

BERICHTE  
FREIBURGER FORSTLICHE FORSCHUNG

HEFT 90

**2011 IUFRO Small-scale forestry conference  
synergies and conflicts in social, ecological and  
economic interactions**

Proceedings

FORSTLICHE VERSUCHS- UND FORSCHUNGSANSTALT  
BADEN-WÜRTTEMBERG

ABTEILUNG FORSTÖKONOMIE

2011

ISSN: 1436-1566

**Die Herausgeber (Publishers)**

Fakultät für Forst- und Umweltwissenschaften der Universität Freiburg  
Forstliche Versuchs- und Forschungsanstalt Baden-Württemberg (FVA), Freiburg

**Redaktion**

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**Umschlaggestaltung**

Bernhard Kunkler Design, Freiburg

**Druck**

Eigenverlag der FVA, Freiburg

**Bestellungen an (orders)**

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**Special workshop sessions on Figures for Forests II  
IUFRO Working Unit 3.08.00 and Network of Accountancy  
Network Operators**

24.07.2011 - 28.07.2011, Freiburg, Germany



## PREFACE

In this, the UN declared "International Year of Forests", it is a great pleasure to be co-hosting the 2011 IUFRO Small-scale forestry conference in Freiburg, Germany from 24-28 July 2011. Small-scale forestry is a complex network of social, ecological and economic issues which results in diverse interactions between owners, stakeholder groups, communities and not least the forest environment. This conference aims to make the diversity of these interactions visible, with special attention to the fact they can be synergistic or conflicting.

The 45 papers and abstracts published in these proceedings are the result of a tremendous amount of rigorous scientific research and a careful review process. They present the state of the art of small-scale forestry today and with contributions from more than 20 countries and all continents, truly represent the most up to date global thinking about small-scale forestry.

Credit for the contributions goes first and foremost to the authors and we thank them for their effort and creativity to produce these papers.

Special thanks also to the eight members of the international scientific committee chosen for their technical expertise and good judgment. They dedicated enormous amounts of time to carefully read and evaluate the more than 100 conference submissions received.

It is with pride that we share the results of these collective endeavours with conference participants and the wider forestry community as a "Pre-conference Proceedings". Based on the quality of these significant papers and abstracts we anticipate another informative, diverse and challenging IUFRO Small-scale forestry conference and look forward to hearing the associated presentations "live" at the conference.

We have thoroughly enjoyed planning the conference programme for our Small-scale forestry research colleagues throughout the world and we take great delight in soon welcoming old and new friends and colleagues to Freiburg this July.



Dr. Christoph Hartebrodt  
Forest Research Institute Baden-Württemberg  
Conference co-convenor



Prof. Dr. Ulrich Schraml  
Albert-Ludwigs-University  
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# 1 INNOVATION, RESPONSIVENESS AND ADAPTABILITY AS MEANS FOR FOSTERING PARTICIPATION IN FOREST ACCOUNTANCY DATA NETWORKS

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**Keywords:** Forest Accountancy Networks, Ratio Analysis, Interfirm Comparison, Incentives

## 1.1 ABSTRACT

The motivation for participating in a forest accountancy data network hinges on the feedback of relevant economic data to the owners or managers of the respective enterprises. In order to sustain their interest, the contents, the quantity as well as the quality of the information provided has to be adapted to the changing requirements and frame conditions. To some extent, also adjustments according to individual demands can be realized and may serve as incentives.

The paper highlights the role of such innovations for the prosperity of networking activities at the example of Austrian accountancy data networks. Modifications and extensions directly responding to requests on behalf of participating enterprises are of special significance for the general esteem as well as for the further development of the overall system. Offering and demonstrating new possibilities is another driver of a vivid interaction. Examples to be presented comprise e.g. additional ratios and specific formats for interfirm comparison, planning tools and an extension in terms of machine hour accounting for farm forest enterprises.

