

Green steel transitions

Impacts on people and places

LUND UNIVERSITY

MASUGN 4



Table of Contents

Introduction	3
What is happening and where?	4
The future role of industry in shaping industrial communities	6
Expectations of limited change	6
Managing promised change	7
The relationships between industry and community in historical context	9
Beyond the industrial idyll: industrial communities as diverse, and at times, divided places	11
Recommendations	12

This report is a part of the communication efforts of the research project Changing Places of Work: A place-based approach for re-imagining work in fossil free industrial towns of the future. For more information, see:

<https://portal.research.lu.se/en/projects/changing-places-of-work-a-place-based-approach-for-re-imagining-w>

AUTHORS:

Bregje van Veelen, Lund University: bregje.van_veelen@lucsus.lu.se

Will Eadson, Sheffield Hallam University: w.eadson@shu.ac.uk

Åsa Melin, Karlstad University: asa.melin@kau.se

Stefan Backius, Karlstad University: stefan.backius@kau.se

Sanne Malmberg, Lund University: sanne.malmberg@lucsus.lu.se

Davor Mujezinovic, Karlstad University: davor.mujezinovic@kau.se

IMAGE CREDITS:

Image: Masugn. SSAB Mediabank

Image: Oxelösund. SSAB Mediabank

Imagine: Mine and community. Report authors

Image: Hofors. Järnvägmuseet, accessed through digitaltmusem.se

Image: Luleå. SSAB Mediabank

Figure 1 was created by Emma Johansson, Lund University

Published: October 2025, Lund University.

Funding provided by the Swedish Research Councils Forte and Formas (Grant agreement no. 2021-01767) and South Yorkshire Sustainability Centre (Research England Development Fund grant 2022)

Introduction

The transition to a low-carbon society is urgent and will require extensive industrial change. The Swedish steel industry is one key carbon-intensive sector for which there are extensive plans for change. These will have wide-ranging implications for workers and communities. The anticipated impacts are not only economic in nature, but also social and cultural. Addressing these impacts in a context of historic and on-going industrial change is important to ensure that the low-carbon transition supports positive change for people and places, and does not exacerbate existing inequalities.

In this report we focus on how industrial communities are impacted by efforts to decarbonise the steel industry. We conducted case study research in four locations across Sweden, each impacted differently by green steel transitions: Hofors, Blötberget (both in the historical region of Bergslagen), Oxelösund (Södermanland), and Luleå-Boden (Norrbotten, grouped together here due to their proximity). An additional research visit was also undertaken to Kiruna.

The report is informed by research undertaken as part of the Changing Places of Work project, a collaboration between Lund University, Karlstad University, and Sheffield Hallam University.

KEY FINDINGS

1. The green transition in the steel industry impacts not only workers, but also the places and communities in which the industry is located. The anticipated impacts include economic, social and cultural impacts.
 - Residents and other local stakeholders mostly anticipate the impacts to be positive, although there are also concerns, especially in Luleå / Boden.
2. From our interviews we observe that anticipated changes are much more modest than the promise for significant change that dominates top-down and media narratives.
 - Adopting a historical and place-based perspective demonstrates that the 'promise' of the green transition is tempered by historical experiences over the past 50 years.
3. Nonetheless, the green transition is seen as a way to maintain the longstanding connection between industry, people and place.
 - Despite the generally is a close connection between people, industry and town in the places we have studied, digging deeper also shows that these relations are not experienced in a uniform way. Instead, they vary according to local and individual characteristics.
4. Greater attention needs to be paid to local priorities and how these can be balanced against national ones if transitions are to be just.

What is happening and where?

KEY FACTS

- There has been significant attention for developments in Northern Sweden where there have been substantial investments in developing capabilities for fossil-free iron and steel production...
- ... But industrial places across Sweden are impacted by the steel transition, including in old industrial areas such as the Bergslagen region.
- Developments encompass new hydrogen-fuelled iron and steel production plants in the north, investment in existing plants across the steel production process, and some steelworks closures or partial closures.

The *Changing Places of Work* project conducted qualitative case study research in four Swedish locations, and three locations in the United Kingdom to better understand the impacts of industrial change on workers and communities. In this report we focus on the impacts in Sweden.

In recent years, domestic and international attention has been primarily focused on Northern Sweden. Aside from the presence of the steel industry in Luleå, extensive iron ore extraction continues in Northern Sweden. However, industrial transformation will have much broader geographical impacts than is commonly recognised. In the Bergslagen area, with its long history of steel making, some towns are expected to benefit from the green steel transition. One example is Blötberget, where the proposed reopening of an iron ore mine, with ore suitable for green steel production, could help to create new jobs. In contrast, another Bergslagen town, Borlänge, is having its old hot rolling

mill phased out because of Swedish steel company SSAB's decision to utilise hydrogen-based hot rolling in Luleå.

