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Andreas Ottitsch, Ilpo Tikkanen and Pere Riera (eds.)

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Foreword

The usual classification of policy instruments includes the following categories: regulatory (laws, decrees), informational (plans and campaigns) and financial instruments. The international conference "Financial Instruments of Forest Policy", which was organised by the European Forest Institute on 17–20 June, 2001 in Rovaniemi, Finland, tried to shed light on the current theoretical and practical of the development, implementation and evaluation of financial instruments of forest policy in Europe.

While forestry is often portrayed as a "self-reliant" part of the primary sector, not requiring the high amount of public funding which is spent on e.g. agriculture, a closer look reveals that financial instruments do play an important role in forest policy. This becomes especially evident if the focus is widened to include not just the most obvious forms of governmental investments such as direct financial incentives but the various forms of tax-concessions, the role of budgets for state owned forests as well as the role of forest services in the field of extension activities or the funding for quasi-governmental institutions such as mandatory land-ownership associations.

In the context of international donor programs in developing countries as well as in countries with economies in transition, the evaluation of forestry related funding programs both ex post as well as ex ante has received increasing attention especially in the context of assessing the costs and benefits related to alternative programs. In the European context, however, there is only little experience with objective approaches towards the evaluation of various aspects of outputs from forestry related to financial incentive programs.

In the past years EU policies in the form of the Agenda 2000 program have given a new emphasis on forestry's possibilities to contribute to rural development in Europe and also resulted in the allocation of additional funds for forestry related programs. This goes along with a general increase of EU activities in the field of forestry, documented also in the development of the EU Forest Strategy. While forestry still remains the responsibility of national member states, this nevertheless reflects an increased interest in forestry and forest policy. Forestry related issues are also touched by other EU policies, for example environmental policies. In addition, the last decade has seen a general trend towards a reduction of public budgets, which at the time of the publication of this volume is even increased by a rather low level of economic development, forcing governments to reconsider public spending programs and put intended tax-reductions on hold.

As a result of all these developments, financial policy instruments need to be based on sound knowledge on their actual costs and benefits, which has to be based both on empirical ex-post knowledge about the results of past programs as well as on an ex-ante analysis of alternative programs.

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In order to improve empirical knowledge as well as the theoretical development in the field of evaluation of financial instruments of forest policy, the European Forest Institute started a major international research project in 2001, titled Evaluation of Forestry Financing in Europe – EFFE, funded within the framework of the European Union's 5th framework program on research and development (QLK5-LT-2000-01228-EFFE). EFI's Forest Policy Research Forum 2001 was organised under the title Financial Instruments of Forest Policy in order to provide a forum for international discussion on theoretical and practical issues related to the public funding in the field of forest policy. The contributions collected in this volume provide an impressive overview on the state of the art in this field with a special focus on the European context.

The editors of this volume want to express their gratitude to all the authors who contributed with their papers to this major international research forum as well as to the participants of the discussions and workshops during the meeting.

May 2002

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Distributional Cost-Benefit Analysis as an Integrated Tool to Assess Fiscal Policies in Efficiency and Equity Terms¹

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Abstract

Cost-Benefit Analysis (CBA) is probably the most accepted and widely used economic instrument for project and policy evaluation. It is a tool that has been improving over the years. Since the 1960s, one of the main criticisms to CBA has been the general lack of equity considerations (income redistributive effects). The standard solution since then has been the application of distributional weights, although it has been widely questioned. However, there are alternative approaches to accounting for the redistributional effects of a policy or investment. The paper proposes a new approach – the Distributional Cost-Benefit Analysis (DCBA) – that incorporates a second matrix of equity nature, which allows the decision maker to consider both criteria either separately or jointly. Therefore, DCBA can jointly evaluate efficiency and equity aspects of forest fiscal policies.

Keywords: cost-benefit analysis, distributional cost-benefit analysis, methodology, policy

1. Introduction

The increasing concern about the absence of distributional considerations in the standard Social Cost-Benefit Analysis (CBA) in the decade of 1960 can be seen in the influential works of Little and Mirless (1969) and Weisbrod (1968), among many others. The solution that came up as dominant in the relatively few instances where inequality criteria was incorporated, was the use of distributional weights. Some authors argue that there is no sense

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in aggregating unweighted benefits (Johansson 1998), implying that the valuation criterion is dependent on the applied numeraire (Drèze 1998). Weights were applied either to different individuals or groups according to their income or some other variable, or to different variables according to their nature. Distributional weights were to correct the differences in marginal utilities of income or consumption for agents with different income levels. As a consequence, the usual efficiency indicators like the Internal Rate of Return (IRR) or the Net Present Value (NPV) were 'corrected' (Boardman et al. 1996).

Criticisms to the use of weights (Musgrave 1969; Harberger 1971, 1978) focused mainly on the weight values used being arbitrary, in the risk of rejecting investments with a clear social desirability and vice versa (Harberger 1980), and the inconsistency observed in the weight values used to discriminate among costs or benefits for the rich and the poor (Blackorby and Donaldson 1987). Altogether has resulted in a small number of applications and, consequently, in inequality criteria being in practice left out of CBA, although the debate on how to account for equity has been present since then (see UNIDO 1972; Dasgupta and Pearce 1972; Squire and van der Tak 1975; Brent 1984; Mishan 1988; Layard and Glaister 1994; Adler and Posner 1999, among many others).

There are other possible ways, though, to account for distributional effects in CBA. This paper focuses on a new procedure to incorporate income distributional effects that overcome some of the problems of the weight approach, and adds several measures of potential interest to decision makers. The relationship between efficiency and inequality is also analysed, and their integration is proposed through abbreviated social welfare functions.

2. An Explicit Distributional Approach

The Distributional Cost-Benefit Analysis (DCBA) developed here explicitly considers the changes in the income distribution. It contains the usual matrix of a CBA, with variables (costs and benefits) and time periods, and quantities expressed in monetary units, but it adds a second matrix, similar to the first, where quantities (typically indices) reflect changes in income distribution. A third matrix can be added to combine the first two. This twin or triplet matrix system, all being rather similar to the traditional one, makes DCBA easy to interpret to the eyes familiar with CBA.

The estimation of a DCBA involves four/five steps: First, a traditional CBA is undertaken; it constitutes the first matrix. The values for each variable and period will be an input to the calculations for the second matrix.

Second, the increases and decreases of income are estimated for each affected individual or groups of individuals of similar characteristics, according to the values of each variable and year from the first matrix. Changes in income can be monetary or non-monetary (e.g. landscape enjoyment of an old growth forest). The change reflects, in each period, the difference in income distribution undertaking or not the policy or investment. The variation in income can be analysed for each variable and period and for the overall effect in each period. There is no straight correspondence between costs or benefits in the traditional CBA and the kind of effects in the redistributive matrix. In the second matrix, a variable that was a cost (or a benefit) in the first matrix can be a 'cost', a 'benefit', have no effect, or change its nature along periods. It can be considered a 'benefit' if it brings the distribution of income closer to the total equitable distribution, and a 'cost' if it does the opposite. The evaluation indicators, such as the NPV or break-even point will not necessarily have the same sign for the two matrices.

Consider the distribution of income X_0 from a list of *n* individuals in a society and their corresponding income in the relevant period if the project or investment is not undertaken

(*status quo* or do-nothing situation), such that $y_{i,0}$ denotes the individual income of person (or household) *i* in a given period if the project is not undertaken

$$X_0 = (y_{1,0}, y_{2,0}, \dots, y_{n,0})$$

The effect of variable j at period t on individual i is denoted as $V_{i,j,t}$ The individual's new income can be expressed as

$$y_{i,t} = y_{i,0} + \sum_{j=1}^{k} V_{i,j,t}$$

for i=1,2,...,n individuals and j=1,2,...,k variables, and the associated income distribution is

$$X_{j,t} = (y_{1,o} + \sum_{j=1}^{k} V_{1,j,t}, y_{2,o} + \sum_{j=1}^{k} V_{2,j,t}, \dots, y_{n,o} + \sum_{j=1}^{k} V_{n,j,t})$$

The third step is to select an income inequality index. There is a considerable number of such indices, and the properties of them vary. a full revision of inequality indices is outside the scope of this paper, but details can be found in a number of papers (for instance, Sen 1973; Kakwani 1980; Coulter 1989; Lambert 1993; Cowell 1995, 1998).

An appropriate index for DCBA ought to meet some desirable properties. One of them is the Pigou-Dalton condition, under which any transfer from an individual of a higher income to an individual of lower income reduces the inequality (Dalton 1920; Sen 1973). A second desirable feature is that it has to be an indicator of relative inequality, in such a way that proportional changes in income leave the index unchanged, while lump-sum income additions do affect the value of the index. Finally, it ought to satisfy the anonimicity criterion, and be independent of income scale and population size.

Some of the inequality indicators that meet simultaneously the conditions above are the Gini index, the family of generalized entropy and the Atkinson's inequality index.

The well-known Gini index, which is one of the most used indices of inequality, can be interpreted as the sum of the differences in income between every pair of individuals. Formally, it can be expressed as:

$$G = \frac{\frac{1}{n(n-1)} \sum_{i=1}^{n} \sum_{j=1}^{n} |y_i - y_j|}{2\mu}$$

The Gini index lies between zero and one, with G = 0 when total equality is achieved. An extended version of the Gini index (Yitzhaki, 1983) introduces a distributional judgment parameter (*v*) and is defined in terms of the Lorenz curve L(p), $0 \le p \le 1$ as follows:

$$G(v) = 1 - v(v-1) \int_{0}^{1} (1-p)^{v-2} L(p) dp$$

The v parameter must be greater than one. v=2 yields the ordinary Gini coefficient. A larger v attaches more weight to the lower end of the income distribution.

The generalized entropy index (Theil 1967) derives from the thermodynamic theory. Entropy is a measure of disorder. It satisfies the strong principle of transfers, the independence of scale and population, and it is decomposable (Pfähler 1987). The generalized entropy index (E_{a}) is a variant of the Theil index, and its expression is

$$E_{\theta} = \frac{1}{\theta^2 - \theta} \left[\frac{1}{n} \sum_{i=1}^n \left[\frac{y_i}{\overline{y}} \right]^{\theta} - 1 \right]$$

where θ is a parameter of distance between proportions of income of the individuals. Different values of θ give different weight to the distance between different proportions of income along the distribution. Its value depends on the society aversion to inequality. A $\theta > I$ gives a higher weight to the distances in the upper part of the distribution, while $\theta < I$ increases the weight importance of the distances among lower incomes.

Atkinson's inequality index (A_{ε}) is based on a social welfare function that is non-decreasing on income, symmetrical, additive, concave, and with a constant parameter (ε) of relative aversion to inequality (Atkinson 1970.) It is based on an economic normative foundation (Lambert 1993.) The Atkinson index can be expressed as

$$A_{\varepsilon} = 1 - \left[\frac{1}{n} \sum_{i=1}^{n} \left(\frac{y_i}{\overline{y}}\right)^{1-\varepsilon}\right]^{1/(1-\varepsilon)}$$

 A_{ε} is zero when all the individuals of society have the same income $(y_{\varepsilon} = \overline{y})$. The index takes values between 0 and 1, and can be interpreted as both a measure of inequality and an indicator of the potential welfare gain if income were distributed in an equalitarian way (Barr 1998.) An ε parameter equal to zero reflects that society is indifferent to inequality, and $A_{\varepsilon} = 0$, whereas an ε tending to ∞ implies that society is very sensitive indeed to inequality, especially to the poorest individual.

There is a relation between Atkinson's and the generalized entropy index. It can be shown that E_{θ} with $\theta=1-\varepsilon>0$ is ordinally similar to A_{ε} (Cowell 1995). The *v* and the ε parameters play a similar role. The G(v) and A_{ε} indices behave similarly as *v* and $\varepsilon \rightarrow \infty$ and as $v \rightarrow I$ and $\varepsilon \rightarrow 0$ (Lambert 1993).