However, striving for compliance with specific requests faces limits, necessitates trade-offs and may even trigger adverse effects. Safeguarding the consistency of the methodology and hence also of the data pool is a considerable challenge. The paper addresses such critical issues as well and reflects Austrian experiences in dealing with those.

## 1.2 INTRODUCTION

Several European countries share the tradition of monitoring the economic situation of forest holdings by means of forest accountancy data networks (see e.g. Hyttinen et al. 1997). These networks represent more or less stable and representative panels. They are a specific infrastructure for gathering data, located somewhere between case studies and surveys in terms of number of enterprises and detail of information (Sekot 2000). Accounting data is either submitted by the participants or collected by specialized staff according to standardized protocols. Safeguarding the motivation for participation is a strategic issue for running any accountancy network efficiently as well as sustainably. The 'Guidelines for Establishing Farm Forestry Accountancy Networks' list several policy tools for encouraging participation (see Niskanen & Sekot 2001, p. 41ff). Although burdened with the likeliness of self-selection bias and panel effect, the feedback of specific information to the participants plays a key role in terms of motivation and for ensuring a high quality of the data.

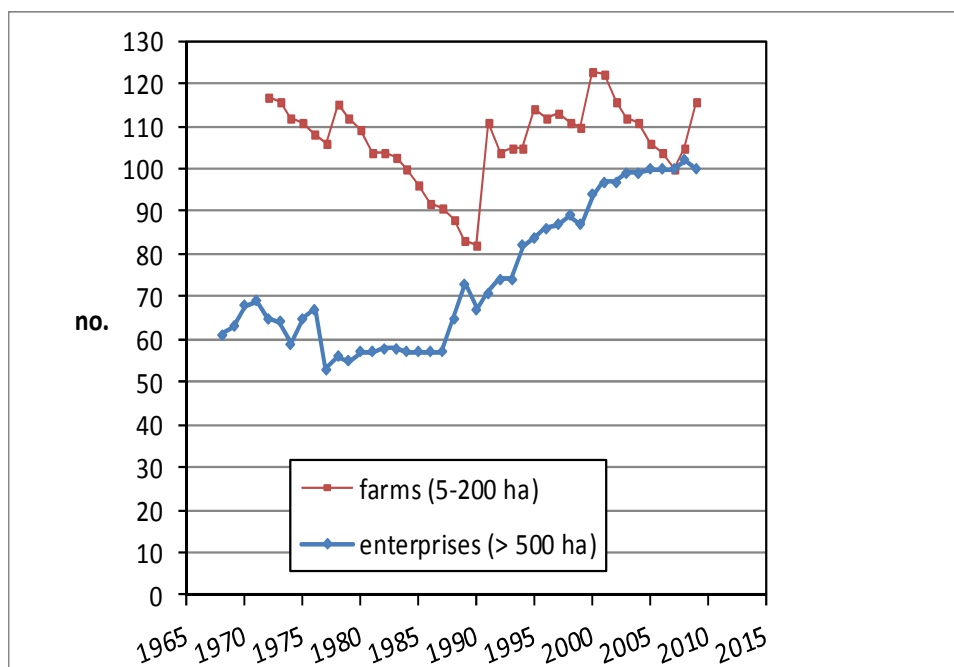
In times of rapidly changing frame conditions, technical possibilities and information requirements, a solid framework of ratios implies a standstill of developments and may be perceived as a retrograde step. It is a major challenge for those running an accountancy network to fulfill the monitoring purposes and at the same time to constantly modernize the system and to respond to specific requests. A flexible design is a technical pre-requisite for adaptability and responsiveness. On top of that, latent wishes and upcoming requests on behalf of the participants should be anticipated so that innovations are implemented not only in reaction to an explicit demand but also or even primarily in a pro-active way.

### 1.3 AUSTRIAN FOREST ACCOUNTANCY DATA NETWORKS

In Austria, economic monitoring of forest enterprises relies on two accountancy networks. Farm forests are represented by a small sub-sample of the national Farm Accounting Data Network comprising holdings which manage between 5 and 200 ha of forests. Members of the forest owner's association managing more than 500 ha of forests constitute the network of forest enterprises. Participation in these networks is voluntary and the samples cannot be regarded as representative. Both networks apply a system of cost accounting, the major balance sheet being the core element of the individual documentation (see Sekot 2004).

