ShortCuts

FROM SKOGFORSK. NO 3 | 2014 | RESEARCH FOR TOMORROW'S FORESTRY

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"NOTHING COMES FOR FREE"

THEME RESEARCH BENEFIT

MISSION

SKOGFORSK PREACHES IMPLEMENTATION

COMMENT

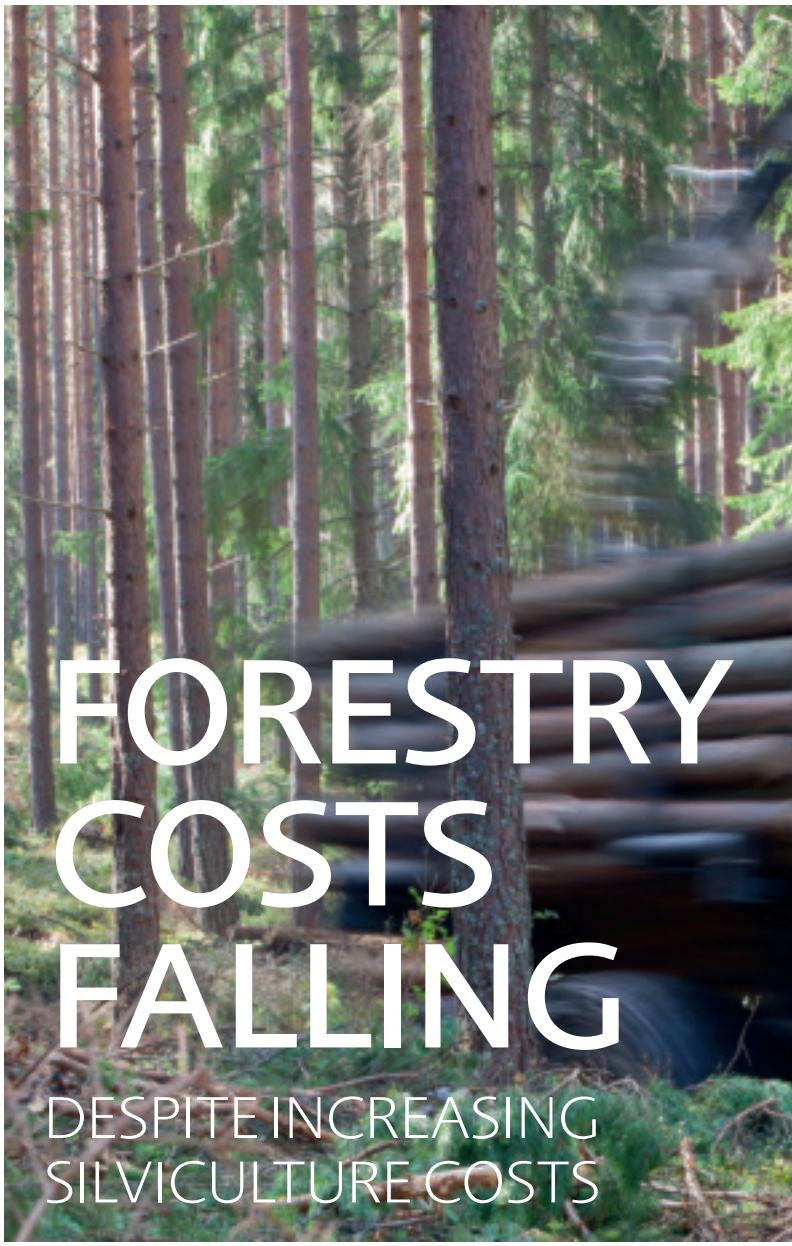
ROLF BJÖRHEDEN, *Operations & Products*

Forestry costs falling at last

The downward turn in the costs curve is expected. Technical improvements and more efficient logging methods observed in our studies are now of such a scale that total costs are falling. Some forestry companies have really been working hard and systematically to improve productivity, and I think costs will continue to fall. Technical advances and closer collaboration between players can further rationalise logging in the next few years.

However, the picture is a bit more complex when we analyse the details in the cost pattern. For several years, costs of transport and roads have been increasing. Introducing larger vehicles on a broad front would considerably reduce costs for the actual transport of wood products, but we must now start seriously tackling the costs of maintaining, upgrading and building forest roads. The increasing cost of silviculture is another long-term trend that is both a worry and a challenge.

For forest fuel, the picture is mixed. Sales volumes are falling, while the costs of production have fallen or remain unchanged. We know that quality and delivery service have improved, but prices have fallen, which has a direct effect on the small margins in this sector. This has created a real acid test for suppliers. An important cause of the problems is the great increase in incineration of waste – Swedish and imported – so forest energy finds it difficult to compete in terms of price.