Another desirable feature is decomposability of the inequality measure, i.e. that there is consistency between the inequality indicator for the whole society and the indicators for the different parts of it (Cowell 1995). This is important for applications where an analysis of population subgroups is to be undertaken. Of the three indices described above, the Gini index fails to be decomposable.

The fourth step is to estimate the selected inequality index for each variable and time period. The estimation is double. One value will reflect the *status quo* situation for the corresponding period, and the other the new income distribution if the policy or investment project is undertaken. The difference between both indices would be the equivalent number for the distributional matrix of the values in the efficiency matrix. Thus, the partial redistributive effect (*PRE*) of a given variable for a given period is

$PRE_{j,t} = I_{X_0} - I_{X_{j,t}}$

where I_{x_0} is the expected income distribution at the same period *t* if the project or investment is not undertaken (*status quo* at this period), and $I_{x_{j,t}}$ is the value of the selected inequality index of the new income distribution if only variable *j* changed:

$$X_{j,t} = (y_{1,o} + V_{1,j,t}, y_{2,o} + V_{2,j,t}, \dots, y_{n,o} + V_{n,j,t})$$

being *V* the value of the increase or decrease in income for the relevant individual.

If *PRE* is positive, the variable is considered a 'benefit'; and a 'cost' if it is negative. The number resulting from the difference of the two indices might not be very intuitive. A better way to present these results might be in percentage terms over the status quo index.

The calculations can be made for each relevant variable (and they might differ from the variables of the efficiency CBA matrix) and time period, although at the end the aggregate effect has to be calculated separately. For the total effect in a given period (*TRE*):

$$TRE_t = I_{X_0} - I_X$$

where I_{X_t} is the inequality level of the income distribution at period t, which is of the form:

$$X_{t} = (y_{1,o} + \sum_{j=1}^{k} V_{1,j,t}, y_{2,o} + \sum_{j=1}^{k} V_{2,j,t}, \dots, y_{n,o} + \sum_{j=1}^{k} V_{n,j,t})$$

And in the overall value across periods, the total redistributive effect (TRE_T) would be $TRE_T = I_{X_0} - I_{X_T}$ where the income distribution of X_T is:

$$X_{T} = (y_{1,0} + \sum_{t=1}^{T} \sum_{j=1}^{k} V_{1,j,t}, y_{2,o} + \sum_{t=1}^{T} \sum_{j=1}^{k} V_{2,j,t}, \dots, y_{n,o} + \sum_{t=1}^{T} \sum_{j=1}^{k} V_{n,j,t})$$

income variations V will typically be discounted over time, although this is a subject open for discussion (see for instance, Rabl 1996; Heal 1998).

This overall aggregated index is the inequality evaluation measure of the effects of the investment. In this sense, it is 'equivalent' to the NPV of a traditional CBA.

The last step is optional. Once the second matrix is completed, a third matrix can be introduced, to combine the results of efficiency (first matrix) and inequality (the second one). The aggregation could be based on the abbreviated social welfare functions. These functions (Lambert 1990) combine an efficiency measure with an inequality value. In general:

$v(x) = V(\mu, I)$

where v(x) is the aggregated welfare measure, μ is the efficiency value and *I* the relevant inequality indicator. The efficiency measure takes often the form of mean income (or income per capita), and can be interpreted as a 'social good', whereas the inequality would be a 'social bad' (Lambert 1990). The function reflects the trade-off society faces when willing to give up efficiency for a gain in equity (Okun 1975).

Several properties are usually demanded to an abbreviated social welfare function. v(x) has to be symmetrical, increasing, and allow transfers; and $V(\mu, I)$ has to be increasing with respect to the first argument and decreasing with respect to the second. This implies that *I* has to be symmetrical and meet the principle of transfer, which is the case for the Gini, Atkinson, and generalized entropy indices.

For the Atkinson index, the function can take the form $V(\mu, I) = \mu [1 - A_{\varepsilon}]$ The result is expressed in monetary units and can be interpreted as the weighted gain in efficiency when inequality is also taken into account. For particular forms function v(x) can take, see for instance Sheshinski (1972), Shorrocks (1988) and Lambert (1993). In the application below, the following form has been used:

$V(\mu, I) = \mu \big[1 - A_{\varepsilon} \big]$

Notice that the importance of the degree of aversion to inequality is already built into the value of parameter e in the Atkinson index, although changes in the parameter do not alter the relation between efficiency and equity (Lambert 1993).

3. Analysis by Population Subgroups

As already mentioned, the decomposable indices (Atkinson and generalized entropy) allow for further analysis of effects on specific subgroups of the population. For instance, subgroups can reflect the recreational forest users/non-users split, or the kind of income source (income versus non-income).

If k subgroups are considered from a given population, the proportion of the population of subgroup p over the total could be denoted as f_p . Therefore, $\sum_{p=1}^{k} f_p = 1$. If the mean income of subgroup p is \overline{y}_p and the proportion of the income of this subgroup over the total income is denoted by g_p , then $\sum_{p=1}^{k} g_p = 1$. Also, denote the Atkinson index for subgroup p as $A_{\varepsilon,p}$. Following Blackorby et al. (1995), the overall index of inequality can then be expressed as:

$$A_{total} = A_{\varepsilon, within} + A_{\varepsilon, betwee}$$

where

$$A_{\varepsilon,between} = \sum_{p=1}^{k} f_p \left(\frac{\overline{y}_p}{\overline{y}}\right) (1 - A_{\varepsilon,p}) - (1 - A_{\varepsilon})$$
$$A_{\varepsilon,within} = \sum_{p=1}^{k} g_p A_{\varepsilon,p}$$

For a full discussion of decomposability, see for instance, Bourguignon (1979), Cowell (1995), or Blackorby et al. (1995).

4. Conclusions

Although the merits of including equity considerations in project evaluation, only rarely they are introduced in CBA. And when it is done, it is generally through weights, what has led to major concerns. This paper suggests an alternative way to account for distributional effects, the DCBA.

DCBA is a way to explicitly consider, within the evaluation framework, changes in inequality due to an investment. It consists of two matrices, extendable to a third one. The twin matrix approach duplicates the traditional CBA table for distributional effects. The similarity of both matrices is believed to be an advantaged for people already familiar with CBA, since the interpretation of the equity part can be quite straightforward. The twin matrix

system can be seen as an extension of the efficiency evaluation to equity, so the decisionmaker has more explicit elements to base the decision on.

A triplet matrix system adds a synthesis to the evaluation analysis. Familiar measures like the Net Present Value, the Internal Rate of Return, or the Break-Even Point can be used to summarize the desirability of the investment, as in the traditional CBA, but now reflecting both efficiency and equity variations in society.

Atkinson and generalized entropy indices, and well as the Gini coefficient, have been considered appropriate for DCBA due to the properties they have. They are relative inequality measures, meet the transfer principle, do not vary with income scale, and the first two indices are decomposable. Thanks to this principle, DCBA can be extended to identify the welfare effect on subgroups of the population. Furthermore, both indices include or can include an inequity aversion parameter to fit different societal preferences.

In summary, although further research is needed, it seems that DCBA could have some advantages over the traditional social CBA with distributional weights. The efficiency effects are not altered, and the traditional IRR, NPV, B/C ratio, or Break-Even Point are still given to the decision maker (first matrix). An estimation of distributional effects are also made explicitly available, using the familiar CBA structure. And still both measures can be consolidated in one, as in the weighting approach. Therefore, DCBA seems to add to the weight option. Furthermore, it also adds the possibility of a more detailed subgroup analysis.

References

Adler, M. and Posner, E. 1999. Rethinking Cost-Benefit Analysis. The Yale Law Journal 109:165-247.

Atkinson, A. 1970. On the Measurement of Inequality. Journal of Economic Theory 2:244–263.

Banks, J. and Johnson, P. 1994. Equivalence Scale Relativities Revisited. The Economic Journal 104:883–890. Barr, N. 1998. The Economics of the Welfare State. Stanford: Stanford University Press.

Blackorby, C., Bassat, W. and Donaldson, D. 1995. Income inequality measurement: the normative approach. In: Silber, J. (ed.). Income inequality measurement: from theory to practice. Dordrecht: Kluwer.

Blackorby, C. and Donaldson, D. 1987. Welfare Ratios and Distributionally Sensitive Cost-Benefit Analysis. Journal of Public Economics 34:265–290.

Blackorby, C. and Donaldson, D. 1984. Ethical Social Index Numbers and the Measurement of Effective Tax/ Benefit Progressivity. Canadian Journal of Economics 17:683–694.

Boardman, A., Greenberg, D. Vining, A. and Weimer, D. 1996. Cost-Benefit Analysis. Concepts and Practice. New Jersey: Prentice Hall.

Bourguignon, F. 1979. Decomposable income inequality measures. Econometrica 47:901-920.

Brent, R. 1984. Use of Distributional Weights in Cost-Benefit Analysis: A Survey of Schools. Public Finance Quarterly 12:213–230.

Buhmann, B., Rainwater, L. Schmaus, G. and Smeeding, T. 1988. Equivalence Scales, Well-being, Inequality, and Poverty: Sensitivity Estimates across Ten Countries Using the Luxembourg Income Study (LIS) Database. Review of Income and Wealth 34:115–142.

Coulter, F., Cowell, F. and Jenkins, S. 1992. Equivalence Scale Relativities and the Extent of Inequality and Poverty. The Economic Journal 102:1067–1082.

Coulter, P. 1989. Measuring Inequality. A Methodological Handbook. Boulder: Westview Press.

Cowell, F.A. 1998. Measurement of Inequality. Distributional Analysis Research Programme. Discussion Paper No. DAARP 36, July.

Cowell, F.A. 1995. Measuring Inequality. London: Prentice Hall-Harvester Wheatsheaf.

Cowell, F. and Mercader, M. 1999. Equivalence Scales and Inequality. Distributional Analysis Research Programme. Discussion Paper No. DAARP 27, March.

Dalton, H. 1920. The Measurement of the Inequality of Incomes. Economic Journal 30:348-361.

Dasgupta, A and Pearce, D.W. 1972. Cost-Benefit Analysis: Theory and Practice. London: Macmillan.

Drèze, J. 1998. Distribution Matters in Cost-Benefit Analysis: Comment on K.A. Brekke. Journal of Public Economics 70:485–488.

Ebert, U. 1995. Income Inequality and Differences in Household Size. Mathematical Social Sciences 30:37–55. Harberger, A.C. 1980. Reply to Layard and Squire. Journal of Political Economy 88:1050–1052.

Harberger, A.C. 1978. On the Use of Distributional Weights in Social Cost-Benefit Analysis. Journal of Political Economy 86:87–120. 14 Financial Instruments of Forest Policy

Harberger, A.C. 1971. Three Basic Postulates for Applied Welfare Economics: an Interpretative Essay. Journal of Economic Literature 9:785–797.

Heal, G. 1998. Valuing the Future. Columbia University Press: New York.

INE (Instituto Nacional de Estadística). 1993. Encuesta de Presupuestos Familiares, 1990-91. Madrid: INE

Jenkins, P. and Cowell, F. 1994. Parametric Equivalence Scales and Scale Relativities. The Economic Journal 104:891–900.

Johansson, P. 1998. Does the Choice of Numéraire Matter in Cost-Benefit Analysis? Journal of Public Economics 70:489–493.

Johansson-Stenman, O. 2000. On the Value of Life in Rich and Poor Countries and Distributional Weights Beyond Utilitarianism. Environmental and Resource Economics 17:299–310.

Kakwani, N. 1980. Income Inequality and Poverty. Oxford: Oxford University Press.

Lambert, P.J. 1993. The Distribution and Redistribution of Income. Manchester: Manchester University Press.

Lambert, P.J. 1990. The Equity-Efficiency Trade-Off: Breit Reconsidered. Oxford Economic Papers 42:91–104.