In both cases, the data are collected in the field by a small group of specialists. Conceptually as well as technically, the University of Natural Resources and Life Sciences Vienna (BOKU) is in charge of both networks. All reports are designed as EXCEL-files, the data being extracted from the common database by means of specific functions. Whereas major modifications at the level of the central database require external programming services, reporting is very flexible. Typically, the reports are designed by the project leader at BOKU exclusively. At the level of the EXCEL-output, however, modifications and adjustments can be introduced by the field staff collecting data and moderating benchmarking exercises of bigger forest enterprises.

Currently, the size of the two networks in terms of participants is of the same magnitude. However, the development of participation clearly indicates the different nature of these networks (Figure 1). The network of farm forests is directly commissioned by the ministry for policy purposes. Participants are specifically reimbursed for keeping forestry-specific records and providing their data. There is a general trend of shrinking due to individual farms ceasing their participation. As the size of the sample is not fixed to a specific threshold level, recruiting of new participants occurs at irregular intervals, typically driven by respective requests of the ministry. Conversely, the network of bigger enterprises serves not only policy purposes but is also meant to provide management tools and controlling data to the participants as a special service provided by the forest owners association which is co-running the network (see e.g. Sekot 2007, 2008). Especially from the late 1980-ies onwards, respective service functions were extended and promoted and met a rising interest. Therefore, the development of participation is mainly driven by the interest of forest owners who would like to join the network and utilize its services. Even the introduction of a fee per day of field work some years ago, which became necessary for financing these activities, did not affect significantly the general trend of rising interest.



**Figure 1:** Development of participation in the two Austrian forest accountancy networks

Some statistical data characterizing the two networks are listed in Table 1. Further background information concerning the network of farm forests can be found e.g. in Sekot (2001, 2006). Sekot & Rothleitner (2009a) provide a comprehensive protocol for data collection in bigger forest enterprises, an overview of the various outputs as well as definitions and explanations for the manifold ratios.

**Table 1:** Characteristics of the two Austrian forest accountancy data networks

Feature	Farm forests (5 – 200 ha)	Forest enterprises (> 500 ha)
No. of participants (average 2000/2009)	112	99
Productive forest land (ha) per enterprise (average 2000/2009)	49	3307
Annual volume of cutting (m <sup>3</sup> ) per enterprise (average 2000/2009)	303	23263
Sampling ratio in terms of number of holdings (%)	~ 0.2	~ 32
Sampling ratio in terms of productive forest land (%)	~ 0.6	~ 53
New concept and database application since	1999	1997
First period covered by data in the database	1991	1987
Standard regional groupings	6	6
Standard aggregates of regional groupings	3	3
Standard size classes	1	3
No. of typological features for classification & other features	56	70
No. of quantities for unit costing	7	47
No. of types of cost (including sub-categories) distinguished	28	81
No. of cost centers (including sub-categories) distinguished	6	63+
No. of non-timber revenues distinguished	6	81+
No. of elements in the matrix of timber revenues	1260	3780
No. of individual standard reports (extended master balance sheet)	1	14
No. of variants of individual reports	1	5
No. of individual reports for anonymous interfirm comparison	0	6
No. of reports for benchmarking groups	0	4

Whereas in the network of farm forests recording of all data is obligatory, several differentiations and items are just optional extensions with the bigger forest enterprises (options related to individually definable, auxiliary cost centers are not accounted for in Table 1 but indicated by a plus sign). The individual reports are provided to the farmers as printouts comprising just 10 pages. The various reports designed for forest enterprises are delivered as EXCEL-files, the volume of a total printout potentially amounting to several hundred pages. Typically, only two parts are printed and discussed: a concise information on key ratios ('FOB-Flash') comprising just 6 pages (4 with tables, 2 with graphs of time series) and the main report ('*Fuehrungskennzahlen*') which encompasses 29 pages with tables and an additional 10 graphs. The remainder of reports serves as auxiliary information for detailed analysis, especially in terms of time series analyses and the allocation of auxiliary cost centers (see Table 2).

