



Forest Enterprise Network in Switzerland

An instrument for measuring economic sustainability



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The Forest Enterprise Network in Switzerland

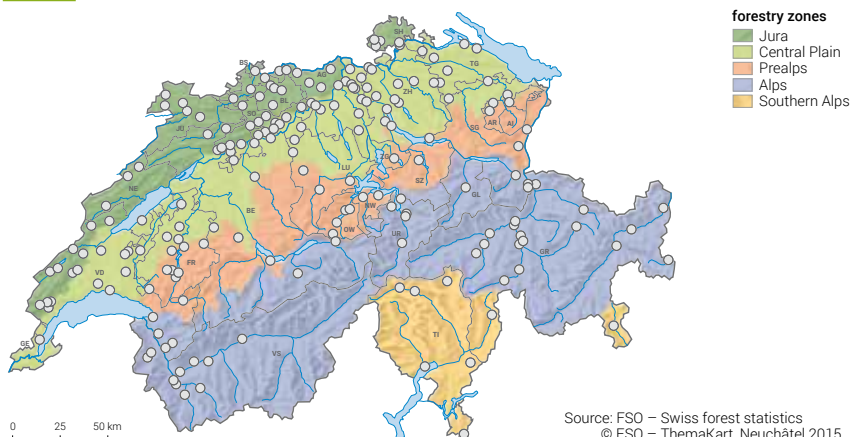
General Information

The “Forest Enterprise Network” (FEN) of Switzerland is a voluntary observation sample comprising 200 forest enterprises from the forestry zones Jura, Central Plain, Prealps and Alps (incl. Southern Alps) (Fig. 1). The collection boundary is set at 50 ha of forest. In its current design, the FEN provides business indicators at forest zone and national levels.

The aim of the survey is to monitor the economic situation of forest enterprises in detail and subsequently draw conclusions for the overall forestry sector in Switzerland. The data gives forest owners and managers of forest enterprises a better understanding of the economic impact of the production processes and the economic proportionality of their performance. Federal, Cantonal and various other stakeholders obtain guidelines for assessing the economic situation of forest enterprises, as well as instructions for optimising general forest policy conditions.

“ForstBAR”, the main instrument applied in FEN, is a cost and management accounting software especially developed for the Swiss forestry sector. ForstBAR calculates and evaluates working hours, revenues and costs in the main product areas (cost-units).

Fig. 1 Geographical distribution of the FEN enterprises



Costs and revenues in forest management are calculated according to priority functions (i.e., economic, social, recreational, nature and landscape forest functions).

The uniform recording of operating figures with ForstBAR and the support provided by experts from *Swiss forest owners association* (SFOA) and cantonal BAR supervisors ensures the high quality and comparability of the figures among the FEN enterprises.

ForstBAR distinguishes between the four main product areas of “forest management”, “services”, “material goods” and “investments”, which are further divided into expenditure items. Direct and indirect costs incurred in the operational value-added process as well as the revenues are systematically allocated to the cost-units.

Structural data

Tab. 1 depicts a selection of important structural information of the forest enterprises in FEN.

Tab. 1 Structural data of forestry enterprises in FEN 2014

Parameter	Unit	Jura	Central Plain	Prealps	Alps	Switzerland
Number of enterprises		53	64	32	51	200
Productive forest area	ha/enterprise	955	534	888	1970	1068
Proportion of protective forest	%	3	1	51	88	49
Timber stocks	m ³ /ha	298	340	331	257	292
Coniferous timber stocks	%	53	57	80	85	70
Intensity of timber harvesting	m ³ /ha	5.97	8.14	5.24	2.24	4.47
Density of forest road infrastructure	m/ha	56	73	26	12	34
Personnel density (management)	Empl./1000ha	1.01	2.17	1.05	0.69	1.05
Personnel density (operational)	Empl./1000ha	3.38	6.91	4.64	3.24	4.05

Area ratios and forest functions

The total forest area of all FEN enterprises is around 254,000 ha. Thus, the FEN enterprises cover 27% of the forest area of all forest enterprises in Switzerland (FSO 2015). 49% of the productive forest area is forest to protect from natural hazards, the majority thereof located in the Alps (Tab. 1). At 45%, the productive forest (priority timber production) is also of great importance.