Layard, R. and Glaister, S. (eds.). 1994. Cost-Benefit Analysis. Cambridge: Cambridge University Press.

Little, I.M.D. and Mirrlees, J. 1969. Manual of Industrial Project Analysis, vol. II. Paris: OECD Development Centre. Mishan, E.J. 1988. Cost-Benefit Analysis. London: Unwin Hyman.

Musgrave, R.A. 1969. Cost-Benefit Analysis and the Theory of Public Finance. Journal of Economic Literature 7:797–806.

Okun, A. 1975. Equality and Efficiency. Washington: Brookings Institution

Pfähler, W. 1987. Redistributive Effects of Tax Progressivity: Evaluating a General Class of Aggregate Measures. Public Finance 32:1–31.

Rabl, A. 1997. Discounting of long-term costs: What would future generation prefer us to do? Ecological Economics 17:137–145.

Riera, P. and Najera, T. 2000. Estudi dels efectes socioeconòmics de l'eix Horta-Cerdanyola. Document prepared for TABASA.

Sen, A. 1973. On Economic Inequality. Oxford: Oxford University Press.

Sheshinski, E. 1972. Relation Between a Social Welfare Function and the Gini Index of Income Inequality. Journal of Economic Theory 4:98–100.

Shorrocks, A. 1988. Aggregation Issues in Inequality Measurement. In: Eichhorn, W. (ed.). Measurement in Economics: Theory and Applications of Economic Indices. Heidelberg: Physica-Verlag.

Squire, L. and van der Tak, H. 1975. Economic Analysis of Projects. Baltimore: John Hopkins University Press. Theil, H. 1967. Economics and Information Theory. Amsterdam: North-Holland.

UNIDO. 1972. Guidelines for Project Evaluation. Project Formulation and Evaluation Series, No. 2. United Nations. Weisbrod, B.A. 1968. Income Redistribution Effects and Benefit-Cost Analysis . In: Chase, S.B. Jr. (ed.).

Problems in Public Expenditure Analysis. New York: The Brookings Institution. Pp. 177-209.

Yitzhaki, S. 1983. On an extension of the Gini index. International Economic Review 24:617-628.

From Input-Oriented to Output-Oriented Subsidy Schemes and Beyond – Theoretical Implications of Subsidy Systems in Forestry

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Abstract

All over Europe forest owners depend for their income to a large extent on subsidies. As with economic instruments in general, these subsidy schemes in practice often do not conform with the underlying theory. The still predominant input-oriented subsidy systems in European forestry are mainly justified on the theoretical basis of welfare economics. However, not only can some explicit goals of these subsidy systems, such as 'preferred distribution of ownership structure' or 'stabilization of rural areas', not be backed up by welfare-economic theory. The implicit assumption in input-oriented schemes, such as 'forestry is a necessary prerequisite for all functions of forests to be provided' bears some even stronger theoretical shortcomings, accompanied by potentially severe practical consequences. In order to overcome these shortcomings, output-oriented subsidy schemes have been introduced more recently. These output-oriented schemes limit the financing support to those benefits of forests that are really dependent on the existence of forestry, and those that are not - or not adequately internalised by markets. The theoretical back-up for these new subsidy schemes is provided by contracting theory within the New Institutional Economics. Even though these new outputoriented subsidy systems seem to be based on a solid theoretical basis and prove to be effective in practice, they still contain a major oversimplification by assuming a homogeneous group of forest owners. Therefore, the future challenge is also seen to incorporate the variety of motives of forest owners in subsidy schemes.

Keywords: forestry, subsidies, externalities, efficiency, contracts

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1. Introduction

The income of forestry enterprises in most European countries depends to some extent on transfers of public financial resources. In the Netherlands, for example, around 50% of the total revenues of private forestry enterprises are accounted for by subsidies. Even in Scandinavian countries, financial transfers of resources from society to forestry enterprises are significant. Despite a decrease in government support for the total costs of silviculture and forest improvement from 64 million \in to 49 million \in during the 1990s (according to Finland's National Forestry Programme 2010) this amount is expected to be raised to 59 million \in in order to secure the sustainability of private forestry, thus covering around 25% of the total costs of silviculture and forest improvement (Ministry of Agriculture and Forestry 1999: 34).

These financial transfers from public to private enterprises are justified in terms of a general acknowledgement of corresponding streams of social, economic and ecological benefits arising from forest use, such as provision of labour in rural areas or recreational opportunities, raw material as primary input forestry industries or CO_2 fixation. Terms and conditions of these financial flows from society to forestry are codified in legal regulations.

Given the fact that over the last decade major revisions of forest laws, codes, rules, and regulations have taken place in almost all European countries, it seems worthwhile to analyse how the terms and conditions of these financial flows have been affected by these changes. This is especially the case, as both aspects – poor financial condition of forestry and new developments in forestry regulations – might be inter-connected in terms of the first describing a constant problem, and the latter offering a potential solution.

2. Trends in Forestry Legislation

Despite the fact that all changes in legislative institutional arrangements took place in national legal contexts, it is remarkable to find similarities concerning kind and direction of these changes all over Europe. According to Schmithüsen (1999) similar trends can be summarized as following:

- a) The full range of the potential benefits of forests and their importance for societies is stressed. Accordingly a broad variety of forest policy objectives are addressing social, economic and ecological implications of natural resource or forest use.
- b) There is a clear trend to delegate constitutional competencies in forestry matters to subnational entities (regional governments, newly created autonomous state entities). Where the national level remains responsible, sub-national entities are more strongly involved in policy-formulation and implementation, which might be seen in relation to a: "... worldwide situation of states to withdraw from areas of activity. Diminishing direct influence is accompanied by new types of institutions aiming for some kind of different solutions to still old-fashioned problems (Kissling-Näf 2000).
- c) The relative importance of regulative and incentive instruments is changing: Regulative instruments keep their importance in particular with regard to protecting forest areas from uncontrolled clearings and from devastative exploitation, but regulations, which so far have restricted forest management decisions, are gradually replaced by joint-management systems.
- d) Joint-management systems engage forest owners and public authorities on a negotiated and increasingly on a contractual basis.

Despite the similarities in legal developments, there are still major differences in national settings. For example, Finland's National Forest Programme 2010 (Ministry of Agriculture

and Forestry 1999, 2001) stresses support for: "reforestation, management of young stands, drainage reconditioning, basic improvement of forest roads and joint construction of new roads (Ministry of Agriculture and Forestry 1999: 31)."

While in other countries, for example in the Netherlands, the tendency is to replace some 'classical' instruments:

"In recent years, subsidies for forests have been restructured and have become oriented more on output than on input, with less attention to the production function and more to the recreation and nature functions of the forest [...] (Oosterveld 1997: 38)."

Underlying these developments are different paradigms relating to the design and implementation of financial instruments. The key-terms of current developments, to be further discussed here, are 'input-oriented' or 'output-oriented' financial instruments. Input-oriented refers to public financial support of forestry enterprises justified by the assumption of a corresponding stream of societal benefits from forestry to society. Output-oriented refers to defined 'payments' for specified beneficial outputs of forestry (goods, services) by use of public budgets.

The development from input- to output-oriented financial instruments may, for simplicity, be summarized in terms of 'less state, more market'. The 'inherent' reasoning for this development backs up the impression that current redefinitions of forest policy measures intend both an increased efficacy in the fulfilment of societal needs and an increased efficiency in the use of public financial resources to support forestry enterprises and forest owners, as well. An example for potential pathways leading to increased efficiency is shown in Figure 1.

Even if the figures for income, expenditure and share of public subsidies may vary in different countries for almost all European countries, the aim for an increased efficiency in the use of existing subsidies in terms of an improved relation of public budget use and its effects (Figure 1-A), and for an increased efficacy in the support of forestry enterprises (Figure 1-B) by use of



Figure 1. Income, sources of income, expenditure, and result of private forestry enterprises (>5 ha) in the Netherlands for 1998 and 1999 (estimated). Source: LEI 2000.

financial instruments ('compensatory payments', 'negotiated agreements', 'contracts'), are obvious. The tendency towards better in terms of more efficient approaches in implementing forest regulations is generally backed up by classical 'welfare economic theory' and its extension to 'environmental economics' – through the integration of non-market aspects to total value concept of natural resources – as well as by 'contracting theory'.

In this context two questions are of central importance: Which preconditions of economic theory must be met to support the idea of increased efficiency of subsidies in forestry; and, What are the implications of current developments in terms of their effects on society and forestry enterprises?

3. Efficiency

Efficiency can be defined as the capacity to produce desired results with a minimum expenditure of energy, time, or resources. In the context of 'financial instruments of forest policy' the term 'resources' then stands for any kind of financial flows from public budgets to private forestry enterprises. Respectively, 'desired results' represent the total of societal needs with respect to forests.

Even taking this comparably simple definition, some general information needs to be derived that are essential in order to judge a certain action in terms of increasing/decreasing the total efficiency. Of course, the meaning of 'resources' should be clarified. When talking about financial instruments in forest policy, there is a lack of agreement as to whether only budgetary subsidies, or public provision of services and goods, capital cost subsidies, and policies that create transfers through the market mechanism (de Moor 1997: 5) should also be included in detailed analyses. A clear understanding is also necessary of what the desired results should be. The goals or objectives, for which certain financial resources are used, are very seldom specified in an operational manner. The clear meaning of, for example, of 'improvement of natural resources quality', 'stabilizing rural areas', or 'constancy of ownership distribution' is often not easy to decipher, and commonly accepted criteria for these issues are often not available.

Regarding the efficiency question, it is even more important that some of these goals are clearly related to distributional objectives (distribution of income and wealth), while some others aim for allocative objectives (efficient use of given resources). Assuming the distributional objectives are part of a discussion on 'equity' or 'justice' issues, by definition the concept of economic efficiency can only be of minor importance: the quality (not efficiency) of financial instruments here is judged on the ability to reach a certain goal as formulated in political processes. Hence, neither the objectives, nor the resources used can be justified in terms of economic efficiency. The question of whether they need to be justified should also be considered. 'Good' policy is defined by political (norms, values) and not by economic (cost, benefit) means. Adequacy replaces efficiency, thereby hardly being measured or incorporated in concepts such as 'rational' decision-making.

It is, therefore, not surprising that nowadays politicians favour natural resource policies aiming for allocative efficiency. 'Good' policy here seems not to be based on relatively poor information such as 'values and norms', but might be seen and communicated by policy makers as a kind of 'social engineering' based on 'hard' facts. If there is a chance to calculate benefits and cost of natural resource policy, there is also a chance to replace some subjectivity by 'hard' facts based on (welfare-)economic theory and supported by economic research – as assumed, a good step towards rational policy making. The 'efficiency' analysis can respectively be split into:

- Efficient states of production, derived from a concept of 'welfare economics' by integrating the total value of forest goods and services.
- Efficient instruments to reach these states of production or conditions of optimal societal welfare.

3.1 Efficiency in terms of rational states of production (input-oriented)

When markets cannot be relied on in terms of provision of unpriced goods and services of forests, existing market failures define an area of specific need for political action. However, despite acknowledged partial market-failures, the allocative efficiency of functioning markets increasingly serve as benchmarks for the allocative efficiency of political systems. This applies to the performance of the political system to provide non market products and services of natural resources, when information about 'cost' and 'benefits' can be incorporated. If market failures exist and the political system has the potential to fix some of the problems, the efficiency of markets still serves as a benchmark for the political system:

In the market place consumers must signal to suppliers what quantity and quality of products they demand at what prices; suppliers must determine which products to produce and which input combinations to use. Both demanders and suppliers must monitor one another to ensure that products are delivered and paid for. To the extent that actions can be effectively measured and monitored, demanders and suppliers will internalise costs and benefits, profits will be made, and efficient resource allocation will be a by-product. Similarly, citizens who demand goods and services from government must monitor the politicians and bureaucrats who supply them. (Anderson and Leal 1991: 10).