**Table 2:** Elements of the individual standard reporting in the network of bigger enterprises

Name of report	Main contents	No. of pages
FOB-Flash	Main ratios and developments – overview for owners	4+ graphs
Fuehrungskennzahlen	Part 1: Ratios and proceeds	29+10graphs
BAB-mit-Umlage-1_3	Part 2: Master balance sheet in absolute values; allocation of auxiliary cost centers by means of specific types of cost or proportionally; 2 levels of differentiation of costs	25+52
BAB-mit-Umlage-3_3	Part 3: Master balance sheet in absolute values; generally proportional allocation of auxiliary cost centers; 2 levels of differentiation of costs	20+47
BAB-gruppiert	Part 3 adjusted for working on the screen by means of the EXCEL structuring tool, not designed for printout	-
Hilfsstellen-vor-Umlage	Auxiliary cost centers; original values; 2 levels of differentiation of costs	Max: 9+27
Hilfsstellen-nach-Umlage-1_1	Auxiliary cost centers after allocation of non-wage labor costs; 2 levels of differentiation of costs	Max: 9+27
Hilfsstellen-nach-Umlage-1_3	Auxiliary cost centers after mutual allocation; 2 levels of differentiation of costs	Max: 18+27
Umlage-von	Allocations documented per auxiliary cost center	Variable
Umlage-auf	Allocations documented per charged cost center	Variable
Zeitreihe	Time series of the latest 10 years; nominal values	23
Zeitreihe_real	Time series of the latest 10 years; real values (basic year free to choose)	23
Entwicklungen-ab-1987	Time series from 1987 onwards; nominal values; tables not designed for printout	15 graphs
Entwicklungen-ab-1987_real	Time series from 1987 onwards; real values; ; tables not designed for printout	15 graphs

## 1.4 SUCCESSFUL INITIATIVES AS STEPS OF DEVELOPMENT

Especially a series of initiatives related to the network of bigger forest enterprises may serve as an example for successful innovations which have been accepted and approved. Instead of the previous FORTRAN-program, which produced only a single, fully standardized report, the technical solution implemented in 1998 relies on a central database. The data frame as well as any reports can be adjusted quite flexibly to new requirements. Reporting consists of a set of EXCEL-files allowing the participants to work with the output e.g. by designing additional graphs or integrating the output in their reporting system e.g. by linking files.

The database in connection with the most flexible scheme of reporting was a pre-requisite for a substantial expansion of the set of documents and information provided to the participants. Major improvements concerned the integration of graphs and the flexible structuring of a variant of a report by means of the respective EXCEL-tool. Meanwhile, 4 types of time series are part of the standard output: one covering the last ten years (formatted ready for printout and including respective averages) is available in nominal as well as in real terms as is the long-term documentation (from 1987 onwards).

However, the number of different reports may confuse forest owners or even some managers, so that they ultimately ignore the information provided. This consideration lead to an additional report specifically designed for providing forest owners with a concise overview. Meanwhile, this report marks the starting point of any discussion of results between the field specialist collecting the data and the individual enterprise. This report not only summarizes key indicators but integrates actual figures and developments at an aggregated level. Expressing the net profit of any cost center in terms of volume and relating this to the allowable cut is an additional element of the 'FOB-flash' not covered by any other report yet. Model calculations balancing the fellings of the last 10 years with the allowable cut and indicating future cutting potentials in terms of sustainability are recently added features triggering vivid discussions.