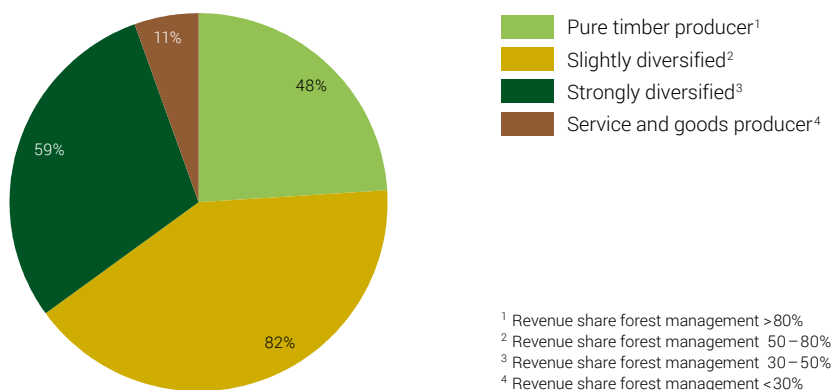
Enterprise size

On average, a FEN enterprise operates on approximately 1000 ha of forest (Tab. 1). However, the enterprise sizes vary strongly depending on which forest zone it is located in. In the Central Plain there are many small and medium-sized enterprises (≤ 1000 ha), while two-thirds of the Alpine enterprises are much larger (> 1000 ha).

Enterprise types

In addition to forest management, the Swiss forestry enterprises provide a variety of services outside the forest area (e.g. tree felling services in gardens) and goods on a large scale (e.g. energy logs and wood chips). Fig. 2 shows the respective orientation of the FEN-enterprises in particular main product ranges.

Fig. 2 Enterprise types in FEN 2014



Forest Enterprise Revenues

Total operating revenues

Fig. 3 shows the revenue structure of forest enterprises in FEN for the year 2014. The percentage indicates the proportion of the respective revenue item with regard to total revenues.

As expected, 55% of the revenues are generated through forest management. These are generated mainly through felled timber sales and compensations by the public sector. More than 60% of public funds are payments for protection forest management (transfer payments). **Notable are the 31% revenues generated from services.** Forest enterprises generate more than half of these revenues with services for third parties. The enterprises generate 14% of the operating revenues through the production of goods, which are mainly energy logs and wood chips (Fig. 3).

Timber harvesting and revenues

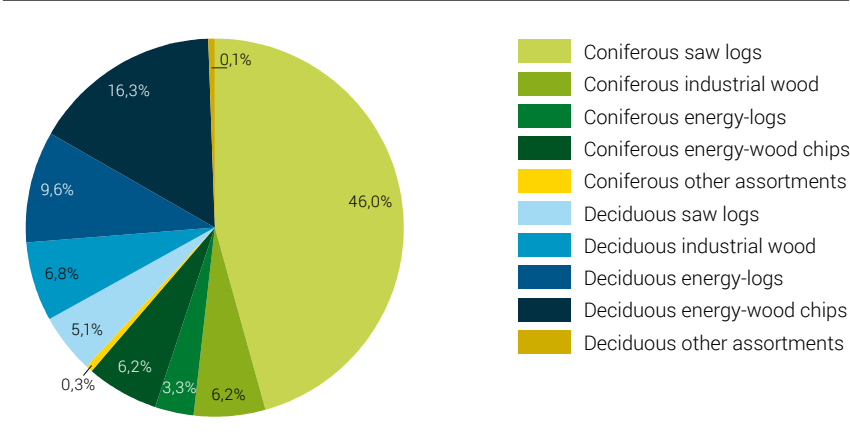
Fig. 4 shows the proportions of assortments of used coniferous and deciduous wood. **Nearly two-thirds of the harvested timber is an assortment of coniferous wood.** Coniferous saw logs, the most important economical assortment from timber harvesting, make up 46% of total use both in terms of revenue potential per solid cubic meter (Fig. 5), as well as in terms of sales volumes for the enterprises.

Fig. 3 Revenue structure of forest enterprises in FEN 2014



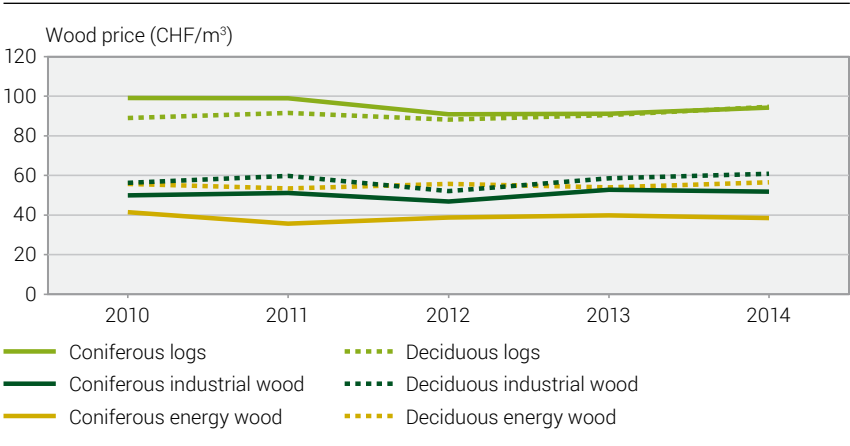
While the price for industrial and energy wood remained relatively constant within the time period 2010–2014, the price of coniferous logs decreased by 5%. In the same period, the average price for deciduous logs increased by 6% (Fig. 5).