Making 'virgin' green steel making requires iron ore as well as large quantities of renewable electricity and improved infrastructure for electric power transmission. The expansion of mining activity and renewable energy generation have implications for other communities, not least the Sami, although a detailed exploration of these effects is beyond the scope of this report.

To analyse how green transitions in the steel industry impact on places we conducted fieldwork in four locations, chosen based on their different roles in the steel supply chain and differences in anticipated impacts. While some places (Luleå-Boden, Blötberget) expect to see industrial growth, others (Hofors, Oxelösund) primarily hope to maintain current levels of industrial activity. These are shown in Figure 1, below.



Figure 1: Swedish Case Study Locations

The future role of industry in shaping industrial communities

KEY FINDINGS

- Luleå-Boden is the only place where significant change is anticipated, which also brings challenges and worries
- In the other communities, expected impacts of the green transition are modest, and hopes centre around halting long-standing local socio-economic decline
- The green transition acts as a source of local pride, even if impacts are expected to be small

EXPECTATIONS OF LIMITED CHANGE

Expectations of how green steel transitions will impact places and communities in Sweden are largely neutral or positive. This stands in stark contrast to research we conducted in the UK. Nonetheless, within Sweden the anticipated changes of the green steel transition do vary. In Hofors and Oxelösund, employment numbers are expected to stay fairly stable, or reduce slightly. In Blötberget, it is hoped that the re-opening of the mine could create approximately 300 jobs, although it is unclear when these jobs might be realised. The anticipated scale of change in Luleå-Boden is more significant, although much of this is due to the broader promise of reindustrialisation, which extends beyond the steel industry. At the time of our interviews, there were mentions of the potential for 10,000-15,000 new jobs in the region, although these are associated with a broader 'green transitions'-agenda, not only with changes in the steel industry.

While the Swedish steel industry has received over a billion SEK from the EU Just Transition Fund to support its transition towards fossil free steel making, expectations for how this transition will impact local steel communities are surprisingly modest. While more substantial changes are anticipated in Norrbotten (as described in the next section), in the other places where we conducted research the anticipated changes are small. In Hofors and Oxelösund the steel industry remains a major employer, but neither residents nor other local stakeholders expect the green transition to kick-start a return of the 'golden' post-war era when the company and town were seen as one. Rather, the expectation is that the companies will operate in the

efficient and 'lean' manner which has become the norm. Especially in Oxelösund and Hofors, the hopes for the future are about maintaining what is: trying to halt any further decline and ensuring the continued survival of these communities. At best, residents hope that perhaps a few more people will move there and that the local shop might re-open.

In Blötberget hopes for the future were also modest, but there was also more confidence that if the green transition does not bring change, the community will be okay. This is due to the historical experience of the place. The closure of the iron ore mine in 1979 had detrimental impacts on the community, but those who remained are content with their lives today. These residents expressed the sentiment that if the mine re-opens, that would ensure the continuation of their identity as a mining community, but even if it does not, that their community could survive whatever the future might hold.

Luleå-Boden is the exception, where we identified a stronger anticipation of substantial change. Here, research participants expressed a stronger hope for the future, and the promise of socio-economic development that the green transition might bring. At the same time, this was the only place where concerns were expressed about the transition, perhaps because it is the only of our cases where the socio-economic changes are already starting to be noticed. The anxiety is primarily about things changing too much, and about the character of the city disappearing. Yet, at the same time, constant change is part of their history and something that fits in the local narrative and identity of the region.

It is important to emphasise that the anticipated impacts are not only material. What matters to many across our case study locations is how the green transition is putting their community on the map again. Residents appreciate that their town is talked about, and seen to matter again at a national and even global scale. Their positive attitudes to the coming changes are more about being at the forefront of something, about being noticed, about pride in their community.

For all the places there appears to be the same interesting contradiction: they want to grow, but they want to maintain their current character. They want prosperity, but not too much of it. They mostly do not imagine something qualitatively different in any significant way. Rather, things ought to remain the way they are – the way that they like them – but improve slightly in various ways, while each community retains its character. As such, there is thus an interesting contradiction between the top-down visions of ‘green’ transitions as a source of transformation and the lived experiences and desires at the local level.