As indicated in Table 1, interfirm comparisons and benchmarking exercises are supported by means of specifically designed reports. Standard individual reports are provided at least twice a year at different levels of detail: after the first six months of the year, those enterprises where the data could already be collected and processed are provided with preliminary averages for the alpine as well as for the non-mountainous regions. Also

a first ranking of all these participants is elaborated. At the end of the year, more detailed material in terms of averages for regions and size classes as well as rankings are provided. Specific averages are calculated for the individual benchmarking circles and fitted into reports which allow a direct comparison of figures and developments. As these benchmarking circles represent the most interested participants, complying to individual requests concerning e.g. additional variables and modified reports is a constant challenge. For instance, one group is interested in average regional results as an additional element of their benchmarking report. Just recently, another group asked for a report which supports direct comparisons of averages stemming from different benchmarking circles.

Several innovations were more or less triggered by respective requests on behalf of individual participants. Respective examples of responsiveness comprise the introduction of additional sub-categories of certain cost and revenue items and ultimately of a refined system of stepwise calculation of contribution margins. Also the sequence of this stepwise calculation scheme has been adopted according to specific requests. Additional variables for the interpretation of harvesting costs such as the structure of technologies applied or the average inclination of the stands were at first used by a benchmarking circle on their own in addition to the standard report provided by the network. While at first only implemented in the benchmarking reports provided to this group exclusively, this set of variables has been adopted as a general new standard meanwhile. Another suggestion was to integrate averages into the comparison of time series. This idea has been adopted as a general standard for all the benchmarking circles.

One participant once commented on the calculation of the break-even point, that typically it is not just a profit of zero which should be achieved. This remark triggered the development of first planning tools, based on the figures of the previous year. The latest extension in terms of planning tools has been developed this spring, once again in response to a quite general request. One of the new tools assists the calculation of an average stumpage value, thereby taking into account individually definable types of fellings, the respective structure of assortments and the specific costs of different harvesting technologies. A budgeting tool assists the planning process per cost center by providing the figures of the previous year as well as ten years averages in real terms. The scenarios comprise 3 levels of intensity (minimal, ordinary, maximal budget), encompass the whole company and include the planning of investments. The user may choose between a liquidity-oriented and a profit-oriented budgeting approach. All net figures of financing are also expressed in terms of volume valued at average stumpage prices.

A quite far-reaching service may be necessary when a participant requires results which are definitely not in line with the standards of data collection. In such a case, the enterprise may be represented twice in the database: One version consistent with the regulations is used for the computation of averages whereas the other version is provided exclusively to the participant. Respective examples for individually adapted delimitations concern areas belonging to a nature reserve or national park, pension funds or the production of chips for bioenergy plants. However, the number of such exceptional duplicities has to be kept to a low level for sake of efficiency and the respective participants are provided with not fully consistent data for interfirm comparison. Similarly, a differentiation of the enterprise into units at the level of range districts has to be restricted to exceptional circumstances.

## 1.5 THE RISK OF SUNK COSTS

Typically, most of the developments are not requested explicitly or commissioned by any party but originate from innovative ideas or a merely anticipated future interest on behalf of the participants. Establishing respective reports, tools or services may be regarded as investments in potentials for future success. However, such potentials may never become operational. In such a case, those running the network are burdened with sunk costs, having spent time and money on investments which do not pay off.

In spite of the many positive experiences, some of the developments prepared for the network of bigger enterprises are associated with sunk costs. When specific reports were designed for groups of enterprises engaged in yearly interfirm comparison exercises, a complete set for groups with two up to twelve participants was established although only groups with 2, 5, 6 and 12 participants existed then. The expected demand for the other sizes of groups did not come into effect yet. Meanwhile, however, a general modification of the reporting scheme necessitated a substantial updating of formats and links, rendering the originally designed reports practically useless.

Another example for a minor stranded investment is the ‘minimal report’ which was designed for those participants, who merely provide their data but are not interested in results and analyses and should therefore be exempted from paying a fee for participation. Ultimately, the forest owners association handled this issue otherwise so that still all the participants are provided with the standard set of individual reports.

Some functionalities of the database application turned out to exceed actual demand as well. A respective feature is the matrix for individually and automatically re-coding types of costs and revenues in the process of importing csv-files into the database. As practice has shown, either the participants adopted the network’s classification right away or coding is an integral part in the process of data collection.