FORESTRY COSTS FALLING

DESPITE INCREASING SILVICULTURE COSTS

In 2013, forestry costs fell by eight percent compared with 2012. Logging has become more efficient and fewer expensive storm fellings appear in statistics from the forestry sector.

This is shown in the joint survey carried out by Skogforsk and the Swedish Forestry Agency for 2013.

"What we're possibly seeing is a break in the trend after several years of increasing costs," comments Skogforsk's Torbjörn Brunberg. "In other follow-ups, we've observed greater efficiency in logging, and that should have an impact on the statistics."

However, costs of silviculture increased by approximately four percent in 2013. Transport costs were unchanged and were thereby in line with inflation (0 percent). Industry's costs for raw materials fell because of lower wood prices.

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PRODUCTIVITY IMPROVING

Productivity and machine utilisation in forestry are once again increasing after several years of decline.

"It's pleasing to see that efficiency is increasing," says Torbjörn Brunberg of Skogforsk. "But one deviation from the trend is that productivity in thinning activities in southern Sweden has fallen somewhat, probably because the stands in question have more smaller-dimension trees than previously. The average stem has decreased from 0.11 to 0.08 cubic metres."

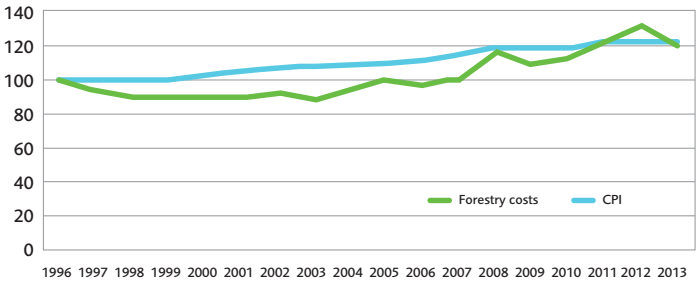
Even in the thinning stands in northern Sweden, average stem size has decreased somewhat, but average size has increased in the country's final fellings. Average stem size is an important factor in the productivity of forest machines – larger trees are cheaper to fell and transport than smaller trees.

PRICE OF FOREST ENERGY FALLING

The price of forest fuel has fallen for the second consecutive year. Since the peak in 2011, the price has fallen by approximately five percent, which equates to approximately SEK 10 per cubic metre.

In 2013, costs continued to decrease marginally. This is shown in new statistics from Skogforsk.

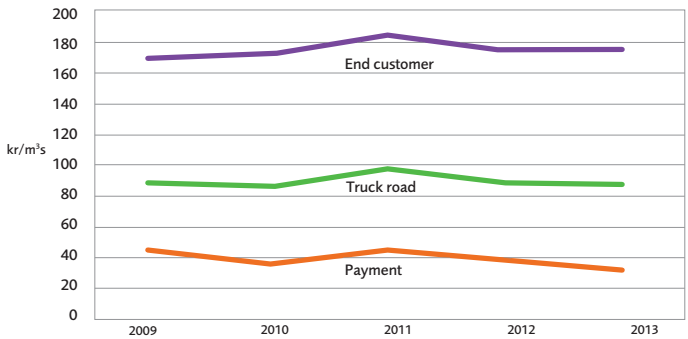
The main reason is that forest owners are receiving lower prices for forest fuel.



The graph shows how forestry costs per felled cubic metre have developed since 1996. Forestry costs include felling, silviculture, administration, roads, etc. Skogforsk and the Swedish Forest Agency have been carrying out the joint survey of forestry costs and revenues since 1992.

About the survey

The survey covered a trading volume of 36 million m^3sub.
The corresponding volume for fellings was 45 million m^3sub.
Southern Sweden comprises Götaland and Svealand, and northern Sweden comprises Norrland.



The graph shows how payment to the forest owner, and the costs to truck road and end customer, have varied in the years that forest fuel data has been collected. After the peak in 2011, total costs have fallen somewhat, mainly because payments to forest owners have fallen.

SUCCESSFUL IMPLEMENTATION OF RESEARCH RESULTS:

"NOTHING COMES FOR FREE"

"Sadly, nothing comes for free. Clear objectives are needed. Resources are needed – both time and money. But good timing is also need – and that requires dialogue. So, it's not that simple…"

Text & photo: SVERKER JOHANSSON | sverker@bitzer.se

Magnus Thor has seen it all. He has been working on applied research for a couple of decades, and has seen many textbook examples where research results have been successfully implemented in practice. But he has seen just as many slow-moving and long processes where it is hard to get new methods and technology accepted and implemented.