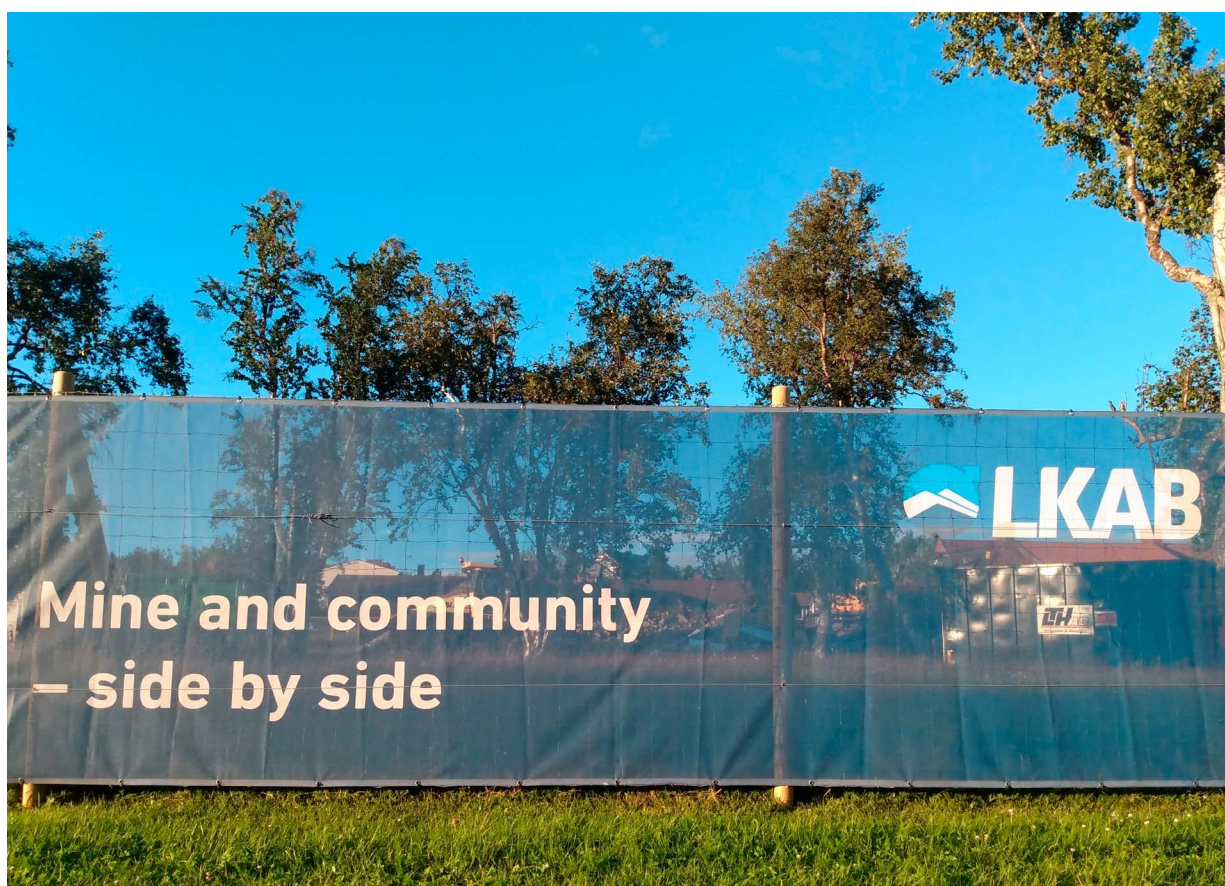
MANAGING PROMISED CHANGE

In Hofors and Oxelösund local government appears to play a relatively minor role in managing changes that are anticipated. Municipal representatives conceded that the steel companies direct the speed and direction of change, with limited input from municipalities. Due to the scale of change in Luleå-Boden, managing these changes presents more immediate challenges. It is anticipated that many of the jobs will be filled by migrants, especially international ones. Northern Sweden faces historic labour market challenges, due to a combination of a decline in the working-age population, a relatively low share of people with a post-secondary education who remain in the region, and significant out-migration of young people and skilled workers. In-migration creates opportunities for municipalities, in the form of municipal taxes for example, but also increased demand for social and physical infrastructure in those places, such as housing, schools and hospitals.

At present, lack of housing represents a major obstacle to industrial development in Luleå-Boden. Although all interviewees identified it as a key issue, the ability to act decisively appears small, with most actors pointing to one another to lead the way. Furthermore, investments into housing need to be made in the present, whereas the income will be generated over time.