It is not always easy to assess future demand and to determine the right time for investing in respective potentials. For instance, a specific survey indicated a general interest in a more flexible application of the model calculation based on allowable cut, which serves as a proxy for changes in the value of the growing stock due to over- or undercutting. Apart from the actual allowable cut alternative measures such as the average allowable cut of the region or the mean of a specific group of enterprises engaged in detailed interfirm comparison were seemingly of interest. Specific functions and adapted reports were designed in order to efficiently manage respective requests. For the time being, however, the demand did not yet materialize. Obviously, the analytical efforts on behalf of the participants still do not encompass these issues in practice.

The network of farm forests provides another example for innovations which remain unutilized. The only major development since the general revision of the concept in 1999 has even been triggered by a very specific interest. The forestry department of the chamber of agriculture in Upper Austria intended to establish a regional farm forest network in order to foster extension services. They wanted to adopt the concept of the national network and were willing to implement a regional extension to it. The only specific request concerned an additional module for machine hour accounting. The respective tool has been developed and implemented. In the end, however, they decided to apply the Styrian concept, which originally had been rejected.

## 1.6 LIMITS, TRADE-OFFS AND SIDE EFFECTS

Apart from the risk of un-paying investments, responsiveness and adaptability face limits and necessitate trade-offs. Any report or variant increases the hurdles for general steps of development like the introduction of an additional cost or revenue item. In such a case, additional efforts are necessary for updating the whole system in a consistent way. Furthermore, the risk of errors increases as well, the various reports stemming from different periods and reflecting not fully standardized approaches. The manifold links between individual reports (all MS-EXCEL-files) contribute to the complexity of the whole system which is therefore quite prone to mistakes. Consequently, the higher the level of differentiation already is, the more energy-consuming general updates are.

Establishing a valid ranking of the various ideas for further developments is all but straightforward. There is also a certain danger of just tinkering with incremental modifications thus blocking the capacities required for major improvements. In many cases there is no clear correlation between the number of interested participants, the significance of the additional information to be provided and the necessary efforts for implementation. Trade-offs have to be performed between clearly articulated interests of individual participants or small pressure groups on the one hand and general improvements of the system from which the participants benefit only indirectly on the other.

Insufficiently planned or un-coordinated innovations imply a waste of resources and may trigger adverse side effects. On behalf of the institutions and persons running the network a trade-off between centralization and co-ordination has to be performed. Either the competency for adjustments and developments is strictly centralized or the decentralized activities have to be well attuned and co-ordinated. Otherwise, parallel developments may occur, triggering inefficiency and even confusion in case of contradictory solutions provided by different partners. Respective examples pertain to specific reports individually designed for benchmarking circles in parallel. Similar requests were considered as unique and hence treated separately by different field agents, although a general framework existed already.

In the network of bigger forest enterprises, the participants are not paid for providing standardized data but receive a service they even have to pay for on top of their general membership fee to the forest owners association. This places them into a comparatively strong bargaining position as customers. Striving for compliance with specific requests is necessary to ensure the interest in participation but may ultimately corrupt the overall consistency of the accounting data. The personnel collecting the data in the field may be provided

with incomplete or biased data or even be urged to knowingly accept certain deviations from the general guidelines. For instance, individual enterprises or specific groups of participants are not interested in certain figures themselves and hence refuse to provide these although respective data is part of the obligatory documentation. Working hours, the volume of sanitary fellings or the number of employees are respective examples. In such a case, the accuracy of reports for aggregates may be impaired, as missing data is counted for zero. This may indeed lead to biased results documented by standard reports. Consequently, one must not rely on the comprehensiveness of the data and a check for missing data has to be performed at least for specific analyses, thereby increasing the cost for data processing. Some deviations from the protocols may nevertheless stay undetected and hence also unaccounted for. For instance, quite a number of participants prefer matching revenues and costs in such a way, that the stocks of felled timber are systematically reduced to zero. This problem could not be resolved properly yet, so that the reported stocks still tend to be underestimated. Another conflict lasted for years until it could be settled. A considerable number of participants preferred to report their timber proceeds at roadside for the sake of better comparability, thereby leaving out any costs and revenues associated with transportation. Ultimately, the general guidelines were adapted in such a way, that logs and pulpwood are to be valued at the roadside but costs and revenues as well as volumes transported are to be recorded as well. In this case, a severe conflict triggered an innovation which is now capable of satisfying all related information requirements.

