and your role” and act in a systematic and organized way.

The managerial role and the leadership related to that role is highly in focus in safety work. This means for example that the manager/leader need to act as a role model for safety behaviors. Self-leadership is also relevant since everyone has a responsibility for everyone’s safety.

An inclusive safety culture consists of that several competencies and personnel roles work together such as: personnel, managers, representatives from the unions, business health representatives etc.

The common denominator for the companies that participated in the project was that they wanted to get ahead in their work to create a sustainable working life. Some success factors are:

- Put safety at the top of the agenda.
- Promote good cooperation between employers and unions.
- The foundation must be laid through reliable, systematic work environment work.
- Work actively to develop the organizational and social work environment.
- Strive for continuous improvement, through good leadership and an active workforce.

Result discussion

The project has been expected to map and analyze sustainable work processes regarding safety in the forest industry and this has also been conducted. By analyzing the scope of safety work together with behaviors of a proactive and reactive nature, the safety culture is expected to be strengthened within the organizations. Previous research where the method has been shadowing managers and leaders has, among other things, shown that many are unaware of the extent to which they engage in various work steps. When they have become aware of this, they have also managed to change their work situation.

The project's results have also contributed to research on active collaboration between the different actors to create a sustainable work environment and safety culture in organizations and on how leadership and employee-ship can be developed to create greater safety in the forest industry. In the project the observed managers received feed-back on activities, behaviors and time-management and their reflections were that it had been a valuable experience for them in their role as leaders.

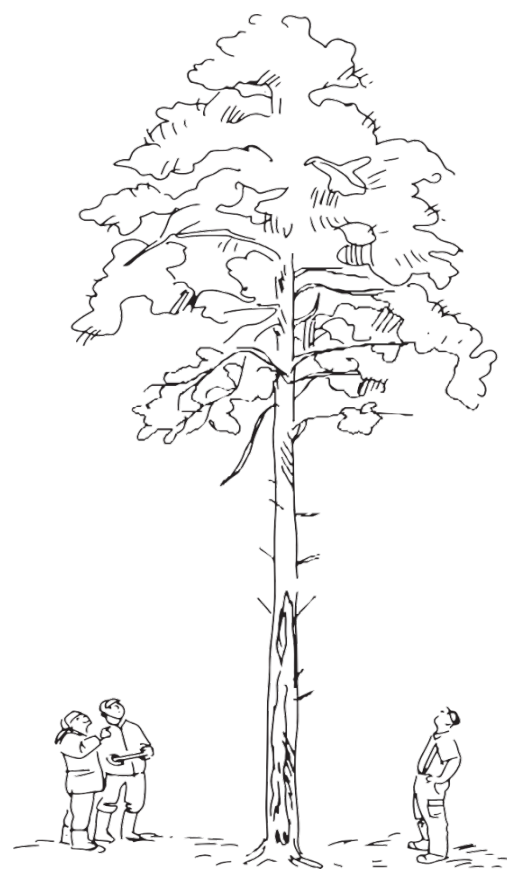
Publications and presentations

We have presented results from the data-collection in three ways; (i) two conference presentations of interviews conducted with personnel that are working in central positions related to the plants and observations of managers, (ii) a booklet where we could use the knowledge from both the interviews and observation studies and (iii) presentation of results at SIRIUS¹ Forum May 9th 2023.

Barth, H., Ulvenblad, P. & Ulvenblad, P-O. (2023). Managerial work in a risky environment – experiences from the Swedish pulp and paper industry. Extended abstract presented at the 4th International Conference in Management, Business and Economics, Athen, Greece April 21-24th.

Ulvenblad, P., Barth, H., Ulvenblad P-O. & Billström, A. (2022). Towards a zero-vision for accidents in the forest industry: Co-creative and proactive behaviors for sustainable safety processes. Paper presented at the 26th Biennial NFF Conference, August 24th – 26th, Örebro, Sweden.

Ulvenblad, P., Barth, H. & Eriksson, M. (2022). *Säkert tillsammans i skogsindustrin*. Praktiknära skrift, Centralfonden, Högskolan i Halmstad.



¹ <https://industriarbetsgivarna.se/course/sirius-forum-2023/4>

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