Fully in line with what economists have long pushed for, nowadays there seems to be a widely held belief in the major theoretical and practical advantage of economic instruments within political decision making, namely to be able to incorporate environmental concerns directly into the market price mechanism. In fact, straightforward environmental economic approaches are fascinating, which may explain why derived terms and concepts have become part of the common repertoire of forest policy-makers all over the world. Having an 'objectively' determined price would imply some semblance of consumer sovereignty and ideally known 'values' of non-marketed goods and services of natural resources could be used in some form of environmentally (socially/economically) adjusted Cost/Benefit Analysis. Then the decision-maker can let the data inform them and the public of what trade-offs should be made to satisfy economic efficiency criteria (McKenney 1998: 6).

Trade-offs between the public (society) and private forestry enterprises are directly related to terms such as 'incentives', 'transfer payments', 'financial support', which can all be traced to the very content of the term 'subsidy'. Subsidies comprise "... all measures that keep prices for consumers below the market level or keep prices for producers above the market level or that reduce costs for consumers and producers by giving direct or indirect support" (de Moor 1997: 1).

Being adequately used, these financial instruments of policy making seem to "... have all the efficiency properties of the competitive market pricing. They trigger actions both among producers and consumers that allow the achievement of given environmental objectives at the lowest costs "(UN/ECE 1998: 9).

With the use of subsidies (incentives, support, etc.) it is, therefore, possible to eliminate a perceived deficit in the provision of beneficial goods or services of natural resources, such as forests. Part 1 in Figure 2 illustrates the standard argument presented within forestry circles.

As private forestry enterprises only integrate market based prices leading to private marginal revenues (mr_n) in their decision-making, additional positive externalities (external



Figure 2. Conditions of efficient internalisation of external economies and diseconomies.

economies) or societal revenues (mr_s) are not taken into account, when output levels of production are determined. Higher output levels will only be reached, when not only market prices (p₁) generate private (market) returns, but higher (subsidized) prices (p₂) are taken into account. When subsidies reflect added societal returns in a correct way, thus leading to higher possible return for enterprises, a strong influence on the private determination of enterprise output levels is expected, which will lead to societally efficient states of production. Similar to higher (subsidized) prices (\uparrow A), subsidizing production inputs with resulting lower (subsidized) private marginal cost of production (mc_{p(1)} \rightarrow mc_{p(2)}) will lead to equal results (\downarrow B = \uparrow A).

Unfortunately the same environmental economic concepts are not only used within the forestry sector, but also by 'non-forestry groups' – sometimes with some puzzling effects. An inside forestry perspective in Figure 2 [1] justifies subsidies to increase the level of timber production above the current level resulting from market forces (q_1, q_2) in order to gain additional societal benefits from timber production (CO₂ fixation, etc.). Conversely, an outside forestry perspective Figure 2 [2] might stress that even timber production at the current level (q_1) is associated with some societal cost (e.g. the loss of 'natural undisturbed evolutionary processes'). Therefore, not only the private cost of timber production $(mc_{p(a)})$, but also some additional marginal cost to society $(mc_{s(b)})$ must be taken into account to know the full cost of production $(mc_{p(a+b)})$ at a given output level. An isolated analysis of the starting situation would result in a recommendation such as to use disincentives (fines) to force forestry to decrease the initial output level of production (q_1) in order to reach a societal efficient level of production.

It is obvious that a combination of available information (monetary figures) concerning societal external economies (benefits) and external diseconomies (cost) might serve as a solution to the problem described above. In Figure 3 [3] the 'solution' – quite trivial – is to combine additional societal external economies from forestry ($mr_{s(a)}$) with related external diseconomies ($mc_{s(a+b)}$). This results in an output level, which now, after integrating both cost and benefits, is slightly lower than the solution in Figure 2 [1], but still leads to the assumption, that increasing forestry output levels are efficient in terms of resulting in an optimal welfare for society (q_{ab}).

However, this assumption can still be misleading. Due to the enormous complexity in forest-society interactions, it might be necessary to incorporate additional aspects, such as more societal cost or societal benefits joined with a certain level of production. As a result additional 'external diseconomies' and additional 'external economies' would decrease and increase the optimal level of production, respectively.



Figure 3. Conditions of efficient internalisation of external economies and diseconomies.

One might argue that this is the very basic reason why more forestry economic and forestry policy research needs to be carried out. That is, in order to determine all possible forestsociety interactions. Nevertheless, it should be pointed out here, that more data concerning 'cost' and 'benefits' resulting from applied valuation methodologies does not automatically lead to better knowledge concerning the estimation of 'optimal levels of production'. The provision of just slightly more data might not only change the 'efficient' level of subsidies, but might also change the entire implications in terms of a need for replacing 'incentives' by 'disincentives'. Therefore, we do not know 'how efficient' a certain level of financial instrument is (in the sense of more or less subsidies), nor whether it is 'efficient' to use a certain type of financial instrument (incentive/disincentive) at all. As shown in Figure 3 [3] for example, just adding some societal marginal cost (mc s(a+b+c)) alters the implications of efficient use of financial instruments' - now fines (not subsidies) would serve an efficient state of societal well-being. Even just for the question of whether more or less timber production will lead to higher efficiency, an almost unlimited number of potential negative – and positive - effects have to be integrated to reach a sufficient state of information. Reaching such a level of information, therefore, remains in the theoretical realm. Consequently there is no way to justify partial optimisations of financial instruments by means of even simple definitions of 'efficiency'. There is no constant approach to optimal knowledge. Either there is full information about cost and benefits - in which case the 'efficient use of financial instruments' can be estimated in terms of 'societal welfare', or there is not full information – in which case the 'efficiency' is a more than doubtful argument for justification of the use of any financial instrument.

It becomes obvious that the continuing discussion of whether or not valuation techniques are theoretically fully satisfactory is not a key issue here. Rather there are in the end:

"... probably two schools of thought regarding non-market valuation – those claiming the problems associated with it are so great that abandoning it would not involve any great loss and those who believe the derivation and use of the numbers are critical to economically rational decision-making." (McKenney 1998: 8).

However, even if the proper approach to value benefits and cost has been taken, the practical problem still remains, that all benefits and costs have to be known in order to allow statements concerning 'efficiency' in the respective meaning.

A last argument stresses the (not very often questioned) assumption, that, if not the society, at least the forestry enterprise has a solid knowledge about its 'real' marginal cost of production. Taking into account the fact that timber production serves most of the time as a

reference point for (opportunity-)cost calculations, this assumption could be seen as essential. However, as forestry takes place in a natural, societal and economic environment, which due to long production periods is of high uncertainty, even the most simple idea that information about 'real' cost of production and 'real' marginal return is available, seems to be quite doubtful. Certainly, assumptions concerning future prices and cost calculated at 'correct' discount rates may be used to transform uncertain future to some kind of available present information - not only is this a mere reflection of our beliefs concerning future realities, but even more importantly it cannot even be assumed that most forest owners are aware of sophisticated techniques for forestry investment analysis and make use of these for practical decision-making. Inherently one should always be aware that even forestry enterprises are not informed about their private 'marginal cost or revenues'. Figure 3 [4] shows the following simple implication: as all prior calculations of 'efficient' amounts of subsidies (or disincentives) are based on the assumption of solid information concerning private marginal cost of production, inefficiencies in private forest management must lead to inefficiencies in spending public budgets, as well. If a truly efficient forest management gives a chance to decrease cost to 'true' marginal private cost of production ((t)mc_) the 'efficient' amount of subsidies would decrease from B (in Figure 2[1]) to B' (in Figure 3[4]).

To sum up, efficiency in terms of rational states of production and implied societal welfare, can hardly serve as reason for the use of financial instruments. Here it is not up to 'economic theory' or 'economic research' to relieve policy-makers from the burden of justifying certain goals and spending public resources in order to approach certain states of natural resource management. This is in no way denying that 'rational' justifications can be derived from the legitimacy of existing political systems.

3.2 Efficiency in terms of rational use of budgets: output-oriented

The second question – leaving aside the problem of whether a certain budget can be 'efficient' in general – is how to use available public financial resources in a most efficient way. A clear answer to this question seems to be given by the overall trend in most European countries to move away from regulative instruments or indirect incentives to negotiated contractual agreements and direct incentives, towards more output-oriented systems (Schmithüsen 1999: 9). This development was neatly summarized by Bromley (1991: 20):

The preferred solution – though difficult to implement – would be a process yielding standards of performance that have been collectively (politically) determined, and then mechanisms for implementation that reward individual initiative, experimentation, and efficiency. This would entail a combination of collective choice and atomistic market processes where collective action has responsibilities for the larger social goals and then market processes are relied upon to achieve the most efficient implementation of those goals.

Talking about market processes in relation to the provision of societal benefits implies a significant change in perspective. Instead of focussing on societal 'inputs' of financial resources to forestry, which are assumed as needed for preferred levels of production, now the focus is on forestry enterprise 'outputs'. These are somewhat 'indistinct' societal benefits and positive external effects are transformed to specified products, for which – given a certain demand and presupposed willingness to pay – markets will develop. Potential producers of goods and services aim for natural resource use levels, which meet societal needs best, generate income and – at the same time – are most efficient in terms of using given capacities for production of goods and services at lowest cost. This is in order to

guarantee certain market shares for a respective forestry enterprise under conditions of competition. All market transactions are centred around contractual agreements concerning a negotiated price to be paid by consumers (society) for a defined product to be delivered.

However, contractual agreements can only be efficient if their underlying intention is to reach higher levels of efficiency in terms of better support of forestry enterprises and simultaneously to use available public budgets efficiently. Despite the straightforward economic approach of output-oriented subsidy systems, there are some preconditions to be met if contractual agreements are to be efficient (Table 1).

Table 1. Preconditions of efficient use of given public budgets by means of contractual agreements.

Ι		A specific achievement (activity, including intended non-activity) of a forestry enterprise is an inevitable precondition to promote society's well-being.
Π		This achievement results in goods and services, which are not yet subject to existing markets.
III		Consumers' sovereignty to choose between offers or neglect offers at all.
IV		Producers' ability to exclude potential consumers from potential consumption and related benefits:
	А	Possession of a defined property right to continue activities with negative trade-offs in terms of societal well-being (right to exclude).
	В	Possession of a the property right to deny activities and (!) being physically able to exclude consumers by eliminating existing positive trade-offs.

An explanation of why these preconditions are essential in terms of efficient use of public budgets can be given by analysing issues I to IV ex negatione:

- I Contractual use of public resources is solely efficient on condition of societal benefits, which depend in their delivery on specific achievements of forestry enterprises. From the public budget perspective it is inefficient to contract for benefits, which already result from the existing property right framework, e.g. the law to restock forest land. For clarity it should be noted here that negotiations in terms of interpretations of, or changes in the property right system in the interest of the forest owners is the classical case of rentseeking, which fall outside the category of contractual agreements. If it is just the effects of the very existence of forests, irrespective of their kind (species composition, structure) or type of use, potential alterations of forests by forestry enterprises are of no effect concerning the flow of potential benefits to society. As these flows can even exist without forestry - assuming undisturbed development of forests as the potential natural vegetation type and the plight for reforestation – potential benefits may be described as 'effects of forests' and not 'achievements of forestry' (for an extended discussion see Blum et al. 1996a,b). Contractual payments regarding 'effects of forestry' will only alter the public cost, but not its utility function. As neither the activities of forestry enterprises, nor the 'products' of forestry enterprises are needed to satisfy societal demands, contractual agreements cannot be regarded as being efficient use of public budgets.
- II By definition, 'externalities' refer to any flow of positive or negative effects of enterprise or private activity to third parties, which are not internalised by markets. If market-based

exchange processes for certain goods and services between forestry enterprises and society do exist, additional benefits for society are not externalities by definition, as potential implications for production cost or additional utility by societal benefits have been internalised within the initial market transaction (Knorring 1995).