Fig. 4 Assortment shares of total timber harvesting in FEN 2014



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Fig. 5 Prices of felled use of coniferous and deciduous assortments in FEN 2010–2014



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Forest Enterprise Costs

Total operating costs

Fig. 6 shows the costs of FEN enterprises in the three main product areas. The percentage indicates the proportion of each cost center in relation to the total operating costs. The majority of the costs are in the main product range of forest management – as with the revenues. **On average, 57% of the total costs were in forest management, 29% in services** and 14% in the manufacturing sector (Fig. 6). On the costs side, the great importance of forest management with regard to the economic success or failure of the forest enterprises is underlined.

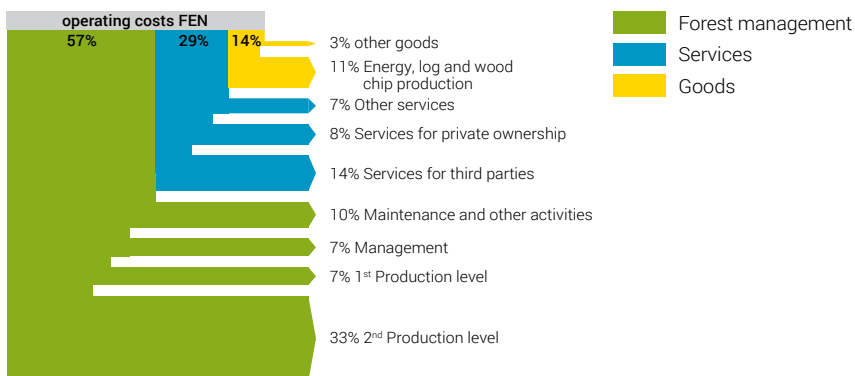
Forest management costs

The most significant cost centre in forest management is the 2nd stage of production, with an average of 58% of the respective costs. Fig. 7 shows how the costs in the 2nd stage of production are split up in various expenditure items. As expected most costs were allocated to timber harvesting (94%).

Timber harvesting costs with high leverage

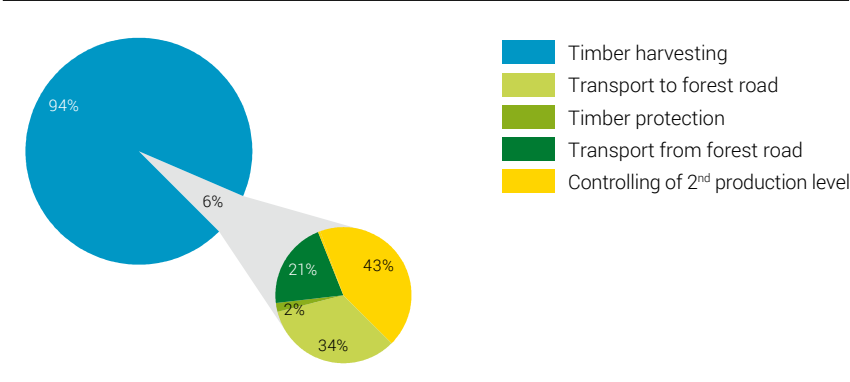
The harvesting cost is the most important cost centre in the FEN enterprises, with a share of 55% of the forest management costs and 31% of the total operating costs.

Fig. 6 Cost structure of forest enterprises in FEN 2014



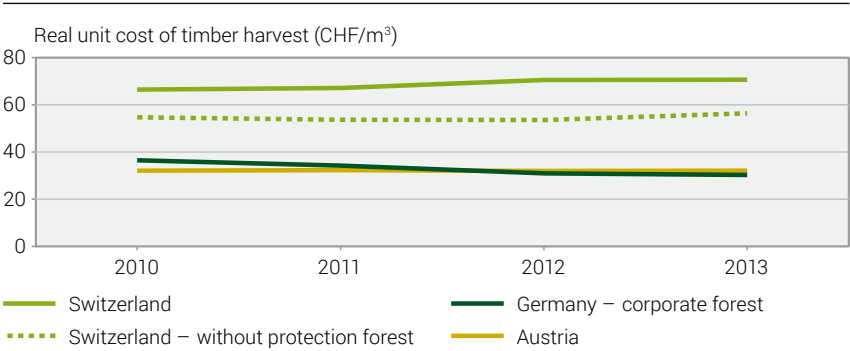
Since the revenues from timber sales can only be partially influenced by the enterprises, the focus needs to be put on the reduction of timber harvesting costs in order to increase efficiency. This is exactly where Switzerland has potential for improving their revenue-cost ratio in comparison to Central European forest enterprises (Fig. 8; Bürgi et al. 2015; in press). This is also the area with the greatest leverage (see Fig. 6).