"We can start by noting that rapid transfer of R&D results is not an end in itself," he says. "It's a matter of survival. That's why at various times we've been studying how implementation really works in the sector."

Skogforsks advisory groups and collaboration groups play an important role in the dialogue between R&D, users and manufacturers

> Rapid transfer of R&D results is not an end in itself. It's a matter of survival.

'Soft' barriers common

"What we've observed – and what is also recognisable in many other sectors – is that most of the obstacles to rapid implementation of R&D results are not of a technical nature at all. Instead, they're more to do with poor timing and difficulties in adaptation to existing systems, or soft barriers like people's opposition, and sometimes nothing other than business policy. One barrier that has become increasingly common is, who is going to pay, who will benefit from the development? The forest company, the contractor or the manufacturer? That conflict has put the brakes on many good ideas.

"So it's vital to include all important stakeholders in the process, with engagement and ownership, so that the changes have a greater chance of making a real impact."

According to Magnus Thor, finding ways to increase implementation in contractor forestry is a particularly big challenge.

"We're not there yet. It's mainly about long-term business relations – sharing the risk and the benefit. If the relatively small contractors adopt new technology, they're risking exposure to teething problems and disruptions in the flow. Often, opposition to new technology is understandable, until it can be clearly seen that an innovation does actually work and has been proved to be worthwhile."

Dialogue with the sector

Skogforsk has continual dialogue with its advisory groups and collaboration groups. With their help, the institute is trying to strike a balance between acute needs and development projects that will be useful in the future.

And Magnus Thor returns to the important dialogue with the sector. Here executive management systematically monitors production, in terms of both existing and new technology. New, promising results have often strong support from executive staff and regional managers, those further up in the organisation.

But, when it comes to the crunch – when technology is to be tested, when methods are to be tested, when trials are to be carried out – everyday activities get in the way.

"It always ends up in the stress of someone's everyday work," says Magnus Thor. "So they tend to be affected by development, rather than benefit from it. Nevertheless, it is often surprising how many people in the sector are really keen to change things for the better. However, the experience is that they must be relieved of involvement in the trial stages, regardless of whether they work in a forest company or in a contractor company."

Manufacturers important

Engagement of major manufacturers is important. They have access to markets, service and support organisations.

"They have access to the users' time and thoughts," says Magnus Thor. "For smaller manufacturers, it's not so easy. Despite exciting innovations, the process is more cumbersome, and they don't have the critical mass that would enable them to exert an influence. This is also a factor that puts the brakes on development."

New standards drive development

Skogforsk often works as a coordinator in developing new sector standards. Both development and administration of the standards are important tools for developing the sector, according to Magnus Thor.

Magnus Thor is research director at Skogforsk, leading the Wood Supply research area.

"We led the development of the contractor agreement, 'ABSE09' and we're coordinating the introduction of the new forestry standard for managing data to and from forest machines, 'StanForD'. Today, ''Calibrated Route Finder' provides a basis for route choice and payments in the transport stage, and a standard is currently being developed for data on standing forest, 'ForeStand'."

Case studies can give answers

Magnus Thor also describes how Skogforsk and forestry players act when it comes to introducing new technology. Multi-tree handling is one example.

"As early as the 1990s, Skogforsk was studying the technology involved in thinning small-dimension stands," he explains. "Results were very promising – studies showed that productivity increased by 15–20 per cent in suitable stands. But after that, nothing much happened, apart from new studies that confirmed the calculations. However, in the 2000s, we carried out an implementation project in the sector. This was successful, and we learned a lot from it."

2 MEASURES TO SPEED UP IMPLEMENTATION

1. SEK 50 MILLION

The forestry sector has allocated SEK 50 million to an application-focused project to be run by Skogforsk. The objective is to improve the competitiveness of the forestry industry and reduce ground damage caused by forestry activities. Broad participation involving forest machine manufacturers and other players is expected to give a strong return on the investment, and the focus is on implementing new, high-tech solutions.

Ambitions are high: the planned R&D measures are forecast to give a return of 25 times the initial investment. This would be through a combination of cost reductions and increased revenue, totalling SEK 1.25 billion per year.

2. 15 implementation targets a year.

Skogforsk identifies implementation targets, which can be broken down to research programme level and individual researcher level.

Three examples from 2014:

- Over a five-year period, use of genetically improved forest breeding material in forestry will be over 90 percent for Scots pine and 65 percent for Norwegian spruce.
- At least 5 contractors have introduced soil moisture maps for use in planning and felling.
- ForeStand, new data standard for standing forest – implementation in two user studies.