- III/IV As a matter of fact, contractual agreements deserve freedom of choice for both consumers and producers. While for consumers the situation seems to be quite obvious, the producer's perspective is definitely more complicated.
- IV(A) Freedom to contract implies for forestry enterprises in essence, that there must be no rule or regulation forcing the enterprise to deliver potential products anyway (as is the case with many services due to the existing reforestation regulations in nation forest laws in most European countries). In terms of contractual agreements concerning 'negative external effects', this means that the property right to continue activities with potential negative implications or harm for society has to be owned by the forestry enterprise. This is an essential precondition to contract for any kind of activity (here: intended inactivity), which specifies the product as being of potential benefit for society. If the respective property right does not exist, public resources are spent to avoid potential harm to forestry activities, which are prohibited anyway at given state of legal rules and regulations.
- IV(B) The situation seems to be even more complicated, when benefits for society result from specific achievements of forestry. Again, these benefits can only be transformed into 'products' if a forestry enterprise possess the property right to deny activities resulting in the respective benefits. As in IV A societal payments for products hardly can be named efficient, which results in conditions not differing from those to be expected, if forestry enterprises just follow legal rules. Additionally it should be stressed that concerning positive external effects, it is essential not only to have property right to exclude, but also to have the physical ability to eliminate existing beneficial streams of forestry activities. As opportunity costs of excluding society from potential benefits might be prohibitively high, society should be reassured by this knowledge. Maybe it would be fair to contract forest owners for the recreational use of forest roads if the respective property right system allows the public free entrance to forests. However, it would be efficient to trust that the forest roads are of essential need for the forestry enterprise in terms of timber production anyway. Assuming rational behaviour, the public has to ignore any contract concerning the recreational use of forest roads as a consequence.

As shown in Figure 4, the somewhat indistinct concept of transferring subsidies to forestry in order to compensate for more or less unspecified streams of externalities can be replaced by a system in which societal demands are met by 'products' of forestry enterprises. Whether forestry enterprises are able to gain profits and whether society is able to achieve efficient provision of natural resource benefits by means of contractual agreements is strongly related to the question of the initial distribution of property rights. If, for example, a society grants the full property right to alter existing forests (including their destruction) or to change forest to any kind of land-use for forest owners, the amount of money a society must spend to reach states of efficient provision of natural resource-related benefits, will definitely differ from a situation, in which given regulations restrict forest owners from all negative effects, and force forest owners to almost all positive effects. It is obvious that rent-seeking processes are of central importance from the perspective of forest owners.

Even though 'output-oriented' financial instruments of forest policy seem to be a straightforward efficient financial policy instrument at first sight, again it is not a question of (allocative) 'efficiency', but of (distributional) equity that is of major importance for all kinds



Figure 4. Conceptual effects of a shift from input-oriented subsidies (A) to output-oriented contracts (B). 'Obligatory' refers to the given property rights system.

and quality of financial streams resulting from contractual agreements. It should be understood that most of the discussion on 'efficiency of contractual agreements' is first of all a process of 'rent-seeking' in terms of attempts to change initial distributions of property rights. Any expansion of not legally regulated forestry activities, which potentially then are subject to free forestry enterprise decision-making, may lead to new 'products' and new streams of income. Any restrictions of free enterprise decision-making by inventing new obligatory regulations and rules are avoiding societal cost by imposing these cost on forest owners. Concerning the major influence of 'political issues' regarding 'output-oriented' financial instruments (e.g. the questions of who determines the societal needs on the public contractor side and how these needs are determined), the financial flows resulting from contractual agreements definitely seem to be more a result of distributional rather than of market processes. However, compared to input-oriented subsidy schemes, contractual agreements have the advantage that they clarify and name the various forest-society interactions more clearly, thereby providing a major step towards more efficiency.

4. Beyond Input-Oriented or Output-Oriented Subsidies ...

An underlying assumption of Figure 1, which served as starting point for further discussions on how to use existing budgets and how to support forestry enterprises in the most efficient way, was the assumption that forestry enterprises, or more precisely, their owners, were carrying out forestry for financial economic (monetary) purposes or – at least – can be influenced by certain financial incentives and disincentives. This basic assumption served as conditio sine qua non for the problem definition and for recommended solutions: where the provision of societal benefits of forest use is insufficient, some incentives may change forest owners' behaviour. Where some 'unsatisfying' financial results of forestry enterprises are observed, significant changes in the forest owners' behaviour are expected. But, what is the

implication for the efficiency of financial instruments of forest policy, if current 'unsatisfying' financial results or even deficits will not lead to relevant changes in forest owners' behaviour, simply because some forest owners perceive monetary aspects of forestry as of limited importance for their decision-making? Given the empirical finding in most European countries of a very limited willingness of forest owners to sell their forest land even in the face of continuing severe situations for many of them, it might be misleading to suppose, that all forest owners are affected in the same way by financial instruments.

Irrespective of whether a subsidy system is input-oriented or output oriented, their targeted objective – the forest owner – has to be taken out of the realm of theory-dominated preassumptions, if striving for more efficiency of financial instruments in forest policy is not to remain just political rhetoric. However, as long as there is a severe lack of theoretically grounded understanding of the motives of current decision-making of forest owners, forestry policy approaches aiming to influence forest owners' decision-making can hardly be seen as an expression of 'efficient' or 'rational' forest policy. We first have to understand why forest owners do what they do, before we can design policy instruments for efficient co-ordination.

An example from the world of art may illustrate this point. Treating the multitude of motivations of forest owners as a homogeneous entity, as is still common practice, is like taking a Rembrandt for a Warhol. Even though they might provide the same public benefits (in the sense of pleasure to their respective admiring community), and eventually be of same value (in the sense of their prices), no one would seriously call it an efficient step, to exchange them for each other. As long as we are not able to incorporate into our models the broad meaning of forestry, most policy and economic analysis by means of valuation of potential cost and benefits simply do not cover the fact that comparable economic implications do not refer to comparable items.

References

- Anderson, T.L. and Leal, D.R. 1991. Free market environmentalism. San Francisco/Pacific Research Institute for Public Policy. Boulder, San Francisco, Oxford. Westview Press.
- Blum, A., Brandl, H., Oesten, G., Rätz, T., Schanz, H., Schmidt, S. and Vogel, G. 1996a. Wirkungen des Waldes und Leistungen der Forstwirtschaft. Allgemeine Forst Zeitschrift, 51(1):22–26
- Blum, A., Brandl, H., Oesten, G., Rätz, T., Schanz, H., Schmidt, S. and Vogel, G. 1996b. Wohlfahrtsökonomische Betrachtungen zu den Wirkungen des Waldes und Leistungen der Forstwirtschaft. Allgemeine Forst- und Jagdzeitung, 167(5):89–95
- Bromley, D.W. 1991. Environment and economy. Property rights and public policy. Oxford, UK & Cambridge, USA. Blackwell.
- de Moor, A.P.G. and Calamai, P. 1997. Subsidizing unsustainable development: Undermining the earth with public funds. Earth Council. http://www.ecouncil.ac.cr/rio/focus/report/english/subsidies/
- Kissling-Näf, I. 2000. Conditions of emergence and change of resource-specific institutions. Experiences with forest regimes in Europe. 8th Biennal Conference of the International Association for the Study of Common Property (IASCP) "Crafting Sustainable Commons in the New Millenium", Bloomington. http://129.79.82.27/ IASCP/Papers/kisslingi041500.pdf
- Knorring, E.v. 1995. Forstwirtschaft und externe Effekte Krisenmanagement durch Internalisierung? Institut für Volkswirtschaftslehre, Universität Augsburg. Beitrag Nr. 134, April 1995.
- LEI, 2000. Verlies particuliere bosbouw in 1999 gehalveerd. Press Release 1633, October 9th, 2000. http://www.lei.dlo.nl/NIEUWS/persbericht.php3?id=126&content=yes
- McKenney, D. 1998. Resource economists should do more cost analysis and less benefit analysis. Working Papers in Ecological Economics, number 9801. The Australian National University, Centre for Resource and Environmental Studies. http://cres.anu.edu.au/~dstern/EEP/eep9801.pdf
- Ministry of Agiculture and Forestry. 1999. Finland's National Forest Programme 2010. Publications of the Ministry of Agriculture and Forestry 2/1999. Helsinki. http://www.mmm.fi/metsatalous/kansallinenmetsaohjelma/english/
- Ministry of Agriculture and Forestry. 2001 (Kaipainen, J.; Lähteenoja, P. (editors) 2001). Finland's National Forest Programme 2010 – Follow-up Report 2000. Publications of the Ministry of Agriculture and Forestry 4/2001. Helsinki. http://www.mmm.fi/metsatalous/kansallinenmetsaohjelma/english/

- Oosterveld, H.R. 1997. Forest in densely populated areas: Forest management in a complex society, The Dutch case. Proceedings XI World Forestry Congress Antalya, Turkey, 13 to 22 October 1997, Vol. 5, Topic 25. http://www.fao.org/montes/foda/wforcong/publi/v5/t25e/2.htm#top
- Schmithüsen, F. 1999. The Expanding Framework of Law and Public Policies Governing Sustainable Uses and Management in European Forests. in: Schmithüsen, F., Herbst, P. and Le Master, D. (eds.). Experiences with New Forest and Environmental Laws in European Countries with Economies in Transition. Proceedings of the International Symposium Jointly Organized by the IUFRO Research Group 6.13.00 and the Austrian Federal Ministry of Agriculture and Forestry, Ossiach, June 1998. p. 1–30.
- UN/ECE (United Nations/Economic Commission for Europe), 1998. Report on the use of economic instruments for environmental policy in central and eastern europe. Environment for Europe – Fourth Ministerial Conference, Arhus, Denmark, 23–25 June, 1998. http://www.mem.dk/aarhus-conference/issues/Finance/ econinst.htm

A Theoretical Framework for the Evaluation of Financial Instruments of Forest Policy

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Abstract

This paper describes a theoretical framework for financial instruments of forest policy, especially as regards their categorisation and evaluation. First a general approach towards a theoretical justification of financial governmental intervention under the conditions of a market economy is introduced. Building upon this the paper then tries to identify different forms of financial policy instruments in the specific field of forest policy. In this context a wide approach is taken, looking both at public as well as private ownership types and taking into account not only direct but also more indirect contributions, especially "in-kind"-contributions by governmental forest services in the form of management assistance and extension services.

Following this basic framework the paper then describes then methods for the evaluation of public intervention policies, which have been developed based upon a combination of quantitative and qualitative methods. This combination allows to assess the success of government intervention policies at several levels, focusing on formal as well as informal objectives and consequences.

In the light of tightening public budget the suggested approach is seen not only as a tool for the ex post evaluation of public policies but also as a contribution towards a more objective discussion of program alternatives which could be extended also to other, especially regulative, policy instruments.

1. Theory of public intervention in a market economy system

1.1 Institutional background of public intervention

This paper deals with the theoretical foundations of public intervention in forestry related activities for the purpose of risk prevention and risk management. The view on this topic is

Andreas Ottitsch, Ilpo Tikkanen and Pere Riera (eds.) Financial Instruments of Forest Policy EFI Proceedings No. 42, 2002 taken under the angle of a market economy framework. In such a system in an ideal-typical world, government intervention would NOT be required, as the distribution of goods and services would be left to the market forces of supply and demand.

From a policy-science point of view there are three basic groups of political instruments. Regulative instruments are rules (i.e. laws, decrees, orders) declared by the government. Unless in the special case of "lex imperfecta" (Latin: unperfected law), they are linked to sanctions, which the government can impose, ultimately relying on its monopoly for physical force (i.e. seizure of goods and/or persons).

Financial instruments in a strict sense are positive (i.e. incentives, subsidies) or negative (i.e. disincentives, taxation) instruments linked as consequences to induce certain actions by private individuals. In a wider sense governmental investment in infrastructure or certain services can also be included here, since it relieves private actors from the related costs.