## 1.7 CONCLUSIONS, RECOMMENDATIONS AND PROSPECTS

The individual information an accountancy network can provide is later available and less detailed than the output of the internal managerial accounting. Hence, one should focus on such elements, which are typically not supported by standard accounting systems or generally not available within the enterprise. In essence, extended time series and standardized data for interfirm comparison may provide respective additional information.

The limited resources for innovations should be allocated prudently. It is advisable to primarily address immediate demand whereas investments in mere potentials should be postponed as long as possible. However, the budget constraint may necessitate a modification of priorities. Less costly but also less relevant developments should rather be put into practice in case the available means do not allow major investments. Developments necessitating external programming are typically associated with higher financial burdens and may necessitate pooling as compared to minor innovations which can be implemented by the project team itself.

A more or less constant stream of innovations requires some kind of change management for the networking activities. For all the parties concerned it has to be clear, what purpose is served by any modification. Inconsistencies should be avoided as far as possible and convincing arguments for the necessity of changes are to be provided whenever time series are affected negatively in some way. The timing of implementation may support the acceptance of changes: For instance, the main report comprises a comprehensive comparison of all ratios with those of the previous year. Major changes affecting such comparisons are usually implemented in terms of reporting in the second year only, so that at least the consistency of the data stemming from the latest two years is guaranteed.

Communication between those running the network and the participants is a major factor of success. Unless innovations are understood, they may irritate some of the addressees and hence even trigger adverse effects. Therefore, any major changes should be explained at least in terms of an up-to-date documentation as well as specific publications (see e.g. Sekot 2003, 2005, 2011; Sekot & Rothleitner 2008, 2009a,b to this effect). A personal contact is vital for detecting latent information needs and getting feedback as well as ideas for further innovations. Data collection and moderating benchmarking exercises provide respective opportunities. Presentations at congresses, workshops, a survey and a specific e-learning course are further means for providing information and fostering communication which have been or continuously are applied along with the networking activities concerning the bigger forest enterprises in Austria. The fact, that respective supply typically exceeds articulated demand by far must not frustrate the project team but contributes significantly to the image of the exercise. In terms of a participatory approach, opinion leaders among the participants should be consulted at least informally before any major change or investment.

Although the possibilities for a further extension of the data frame are quite limited, this does not necessarily imply poor prospects for innovations also in future. Potentials which have been explored already refer to individual developments in terms of ranking results, the application of Data Envelopment Analysis in order to

provide relative measures of efficiency (see Sekot & Hoffmann 2007, Sekot 2010) and international comparisons (Sekot et al. 2010, 2011).

Extending the services provided to a system of consulting on demand beyond the moderation of interfirm comparison exercises within benchmarking circles is a question of strategic significance. Adding text to the figures and graphs, explaining the results to the managers and owners of forest enterprises in more detail and advising them on planning issues would definitely contribute to the value and esteem of the networking exercises but at the same time exceed the capacities of the current system by far. Several scenarios have to be considered, the network hinging on scarce resources and being threatened by a potential lack of financial support on behalf of the ministry. A concentration on consulting activities exclusively financed by the participants themselves would imply the termination of the sector-specific monitoring as the results would hardly be available for policy or scientific purposes any more. Alternatively, the monitoring could be reduced to a simplified reporting system, thereby saving resources for intensified commercial consulting activities. The rate of voluntary participation as well as the quality of the data provided would clearly be bottlenecks of such a system, however.