Construction companies and housing corporations are therefore reluctant to invest until they believe that the population will actually increase according to the existing projections. Yet the construction of attractive housing is key to attracting new workers, but also to ensuring that they settle in the affected regions permanently rather than temporarily. All affected municipalities strongly wish to avoid an over-reliance on temporary workers, or a 'fly-in-fly-out' situation, not least due to financial concerns as municipal taxes are levied based on workers' place of residence.

For this reason, the region of Norrbotten is especially interested in attracting lifestyle migrants from other European nations. These are seen as people who are attracted not just by the promise of work, but also by the lifestyle Northern Sweden has to offer, in the hope they wish to stay in the area long-term. In contrast, there is concern in the Bergslagen region about 'brain drain', given that much of the development is in the north of Sweden. Many of the old industrial towns in the south have faced dwindling populations for decades as their industries have declined. Concerns over an exacerbation of the depopulation problem has led to some southern efforts to retain their residents and maintain a local skill supply. These include e.g. projects meant to attract old residents who have moved away to return.



The relationships between industry and community in historical context

KEY FINDINGS

- In Hofors, Blötberget and Oxelösund there is a strong historic connection between people, steel industry and town – both economically and culturally
- This has changed in recent decades; job losses and re-organisation often involve centralising management functions in Stockholm, which has weakened both the economic connection and the shared sense of identity (the latter especially among young people)
- Understanding these historic changes shows insights into how residents experience current change and anticipate the future

One key theme in our research is how we can understand the changes discussed above, in a historical context. Adopting a historical and bottom-up perspective demonstrates that the ‘promise’ of the green transition is mediated by historical experiences, and memories of these experiences, over the past 50 years.

In the places where we conducted research, industry used to be “everything”, and historically helped the people living in the area. The local steel and mining industry was a key part of local social and economic life, contributing to education and leisure activities. In

Hofors, for example, one particular event stands out, that of the company lending people trucks so they could bring home Christmas trees.

There was also a sense that in the past anyone could get a job in the industry, which helped cement the relation between industry and population. Research participants regarded this as one way in which the company used to take care of the residents, since they ensured that anyone could have an income. However, others argued, it also diminished the value or status of the work.

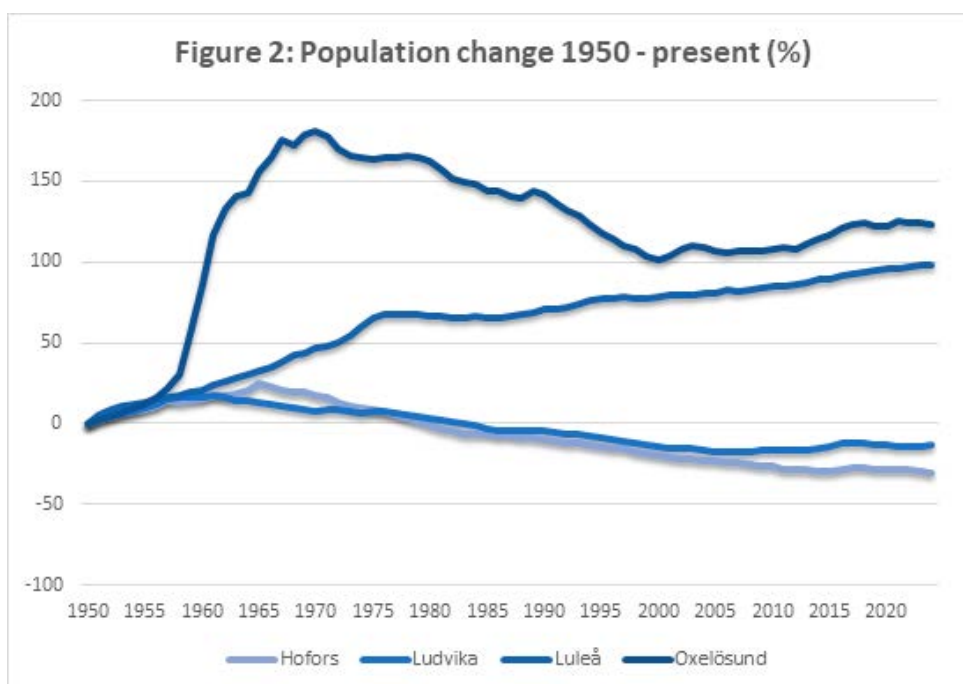


Figure 2: Population change 1950 - present (%)

Aside from this economic connection, the close link between industry and town also fostered an important cultural identity: Bruksandan, the mill town spirit. A place-based culture, where residents identify not only with the place itself but also with the dominating industry/company. In our interviews, people in Hofors would speak of Hoforsandan. In Oxelösund, of Oxelösundsandan, indicating how place, industry and people were “as one”. It also shows the importance of the local community, through which the general concept of bruksandan becomes locally specific and meaningful.