The term informational instruments describes the use of information by the government to induce certain actions. Such instruments can be aimed at informing the public of the potential benefits of certain actions (e.g. the use of new or alternative technology or practices) or altering the public's attitudes and values towards certain actions (e.g. use of legal drugs).

In practice usually a combination of all three instruments is used by public actors. For example financial incentives might be used to compensate private actors for the outcome of regulative measures and public campaigns are used to promote governmental policies. The ultimate result of such a policy mix is thus reflecting the power structures in a given society, which ultimately influence the policy-formulation process.

In such a general framework public intervention can be defined as a government¹ policy to affect a prevailing situation in order to increase or redistribute total welfare in society. The theory of political economy contains three justifications for public agency intervention in a market economy:

- 1. The *allocation* argument justifies intervention in the presence of market failure, where a freely operating market fails to arrive at a socially efficient price-quantity equilibrium.
- 2. The *distribution* intervention implies an ethical commitment to some minimum standard of material well-being.
- 3. The *stabilisation* argument has to do with moderating the cyclic nature of the economy in general and with tempering price fluctuations and maintaining high levels of employment in particular. (Boyd and Hyde 1989)

Another way of looking at public expenditures is suggested by (Atkinson and Noord 2001). This one is focusing on the issue of "marketability" of goods and services. In principle government intervention here is justified by the assumption that the distribution of such goods and services:

- 1. Public goods and services. This category comprises the provision of essential "pure" public goods and services that cannot be rationed by the price mechanism and therefore would not be supplied in efficient amounts if markets were used to make them available. Examples are national defence and general public services such as administration, legislation and regulation.
- 2. *Merit goods and services.* These are public goods that in principle could be (and in most countries to some extent are) made available through markets. In many cases, government provision of such goods and services is justified because of a conviction that they would

¹ The concept of government is used in a large sense meaning the national or international public decision maker

otherwise be provided in less than the efficient amount, because a significant number of consumers lack the required purchasing power, while externalities give these goods and services a public goods element. For example, government provision of education is common because citizens may ignore the social return of human capital investment, or are unable to fund it. Usually informational asymmetry is mentioned as an important additional economic motive for the government to be engaged in the delivery or provision of merit goods and services. These asymmetries limit the ability of the consumer to identify the quality of the goods and services fully and therefore distort prices and the quantities delivered. Health care is an important example in this regard.

- 3. Economic services. This refers to the provision or co-funding of private goods or services by the government. Intervention has often been felt to be desirable in markets for goods and services that are prone to natural monopolies, where externalities are judged to result in inefficient supply if provision is left to the market, or where particular groups of providers are felt to warrant assistance. Prominent examples include public utilities (where entry barriers are associated with the sunk cost of distribution networks) and financial support for specific activities such as research and development, small and medium-sized enterprises and agriculture. It should be noted that where these services are provided by public enterprises their cost is not consolidated with the general government accounts. Hence their operations will only be reflected in public expenditure to the extent that the government subsidises them.
- 4. Social transfers. These are transfers that provide support for income and living standards. Beneficiaries may include those whose market income is low or has declined sharply, or who face exceptional expenses due to old age, disability, sickness, unemployment, etc

In relation to the categorised used by (Boyd and Hyde1989), groups 1) (public goods and services) and 3) (economic goods and services) of this categorisation can be linked to the allocation-argument, whereas groups 2) (merit goods and services) and 4) (social transfers) to the distribution-argument. The stabilisation-argument does not come into the considerations of Atkinson and Noord's classification.

In the context of forest policy programs usually use the *allocation*-argument for formal justification. In some specific cases the *stabilisation* argument is also used, for example in relation to programs aimed at alleviating the consequences of catastrophic events such as storms or fire (e.g. funding for timber-storage in order to avoid the collapse of market prices due to over-supply). At a formal level distribution arguments were introduced when specific forestry related grants were created as a tool for the stimulation of economic development in "less favoured regions", such as the programs linked to EU-Regulation 1257/99, which stress the role of forestry in rural development.

Apart from these formal considerations and stated rationalities one also has to consider the informal elements of public policy, namely the fact that existing policies have to be seen as a result of power-struggles within societies, which eventually are always a struggle for the *distribution* of resources.

1.2 Problems related to the ambiguous nature of financial instruments

1.2.1 Taxes - financial "disincentives" and necessary sources of government income

One major theoretical as well as practical problem of financial instruments is the "legitimisation" behind them, which is not as obvious as the three categories described above might seem it to be.

Taxes - the most prominent "financial instrument" - have the role of being:

- a) Most governments' main source of income for financing "public spending".
- b) In this capacity they are legitimised as a means of "resource-redistribution" in order to install "social justice" and finance the various institutions of the modern welfare state.
- c) In addition taxes are increasingly also being tagged with some sort of "directing" label, aimed at discouraging the taxed actions. The most prominent example for this are ecotaxes which are linked to the use of energy. The problem here is that if such "punitive" taxes were ultimately successful (i.e. stopping the "punished" behaviour), they would also loose their significance as governmental income and therefore require the government to look for new income sources. The current discussion on tax-harmonisation among EUmember countries as well as the need for an adaptation of certain indirect taxes by new member states (e.g. taxation on alcohol and tabacco or on new and used cars) show the problems which are caused by any "redesign" of a taxation system in any given country. As the introduction of new taxes is one of the most unpopular actions for any government, decision-makers might rather shy away from such a measure.

1.2.2 Subsidies – positive incentive or transfer income

Another type of ambiguity exists in the context of "positive incentives" such as subsidy schemes or tax exemptions. Theoretically the idea behind such positive incentives is to direct the behaviour of targeted actors (private households or enterprises) in a certain direction. Ideally the amount of public funds invested should be lower than the accumulated public benefit, which means that any action initiated by such incentives should also encourage private investment or result in external effects, which might also be evaluated in order to calculate the benefits of the programme.

Financial incentives, however, will also be included in individual actors' cost-benefit calculations. As a result they become part of the individual actor's investment considerations. More precisely put, they become a transfer income, which are *a conditio sine qua non* for the subsidised activity to be profitable at the micro-economic scale.

The various financial incentives available within the EU for less favoured regions have shown success in directing investments to such areas, albeit quite often the economic logic of "cumulative effects" (i.e. actors taking into account the positive externalities of public infrastructure available in and around urban agglomerations) has also become evident in intra-regional disparities of such successes. As a result of the success of such aid schemes regional income and thus related economic indicators have risen to a level were the region might not be eligible for the funding scheme any more. In this context then the ambiguous role of support programs becomes obvious in the sense that their "success" as economic incentives has strengthened their importance as a basic element for regional income, thus practically rendering them into transfer-payments. The potential consequences of such developments are currently even more obvious as a number of regions are threatened with loosing their "less favoured" status with the projected "drop" in the average regional GDP after EU-enlargement.

A more complex situation exists in the context of tax exemptions. In several countries proceeds from timber sales are exempt from income taxes. At a less extreme level there exist tax-exemptions for certain supplies (e.g. reduced fuel-costs for the primary sector), or reduced levels of VAT for wood and wood products. Given the fact that market prices for wood are determined by world-market prices mainly, in such a context the financial value of the tax-exemption becomes ultimately a part of the beneficiary's income and the basis for

economic decisions. Thus a whole sector of the economy becomes weaned to an artificial level of profitability, at the cost of society at large, who somehow has to find compensates for the foregone tax-revenues. With the global processes towards removing of trade barriers, protectionist legislation and distortions for competition gaining higher profile, such regulations are likely to be removed in the foreseeable future, which inevitably will result in problems for those, who have become too dependent on such "favourable" conditions.

1.3 Classification of different types of financial instruments in forest policy

According to Cubbage et al. (1993), where the prevailing conditions deviate from ideal ones, a government can intervene through 1) incentives and 2) regulations. The incentives include cost sharing, technical assistance and favourable taxation, whereas the regulations mean, in most cases, various legislation and forest ownership control. Note that regulations and incentives can co-exist in an intervention policy. A government action can also consist of 3) an allocation intervention by government production of goods. Dividing the forest ownership into public and private forestry is a natural way for deeper understanding of public intervention. These two main ownership categories can both be divided further into subcategories: public ownership into federal land, state, municipalities, etc., and private ownership into forest industry owned forests and non-industrial private forests (NIPF), etc.

Both incentives as well as allocation interventions can also occur in ways which are not immediately obvious as government intervention. The provision of extension services and other forms of technical consulting (e.g. setting up of management plans) by the forest service for private owners also has to be seen as a form of resource-allocation, as the private owners would otherwise have to purchase such services on the market. The fact that such services are not always provided on a voluntary basis (i.e. in many countries there exist regulations whereupon private owners have to "accept" management plans from the forest service as a means of governmental control of forest management activities) is not of relevance when it comes to evaluating such practices as financial involvement by the government, although it is of relevance in evaluating efficiency and effectiveness of government programs.

From an analytical point of view the following classification of financial instruments in forest policy is thus suggested.

1.3.1 Grants, compensations, tax concessions

1.3.1.1 Grants and compensations

This type of programs describes the most straightforward implementation of the idea of financial assistance to private actors. Typically programs within this category might list a specific type of measures (e.g. afforestation, sylvicultural measures, investments), a specified group of potential recipients (all forest owners, or a subset of national forest owners, based on sociodemographic characteristics). They will also most likely be linked to a specific time-frame (application deadlines etc.). Funding can also consist in support for capital acquisition (i.e. subsidised interest rates on credit-capital).

The funds for these programs may either stem from the general national budget or from specific funds. The latter may be the case, in the context of programs linked to specific events (e.g. catastrophes), funding of "environmentally friendly activities" from the proceeds from taxation on "polluting activities" is also a possible implementation of this idea.

This category also includes public spending on the production of specific goods and services, which are considered to be of public interest (e.g. water-supply, conservation,

recreation) and are handed out as "compensations" rather than "grants". The main concept still is that there is a money transfer from the government to a private actors. In addition to the flow of financial resources also "the direct supply of goods (e.g. plant-material) to forest owners has to be specified in this category and is to be evaluated at respective market prices.

1.3.1.2 Taxation related measures - tax concessions

Programs in this category are linked to taxation measures. In several countries forestry related activities enjoy exemption from taxes, which other economic activities are subjected to. Revenues from timber sales, for example, are tax-exempt in several EU-member states.

The main problem in assessing the financial effects of such measures one has to assume that the "privileged" activities (e.g. timber sales) also would have been carried out, if they had not been subjected to tax-exemptions. For practical reasons this hypothesis might have to be applied.

1.3.1.2.1 Concessions on direct taxes

This category refers to direct taxation, aimed at private actors' income or property. This includes taxation on property, property transfer (hereditary tax, taxes on property sales, donations etc.) and private income taxation.

In some countries the taxation for real-estate in general is often based on some sort of "income-equivalent" rather than the actual market price of the property. In essence this is a preferred treatment of investments in "land" in comparison to other forms of capital investment. It still has to be discussed, whether in such cases the taxation of "land" or real-estate in specific or the taxation of "capital" is taken as the point of reference.

1.3.1.2.2 Concessions on indirect taxes

This category contains tax concessions on indirect taxes (e.g. value-added tax). On one hand this refers to VAT-concessions on timber itself. In essence such exempts are a "subsidy" for timber as a raw-material (and reduce the cost for the end-consumer). On the other hand there exists the possibility to provide concessions on VAT or other indirect taxes for certain supplies for forest enterprises. A typical type of tax-exemption to be looked into in this context is for example the reduction on gasoline-tax for the use of fuel for machinery (trucks, skidders, harvesters, chainsaws etc.).

1.3.2 Indirect financial involvement by the government – provision of extension services, management plans etc.

This category describes services, which are offered by public or semi-public institutions to private owners for free or at below-market prices. A common example for this are extension services provided to private land-owners for free (or at a relatively modest fee). Another commonly encountered example is management-planning by public institutions for private forest-owners, regardless of whether such a service is comprehensive for the land-owner or not.