Important questions

Before the process of implementing new research results can start, five important questions must be considered:

1. Do we know the users' actual needs?
2. Have we included all stakeholders in our analysis?
3. Is this the right time?
4. Have all drivers and barriers been identified?
5. Are there sufficient research results to drive the issue?

If the answer is yes to all five questions, there is a good chance of a successful implementation.

On course with Skogforsk and SMF

"BUSINESS ARRANGEMENT IMPORTANT FOR IMPLEMENTATION"

VISION was there when Skogforsk and SMF, the Swedish Forest Contractors Association, held their new course on reducing ground damage in logging, together with Mellanskog and a couple of contractor companies in Gästrikland.

After a theory session, participants moved into the forest to discuss suitable measures, the new soil moisture maps, and how collaboration could be improved.

Text & photo: SVERKER JOHANSSON

Isabelle Bergkvist,
Programme Manager Silviculture and Environment, Skogforsk

"Soil moisture maps and new methods are being rapidly introduced, but contractors and landowners also need to agree on procedures and practical arrangements. If the contractors are working within a clear framework, and know they can decide to build a bridge, drive a bit further, build strong log bridges, and be paid for it – yes, that's half the battle won. But if the arrangement is unclear, problems arise instead. It's not Skogforsk's job to get involved in the business arrangements, but this is clearly what often steers implementation."

Robert Pettersson
Machine operator, Grinduga Skogsentreprenad AB

"I think we'll be able to reduce ground damage quite quickly when we get better suggestions for base roads. A good information environment in the cab is also important. The map symbols must be adapted so that they can be seen against the blue soil moisture maps. Mellanskog is testing different colours to make it clearer, and that's important. But the computer must have sufficient power too –it's already on the limit. Sometimes, the bucking computer part doesn't work when the computer is logging coordinates. Perhaps, purely theoretically, navigation and bucking functions should be kept separate so that no lagging occurs."

Marcus Pettersson
Managing Director, Grinduga Skogsentreprenad AB

"The soil moisture maps will be an important tool, both for the planner and for us. The first step will hopefully be that we get better proposals for base roads from the planner, the second step will be to get the maps out in the machines as decision support.

As it looks now, there are many different computer solutions out in the machines. If Mellanskog is to manage function and, not least, provide support, I think a platform-independent app would be best.

At the moment it's unclear what mandate we have to incur costs when trying to minimise ground damage. This needs to be made clearer."

Mattias Morberg
Inspector, Mellanskog

"The course was a good opportunity to discuss what to focus on in my planning in order to provide better service to the teams. From what I've seen of the soil moisture maps, we'll be able to supply better documentation in the future.

And we have to solve the communication issue regarding what the measures can cost. In relation to an average stand of 350 cubic metres, the forest owner might think that a bridge costing 5000 kronor is expensive. It would be good if the contractors could discuss that directly with the forest owner before felling, but at the same time it's us that own the contract, so it's worth thinking about."

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HOW PROFITABLE IS RESEARCH?

CTI is a very profitable research project.

A few years ago, Skogforsk studied the profitability in a number of its R&D projects. The issue is important for both Skogforsk and the funders of various R&D, and the results of the analysis can be useful in prioritisations of R&D work and investments in implementation projects.

Skogforsk studied six R&D projects, which showed good or very good results. For example, in a profitability calculation for 2011, the project 'Quality-assured harvester measurement's showed a profit almost at the same level as Skogforsk's annual budget (see Vision no. 2/2014). The current value of the investments in the projects varied between SEK 39 and 657 million, internal rate of return was between 27 and 175 percent, and repayment time was, at most, approximately three years.

Profitable R&D projects where Skogforsk has played an important role

SEK million, calculated on current value

Project	R&D investment, total	R&D investment, Skogforsk's share	Profit in forestry
Multi-tree handling of forest fuel	12	4	178
Sorting of pulpwood according to properties	40	19	64
Larger harvesters in final felling	49	1	93
CTI, central tyre inflation	1	<1	45
FlowOpt, optimisation of wood flows	1	1	39

HOW FORESTRY CAN SPEED UP IMPLEMENTATION

FOREST COMPANIES

- A fundamental requirement is that the forestry company is capable of receiving innovations for practical implementation.
- One or more employees must be primarily responsible for monitoring research and communicating new results.
- Management must be able to prioritise between suitable development issues, and appoint people and allocate time and resources to run the project.
- Managers at all levels must actively drive and follow up the practical development work.

RESEARCHERS

Researchers must be better at:

- Stating clearly which R&D results are ready for practical implementation.
- Judging whether the timing is right, based on awareness of which issues are prioritised in the various companies.
- More actively participating in the implementation work in the companies.
- Adapting marketing and communicating research results to the issue in question and their applicability to the individual company.

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