However, the steel company and the community are no longer seen as being one and the same. Oxelösund, Ludvika (the municipality that Blötberget is part of), and Hofors have all experienced a decline in population since the industrial heyday of the 1960s and early 1970s (see figure 2, above). Furthermore, due to centralisation, management no longer tends to live locally. As a result, management are seen as lacking knowledge about the local places where the production of steel takes place. These changes also trickle

down to how local workers perceive the connection between industry and place. In Oxelösund, for example, many of the younger workers we interviewed were unfamiliar with the concept Oxelösundsandan. The older generation did know it, but would often lament its disappearance, an indication that nothing has really replaced this connection between place and industry that used to exist.

These changes were often perceived as simply being the way of things, part of a global trend that has affected all sectors of the economy in the past decades. In Hofors, the people lamented the losses this development has led to, but also realised that this is what has kept the company profitable and operational to this day. In Blötberget, the same understanding existed but was mixed with bitterness over the fact that their mine still had plenty of ore left. Residents are disappointed to have lost something so central to their local identity because of economic cost-benefit calculations. It is thus in this context that the green transition should be understood, and why the expectations of change are perhaps so modest.



Beyond the industrial idyll: industrial communities as diverse, and at times, divided places

KEY FINDINGS

- Communities are not uniform. There are both historic and present-day divisions, and interviewees relayed how they experienced living and working in 'bruksorter' differently based on for example gender or nationality
- The question of how to best integrate newcomers in the local society was a key area of concern in Luleå-Boden
- When studying the (anticipated) impacts of industrial change it is important to keep this diversity in mind to understand how different people or groups might be impacted differently by industrial change

In the previous sections we have described how different communities experience and anticipate change. However, it is important to remember communities are not uniform. For example, despite the historically strong presence of *bruksandan*, it is not experienced in a uniform way. For example, male workers and retirees would talk about their identity and social networks primarily as being rooted in the workplace. As a result, when industry disappeared or reduced in size, they were strongly affected. In contrast, female residents were more likely to have social networks outside the workplace, providing a sense of continuity and support in the face of significant change.

Diversity also sometimes spills over into division. The construction of a strong sense of community, of 'us', also relies on the presence of a 'them'. This 'them' could be other nearby towns or villages, even if they were part of the same municipality. In other cases, those who had moved to these industrial communities for work would talk about how they struggled to fit in, and how they had befriended mostly other 'incomers'.

The importance of seeing those who move for work not just as workers, but as residents and community members, was especially recognised in Luleå-Boden. The recent experience of Skellefteå, which experienced

a large influx of workers due to the Northvolt factory, had also put the question of how to best integrate newcomers in local society on the radar in Luleå and Boden. Here the disappearance of activities that used to be specifically organised by and for workers – from sports clubs to reading circles – was seen as both a barrier to integration, but also an opportunity for workers to connect with the broader local community, even if it was not always yet clear how such interactions could best be facilitated.

These dimensions of identity and belonging can sometimes be difficult to grasp through interviews. People took pride in being welcoming and strongly believing that any new arrivals could become a part of the community – but it was also made clear that in the smaller communities, one's family might live there for generations without being considered fully part of the community. Local patriotism would clash with the desire to view oneself as open-minded and welcoming, which in turn would at times clash with the experiences of those who felt they did not belong. However, the take away message here is the importance of not relying on stereotypical and/or uniform views of industrial workers or towns, but instead to recognise the diversity of residents and their respective experiences.

Recommendations

- Recognise the socio-economic opportunities and challenges that come with industrial change. While there is a general focus on the importance of the steel industry for national objectives, there is a need to improve collaboration between industry and municipalities to maximise local benefits.
- Work with local people to understand their perspective on the hopes they have for the future and how industrial change can contribute to this to maximise both local economic as well as social benefits.
- Many of our respondents felt a sense of pride at being part of the green transition, and the possibility it brings for putting their community 'on the map' again. At the same time, potential negative consequences – from local environmental impacts to continued reliance on a single industry – should be recognised and where possible either addressed, or ensured communities are appropriately compensated
- Municipalities reported a sense of competition between them which risks municipalities lowering demands to attract industry. National government should play a stronger coordinating role to address this.