1.4 Financial involvement linked to public forest property

This refers to ALL types of public forest property, including subnational entities, such as regions, states, municipalities (communities) and churches, if the latter are treated differently from private forest owners in the national legislation.

In principle the following further subcategories apply to all of the above mentioned types of public forest ownership. It is only the "number of beneficiaries represented by the owner", which differs.

1.4.1 Type I – Direct management of public forest land by the forest authority

This category describes the management of public forest land by the forest authority, (independent of the "level" of this authority (i.e.: federal, state/provincial, municipal). A well known and documented example for this type of management is the German "Einheitsforstamt"-system, wherein the public authority is also managing public land (as well as supervising/policing and advising private owners).

1.4.2 Type II – Direct management of public forest land by public forest enterprise (in governmental budget structure)

This type of arrangement describes the situation, where a specific public enterprise is in charge of managing public forest land. This enterprise is, however, still part of the governmental structure (i.e. ultimate responsibility to a ministry or other type of government authority). The main difference to the first category of public forest property (above) is that it is assumed to be easier to identify and differentiate management related costs and benefits from those which are linked to general costs of the forestry administration.

1.4.3 Type III – Management of public forest land by separately established companies – independent of actual ownership of these companies

This type of arrangement describes the management of public land under some form of "license" by an enterprise (institution), which has been established according to the rules and regulations for private enterprises, independent of the actual ownership of the enterprise (e.g.: "ÖBF-AG" (Bundesforste) in Austria, is acting like any private share-holder company, but 100% of the shares are owned by the Austrian government).

In addition, also temporal agreements for the management of public land by private companies, typical in the North-American context as well as in tropical forest management are considered here.

2. Theoretical basis for an evaluation of financial incentives

2.1 What can be evaluated

2.1.1 Direct and indirect effects

Financial incentive programs can be evaluated against a number of criteria. The most basic type of evaluation involves an assessment of program effectiveness and efficiency, both of which are to be measured against the program's intended explicit success criteria, which in most cases will have been aimed at a specific sector.

When looking upon a program's effectiveness one has to investigate whether the program's output had the intended effect (e.g. afforestation of agricultural land), while a program's efficiency is calculated based upon the relationship between costs and benefits. From the point of view of the public actor (e.g. the national state) the latter is looking at those costs and benefits which can be attributed to the public sphere as opposed to those occurring in the sphere of private actors.

Apart from the program's intrasectoral effects also intersectoral effects in relation to economic or social spheres outside of the program's main focus of interest may be of concern. Policies aimed at promoting the planting of fast-growing woody species for "energy-plantations", for example have implications on the markets for other energy sources.

Intersectoral effects can also be an intended consequence of a program. Afforestation programs aimed at reducing agricultural production areas (e.g. EU-Regulation 2080/92) are an example for this.

2.1.2 Distribution issues

Regardless of whether a program has been inspired by allocative, distributional or stabilising intentions, any financial incentive program always consists in a redistribution of resources within a society. In order to fully assess the distributional effects of a program, though not only the direct beneficiaries (i.e. recipients of financial resources for e.g. opening up of forests for public access) has to be considered but also the potentially wider circle of people benefiting from the program outputs (e.g. number of people benefiting from increased access to forest lands) has to be considered.

Distribution may occur between different groups within a society which are characterised by specific socio-demographic criteria. Income level is one of the most basic characteristics used to assess distributional effects of a progam, this criterion is often also referred to as "social justice". Intended distributional effects usually consist in a distribution of resources from wealthier segments of the population to less financially affluent groups. In a national context distribution also occurs between different regions in a country. Remote rural regions, which are the main location of forest resources in European countries usually qualify for some sort of special status in national territorial redistribution schemes, benefiting from taxation-revenues from wealthy urban agglomeration areas.

The main logic behind territorial redistribution is to counteract cumulative effects of agglomeration areas, which consist in the positive externalities of the concentration of public infrastructure in urban regions. These externalities are an incentive for private actors' economic activities (allocation of production sites and household) which in return results in increased public (taxation) revenues, allowing for even higher infrastructure investments, thus leading to a circle of public and private investments which ultimately redirects financial as well as human resources away from remote regions. The allocation of public funds in so called "less favoured regions" is intended to counteract this circle and encourage investment activities in remote areas. This can either be done by investments in (public) infrastructure or by directly stimulating private investment through grants, tax-concessions or support for capital-acquisition.

In the context of forestry related programs distributional issues are of interest as the number of (private) forest owners usually is only a very low percentage of a country's population. In addition land-ownership exceeding the size of an average farm may be associated to financial wealth in the mind of the general population and the allocation of financial resources to a group of people who are already perceived as being relatively well off may face acceptance problems. Results from ongoing research activities in several European countries point to this problem (Puelzl 2001).
2.2 Evaluation of specific criteria using quantitative approaches

2.2.1 Effectiveness and efficiency

Program effectiveness is measured in quantities of the program's output. Direct and more indirect approaches will have to be taken to fully assess this. This is illustrated using again the example of afforestation. While it may be relatively easy to provide figures for direct outputs such as "area of afforested land" the assessment of all effects (intra- and intersectoral) of the afforestation (e.g. full value of all wood and non-wood products which will be derived from this land) requires a more sophisticated approach.

Program efficiency is measured as the relationship between program costs for the public budget(s) and public benefits from the program. Financial value is the unit, which allows such a comparison. Therefore program outputs have to be linked with financial values, either through market prices, if such exist, or by means of evaluation methods. The latter is not free of controversy but nevertheless it is a widely used tool to evaluate the value of outputs specifically in the context of environmentally relevant investments.

The evaluation of public intervention falls into two parts: 1) the evaluation of the intervention costs to government and 2) the evaluation of the intervention effects on society. Government action costs should consequently be divided, first, to information costs (central administration, statistics, research etc.), which are present independently of the intervention, and second, to intervention costs (subsidies, controlling, intervention administration etc.).

The individual or private net return on forest management, based on the actual private costs and benefits in real terms, have to be shown to be lower than acceptable for the owner in order to justify public intervention on the property. Any subsidy directed to owners who should expect profit in managing their land, given the actual market conditions and expectations is misallocated as it has to be assumed that the activity would have been carried out anyway.

In the context of the following paragraphs "marginal" costs and benefits describe the marginal (i.e. additional) costs and benefits per case (e.g. subsidy-application), which are to be distinguished from the costs which occur within the public administration for administrating a program. As the evaluation is to be done from the point of view of the public administration it is "public" costs and benefits which are to be taken into account in the analysis of program efficiency.

The private actor (forest owner) that could not profitably manage his/her forest could, but should not necessarily receive, the incentives to undertake forestry activities. Indeed, it is only if the marginal social benefit (MSB) is greater than marginal social costs (MSC) that such an investment of public money would be appropriate. The aggregation of the MSC and MSB for all the private actors whose financial return on management is negative but the economic return positive, will give an indication of the overall efficiency of that public program (Harou 1985).

$$B/C = \frac{\sum_{i=1}^{n} MSB}{\sum_{i=1}^{n} MSC + AC}$$

where MSB is the marginal social benefit induced by the forestry program discounted with a social discount factor, MSC is the marginal social costs necessary to incur the MSB discounted with social discount rate, AC is the total administrative cost of the program and *n* refers to the number of program participants.

Harou (1985) suggests that the marginal social benefits and costs are established by following a with and without analysis. The management with and without the different programs can be established by different methods. A more detailed description of the evaluation methods can be found in Harou (1985, 1987).

2.2.2 Equality

Program equality describes the distributional effects of any public funding program. Basically this consists in comparing the source of funds with the recipients of program benefits. Again attention is brought to the fact that this does not have to equal the recipients of funds from the program. This is illustrated in figure one using the example of a program which offers public funding for land-owners who open up recreational access to their forest property. Such programs are offered in several European countries where no everyman's rights is existing.

For the example in Figure 1 funds for the program stem from the general national budget. Government revenues are mainly created from direct and indirect taxation. The hypothetical taxation example assumes that the biggest share of taxation revenues is created from segments of the population whose income lies close to the national average. As a result of a progressive income taxation system lower income classes contribute less while higher income classes still contribute a relatively high shares to the national public income, even though only a smaller number of persons is affected. In the hypothetical example the largest share of the program payments goes to person represented in income classes which lie just under the national average income, which may be typical for the situation of small scale land-owners, who make up the majority of forest land-owners in most European countries. Program funds are also paid out to large scale land-owners, who are members of higher income classes. The benefits of this specific



Figure 1. Exemplary illustration for an assessment of program equality – distribution of source of funds, allocation of payments and allocation of program benefits in relation to income distribution and average income level within a population. In this "ideal" example public benefits are assumed to be exceeding public costs significantly.

program "public access to forest land", which have been evaluated by means of e.g. contingency valuation method (CVM) or travel cost method, are distributed across all income classes, as recreational access is in principle "available to everybody". Empirical studies on outdoor recreation show, however, that forest recreation is specifically enjoyed by segments of the population whose sociodemographic characteristics (i.e. education standard, age, profession) identify them as members of income classes above the national average (e.g. Ottitsch et al.2000).

It is stressed here that this example is only brought forward in order to illustrate issues which have to be taken into account in the evaluation of a program's distributional effects. The assumed distribution of taxation revenue and program payments are not intended to resemble any "real life"-example.

In order to assess program equality it is thus necessary to collect information on

- a) the source of program funds,
- b) the recipients of program funds and
- c) the eventual beneficiaries of program outputs.

While the example in figure 1 is using "income classes" as the indicator by which distributional effects are being measured, a similar example could also be created using geographical or administrative regions within a country as relevant structure.

2.3 Qualitative elements of program evaluation

While quantitative approaches allow for an assessment of program outputs and the relationships between inputs and outputs, they do not necessarily allow for an explanation of causal relationships.

The main complex of factors to be investigated in the context of an evaluation of financial instruments are the so called "non-market-failures". In an analogy to market-failures which are used to justify government intervention, this term describes problems related to the implementation of financial instruments which the fact that this form of resource allocation is not guided by market-mechanisms of supply and demand. Usually the following three groups of "non-market failures" are identified:

In principle the following three groups of factors can be regarded as possible causes:

Disjunction between costs and revenues

Due to the fact that the allocation of program funds in principle is not necessarily linked to considerations of program benefits, authorities may not apply full cost-benefit rationales in program implementation. On one hand this means that indicators such as "number of applications" or "area of land affected" may be used to measure a program's effectiveness rather than using more sophisticated approaches such as considerations regarding the future value of outputs from lands affected by e.g. an afforestation program. On the other hand formal as well as informal budgeting rules and criteria may serve as an incentive for implementing authorities to use as much of the available funds as possible during a budgeting period (or as early as possible during a program period), as this may underline the "necessity" of the program as well as the "efficiency" of the administering institution.

• Institutional rationale

Maximisation of institutional profits (rationale choice): While at a formal level public institutions have been set up to administer programs according to goals and guidelines, which have been decided upon at the political level, at an informal level the institutions' own benefits are being taken into consideration in the implementation of programs. In principle any organisation (whether public or private) is aiming at increasing its sphere of

influence and its personnel as well as financial resources under its control. From the institution's point of view any program therefore has to be judged to what degree it is suited to contribute to these main institutional interests.

Maximisation of profits for clientele / constituency: Bureaucratic institutions are also characterised by a certain level of identification with the interests of their main clientele. They see themselves and are seen as part of their respective sector. Consequently the availability of funds for sector specific goals is seen as a success in itself, regardless of long-term considerations of cost-benefit analysis from the point of view of "the public interest". In addition financial instruments also allow an institution to strengthen its ties with- and also control over its clientele. The contacts established through funding-applications are also seen as a way to instigate informal extension service activities. In addition to the clientele-specific considerations of implementing public organisations the constituency-specific considerations which play a role at the political level during the phase of policy development and formulation also have to be considered.