Fig. 7 Composition of costs in the 2nd production stage in FEN 2014



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Fig. 8 Timber harvesting costs in Switzerland, Germany and Austria 2010–2013 (fixed exchange rate 1.23/CHF, annual average 2013)



Source: Bürgi et al. 2015 (in press)

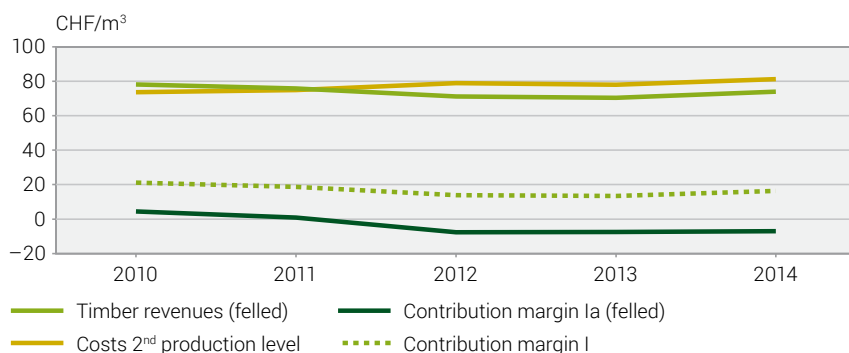
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Contribution Margin and Operating Result

Revenues excluding timber harvesting costs

Revenues excluding timber harvesting costs (CMIa) were continuously negative during the period 2010–2014 (Fig. 9). The main reason is the difficult timber harvesting conditions in the Swiss Alps, which result in high timber harvesting costs. Approximately 60% of the productive forest area in FEN is located in the Prealps and Alps. If the contributions for the protection forest management are taken into account, the CMI (revenues excluding timber harvesting costs and including compensation payments and subsidies) is positive over the whole study period. However, even under consideration of the public money the CMI (Fig. 9) is still relatively small and thus insufficient to cover the structural costs.

Fig. 9 Revenues excluding timber harvesting costs per cubic meter (contribution margin Ia/I) in FEN 2010–2014



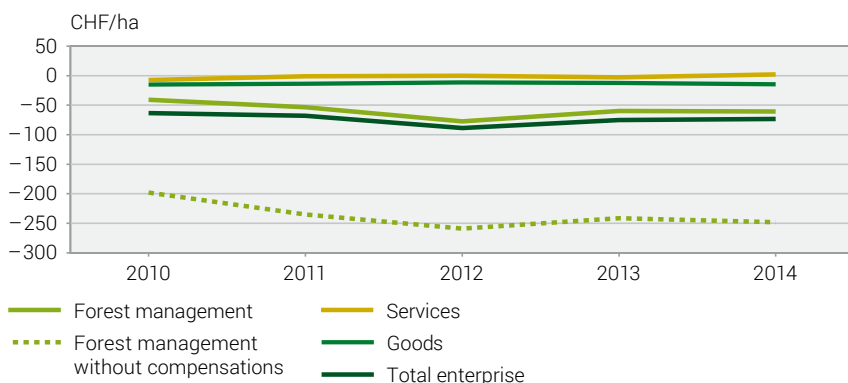
Forest management results

The profit in forest management was negative over the whole study period (Fig. 10). The losses in forest management can be attributed mainly to the unfavorable cost situation in the cost center of timber harvesting, silviculture and forest infrastructure. **The reasons for this, apart from the difficult conditions in some mountain forests and the small size of the enterprises, are the resources (personnel and equipment) that are unsuitably adapted to the enterprise conditions.** Forest enterprises therefore need to contribute a large proportion themselves in order to make use of the resources. These sub-optimal methods result in an unfavorable cost situation (Bürgi et al. 2015).

Services and goods sector results

Despite considerable revenues from services, most forest enterprises in FEN have achieved negative profits in this main product range. The goods sector (mainly the production of energy logs and wood chips) also reported losses during the study period (Fig. 10).

Fig. 10 Profit in forest management as well as in the services and goods in FEN 2010–2014



Benchmarking

Regional benchmark circles

“In a continuous process of learning from the best, in order to be among the best...”. Under this motto, the School of Agricultural, Forest and Food Sciences (HAFL) has been supervising regional benchmark circles for forest enterprises on behalf of the Federal Office for the Environment and Statistics since 2014.

Benchmarking means learning from systematically and continuously comparing your own enterprise strategies, products, services, structures and processes with those of the best enterprises (Schmithüsen et al. 2009).

Specifically, this form of enterprise comparison aims to identify the competitive advantages of the best forestry enterprises, to identify unused potential in their own enterprise and to subsequently find ways to tap into them.

Forest enterprises sharing similar conditions and strategies form so-called benchmark circles (e.g. Alpine enterprises). They get together once a year for one day workshops with focus on various themes.

Imprint

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