## 1.8 REFERENCES

- HYTTINEN, P.; KALLIO, T.; OLISCHLÄGER, T.; SEKOT, W. AND WINTERBOURNE, J. (1997): Monitoring forestry costs and revenues in selected European countries. European Forest Institute Research Report No. 7. Joensuu
- NISKANEN, A. AND SEKOT, W. (eds.) (2001): Guidelines for Establishing Farm Forestry Accountancy Networks: MOSEFA. European Forest Institute Research Report No. 12. Leiden
- SEKOT, W. (2000): Forstliche Testbetriebsnetze aus wissenschaftlicher Sicht. *Allgemeine Forst- und Jagdzeitung* 171(9/10): 170-177
- SEKOT, W. (2001): Analysis of Profitability of Small-Scale Farm Forestry (SSFF) by Means of a Forest Accountancy Data Network – Austrian Experiences and Results. In: Niskanen, A.; Väyrynen, J. (eds.): Economic Sustainability of Small-Scale Forestry. European Forest Institute Proceedings No. 36. Joensuu, 215-226
- SEKOT, W. (2003): Weniger Papier- rascherer Überblick. *Aktuell* 2: 6-8
- SEKOT, W. (2004): Die forstliche Betriebsabrechnung – Potenziale und Grenzen eines Führungsinstruments. *Centralblatt für das gesamte Forstwesen* 121(2): 63-80
- SEKOT, W. (2005): Von der Nachkalkulation zum Controlling. *Aktuell* 6: 6-9
- SEKOT, W. (2006): Die bäuerliche Waldwirtschaft im Spiegel von Testbetriebsnetzen. In: Darnhofer, I.; Wyrzens, H.-K., Walla, Ch. (eds.): Alternative Strategien für die Landwirtschaft. Facultas, Wien, 35-49
- SEKOT, W. (2007): Informationsangebote und Controlling-Tools für Testbetriebe in Österreich. Fakultät für Forst- und Umweltwissenschaften der Universität Freiburg und Forstliche Forschungs- und Versuchsanstalt Baden-Württemberg (eds.): Berichte Freiburger Forstliche Forschung No. 74: 65-74
- SEKOT, W. (2008): Interfirm Comparison and Benchmarking Exercises within the Framework of a Forest Accountancy Data Network. In: Cesaro, L.; Gatto, P. and Pettenella, D. (Eds.). The Multifunctional Role of Forests – Policies, Methods and Case Studies. EFI Proceedings No. 55, Joensuu, pp. 161-169
- SEKOT, W. (2010): Efficiency analysis based on the data of forest accountancy networks – prospects and limitations. Fakultät für Forst- und Umweltwissenschaften der Universität Freiburg und Forstliche Forschungs- und Versuchsanstalt Baden-Württemberg (eds.): Berichte Freiburger Forstliche Forschung No. 84, 127-133
- SEKOT, W. (2011): FOB-News 2011. *Aktuell* 1: 20
- SEKOT, W. AND HOFFMANN, CH. (2007): Zur Weiterentwicklung des forstlichen Betriebsvergleichs mit Hilfe der Data Envelopment Analysis. *Centralblatt für das gesamte Forstwesen* 124(1): 35-61
- SEKOT, W. AND ROTHLEITNER, G. (2008): Weiterentwicklung der forstlichen Betriebsabrechnung. *Aktuell* 1: 12-13
- SEKOT, W. AND ROTHLEITNER, G. (2009a): Kennzahlenanalyse und Kennzahlenvergleich auf Basis der forstlichen Betriebsabrechnung. Österreichischer Forstverein (ed.). Wien
- SEKOT, W. AND ROTHLEITNER, G. (2009b): FOB-News: Innovationen und Vorhaben beim Forstbericht. *Aktuell* 2: 6-9
- SEKOT, W.; FILLBRANDT, TH. AND ZESIGER, A. (2010): International comparisons based on accountancy data: generating compatible data using the example of Germany, Austria and Switzerland. Fakultät für Forst- und