• Program externalities

Territorial and sectoral aspects: Program impacts do not only influence the immediate intended sphere of influence of a program but result also in external effects. Incentives which intend to instigate economic activities in a certain sector or geographical area alter conditions not only in their intended sphere of influence but also in other areas, both sectoral as well as geographical. As a result what may be accounted for as social benefit in one sphere may result in social costs in areas affected by negative external effects. One example for such effects is the competition between different programs aimed at reducing agricultural production area. The availability of funds for ecological set-asides may decrease farmers' willingness to apply for afforestation grants if the former provide similar income possibilities with less stringent commitments (e.g. minimum duration of grant-contract, legal and technical problems in reconverting land to agricultural land use etc.). In order to avoid such effects inter-sectoral coordination of programs is increasingly seen as a requirement in the context of land-use related policies.

In order to assess the possible instances of "non-market-failures", it is necessary to perform a more detailed policy analysis, which has to investigate not only the program implementation process in detail, but also will have to consider to what degree relevant factors during program development and formulation may be the underlying cause.

Such an analysis will have to investigate informal elements of the policy process too, taking into account that formulated goals and objectives may not serve to fully explain a program's rationale.

3. Conclusions

This paper provides a theoretical framework for the evaluation of financial instruments of forest policy. In so doing it starts out from theoretical foundations related to the development and implementation of financial policy instruments in general and then tries to provide a categorisation of relevant instruments in the field of forest policy especially in the European context (i.e. not including the Russian Federation and other countries which became independent from the former Soviet Union during the 1990s). Some instruments in use in other parts of the world, especially in the context of stumpage-fee based license management systems on public forest land are not given specific considerations, as the paper tries to provide the theoretical basis for a research activity focusing on EU and EU-accession candidate countries.

It is shown in this paper that public financial investments and support in the field of forest policy do not only occur in the obvious form of specially dedicated grant programs, but that one has to look at a wider range of instruments and policies. Still in the field of financial policy instruments in the traditional sense various forms of tax concessions have to be taken into consideration, which exist in many countries, ranging from income-tax exemptions from timber sales to tax reductions for certain supplies (e.g. diesel-fuel) or special arrangements for property-transfer taxation of agricultural and forestry properties.

The management of public forest land is another specific issues which has to be taken into consideration. The approach suggested in this paper identified three basic models for the management structure of public forests, which in one or another form are relevant in European countries. The categorisation mainly uses the degree to which the management of public forest land is tied to the overall administrative structure of forest authority in a country, region or municipality. This sort of categorisation has been introduced in order to facilitate comparison between country-results.

The evaluation approach suggested in this paper focuses first on inter-sectoral effects of analysed programs. Effectiveness of a program is to be analysed based upon its explicitly stated goals and objectives, which have to be taken from the formal program texts (i.e. laws, decrees) as well as preliminatory documents, which highlight the process of program development and formulation. Efficiency has to be calculated based on cost-benefit analysis. On the cost-side the main task consists in identifying not only the direct program costs (i.e. marginal costs occurring through the payment of program funds), but also the administrative costs related to the implementation of the program. To what degree this is possible, also depends on the quality recording systems kept by the organisations implementing the program. On the benefit side the full value of all benefits initiated by the program has to be identified. For this either market prices or the results for existing evaluation approaches may be used. From the point of view of the public policy-maker only public costs and benefits of the program are of interest. Therefore the spheres of public and private costs and benefits should be treated separately in the project. These considerations make it evident that especially for the evaluation of values for nonmarketed goods and benefits a sophisticated approach has to be taken, which necessarily will include some elements of assessments and assumptions which may be challengeable. As long, though, as these assessments and judgements are made in a transparent way and in the same way for comparable cases, this is not necessarily a restriction of the approach, but opens possibilities for additional sensitivity analysis.

Apart from effectiveness and efficiency an analysis of program equality (i.e. distribution effects) also is seen as an essential part of program evaluation. In the context of forestry related measures, specifically under conditions of dominating private forest ownership, a differentiation has to be made between the immediate recipients of program payments, in most cases land owners, and the beneficiaries of program outputs, which may constitute a much larger group. A detailed analysis differentiating between these two types of "beneficiaries" may serve to contribute to a more objective discussion about program effects, keeping in mind that financial assistance to private land-owners is not necessarily well accepted among the general public.

Effectiveness, efficiency and program equality are assessed mainly in respect to a program's stated objectives and formal criteria. While such an analysis, if done ex post, provides information on the outcome of a program, it does not necessarily create insight into the causalities which may have led to program success or failure. Therefore an additional qualitative analysis is necessary, which looks into the implementation of the program, specifically to what degree institutional factors have influenced program implementation. This type of analysis acknowledges the reality that implemented programs are not the result of an optimisation process but rather the result of a struggle for resources between often

conflicting interests. By analysing which interests ultimately were successful both in formulation as well as implementation of the program thus an image of the power structure within the analysed unit (country, region, municipality) can be drawn.

The approach suggested here is suitable for both ex-post as well as ex-ante evaluations. It could also be extended to other than just financial instruments, especially as administrative costs are also included into efficiency considerations. In the light of a general trend towards the tightening of public budgets a higher need for the assessment and justification of financial costs of competing program alternatives may be expected. The suggested approach can serve as a contribution towards a more objective discussion of policy alternatives.

References

Boyd, R.G. and Hyde W.F. 1989. Forestry sector intervention. The Impacts of Public Regulation on Social Welfare. Iowa State University Press, Ames. 295 p.

- Cubbage, F.W., O'Laughlin, J. and Bullock, C.S. 1993. Forest resource policy. John Wiley & Sons Inc., New York. 562 p.
- Harou, P.A. 1985. Comparison of methodologies to evaluate aid programs to nonindustrial private forests. Silva Fennica 4(19): 365-375.
- Harou, P.A. 1986. The EC context for private forestry incentive evaluation. Silva Fennica 4(20): 366-375.
- Harou, P.A. 1987. Essays in forestry economics: appraisal and evaluation of forestry investments, programs and policies. Vauk, Kiel. 195 p.
- Johansson, P.-O. and Löfgren, K.G. 1985. The economics of forestry and natural resources. Basil Blackwell, Oxford. 292 p.

Ottitsch A., Weiss G. European Mountain Forest Policies – A Comparative Analysis; in: Price M.F., Butt N. (eds.): Forests in Sustainable Mountain Development – A State of the Art Knowledge Report for 2000; IUFRO Research Series Nr. 5; CABI Publishing; ISBN 0 85199 446 6; Oxon, New York 2000, pp. 415–421

- Ottitsch A., Pregernigg M., Buerg J.: Die Wiener und ihre Wälder; Einstellungen der Wiener zu Wald und Erholung im Raum Wien; Schriftenreihe des Instituts f. Sozioökonomik der Forst- und Holzwirtschaft; Nr. 37, Wien 1999, 117 p.
- Puelzel H. 2001. Preliminary results from the Austrian case study for the EU-4th framework project MULTIFOR-RD, oral information, Institute of Forest Sector Policy and Economics, Vienna.

Public Forests as an Indirect Financial Instrument in Forest Policy

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Abstract

The financial effects on private forests generated through public forests are discussed. The Finnish Forest and Park Service (FFPS) is the largest forest owner in Finland with a share of 1/10 of total fellings and 1/4 of forest land. The data used in the study consists of 34-year time series, and the following major tasks of public forests are analysed: roundwood supply; employment; nature conservation and recreation; and income to Budget. First, the public choice function for FFPS according to the major tasks is discussed. Second, an analysis of FFPS behaviour on the supply of sawlogs is carried out using econometric analysis. Third, the consequences of FFPS behaviour on non-industrial private forests (NIPF) are further evaluated and their indirect financing effects discussed.

Keywords: Finnish Forest and Park Service, indirect financial assistance, non-industrial private forests, evaluation

1. Introduction

Financial assistance for forestry can be allocated directly (e.g. grants, loans, tax concessions) or by employing indirect instruments (e.g. public supply or procurement of forest goods, technical assistance, and research and development). In this study, we concentrate on the public forest ownership as an indirect financial instrument and as a special form of intervention in forest policy.

Market interventions could be classified first, in accordance with their justification (allocation, distribution and stabilization) and second, according to whether the intervention has effects to supply or demand for resources. Public ownership is normally connected with

Andreas Ottitsch, Ilpo Tikkanen and Pere Riera (eds.) Financial Instruments of Forest Policy EFI Proceedings No. 42, 2002 all of these three fundamental economic justifications and to resources utilisation equilibrium (Boyd and Hyde 1989).

The concept public forests is normally used with forest areas under the influence of the government (i.e. state forests). When comparing the differences between private and publiclyowned forest functions, the main difference originates, not primarily from the differences in ownership structure, but from differences in objectives and targets set by owner, which actually determine the functions of forests. In public forests those objectives and targets are more numerous than in private forests. In addition, the objectives and targets of public forests usually have conflicting relationships with each other, because they are compromises between political, social, economic, financial and environmental interests and are constantly challenged by public opinion (Vehkamäki and Heinonen 1995).

Public ownership is also one of the policy instruments that could be used to have an influence on non-industrial private forest (NIPF) owners' behaviour (Brooks 1986). An increase in public harvest can lead to a similar price impact as expenditures in forestry programmes to shift NIPF supply of roundwood. Although the outcome will be the same in terms of price, the distribution of gains and losses between producer groups are quite different.

In the present study, we follow the previously presented evaluation scheme with conflicting targets and indirect supply of roundwood effects of public forests. Our first objective is to describe the public choice for state-owned forests and employ empirical time series data on the Finnish Forest and Park Service (FFPS). When considering whether the public harvests have negative or positive influences on NIPF owners, the crucial factor is the sign of the public forests' price-elasticity of roundwood supply in short- and long-term. It can be presumed that all other functions, which are quite specific factors to public supply of roundwood, have a strong control over price-elasticity. Second, we examine the effects of the public choice on the NIPF supply of roundwood. Principally, almost all indirect instrumental effects of public forests are originating from the public supply of roundwood. In this respect, the public supply of roundwood with regard to the quantity response in NIPF is of our interest.

2. Empirical Case – Roundwood Supply from FFPS and its Indirect Effects

2.1 The functions of FFPS

The state-owned forests in Finland are almost completely (about 97%) administered by the Finnish Forest and Park Service (FFPS), which is the largest forest owner with a share of 25% of the total productive forest land. Due to the historical and political development in Finland, the state-owned forests are mainly located in northern and northeastern Finland, where the state owns over half of the total land area.

Because of the special characteristics of public forest ownership, the functions of FFPS set by the owner differ from private forest functions, and the FFPS's functions are usually also contradictory with each other. These functions have changed with the society and with the increase and diversification in demand for forest products and services. They can be divided into two groups:

- · economic functions; and
- social functions.

The economic functions act under the market conditions and are not subsidised by the government. The leading economic function is a sustainable roundwood production, which can be further divided into short-term roundwood fellings and long-term roundwood

production investments. The other economic function, or more like a requirement, having a consequential relationship with roundwood production, is the profit function set by the Ministry of Agriculture and Forestry in co-operation with the Ministry of Finance. This practically means bringing the incomes, and in the case of FFPS, mainly roundwood sales incomes to Treasury. The profit requirement is pre-set in the form of certain amount of dividends, to increase and also encourage to effectiveness of organisational operations. For the Treasury, setting the profit target for the FFPS has been quite important, because it has been a flexible and also a reliable instrument to finance and balance the Budget, especially in harsh times of state finance and tax revenues. Due to the binding nature of the Budget and the fact that FFPS's turnover has almost completely been comprised of roundwood sales revenues, the profit requirement has controlled strongly FFPS's supply of roundwood.

Social objectives are mainly due to FFPS's engagements to political and administrative decision-making, which have a strong influence on FFPS's functions. The main social function is to arrange the nature conservation and recreational services, which have both been in significant progress during the last decades. The conservation and recreation functions are based on the conceptual argument that a price responsive market alone cannot provide for public goods and external values in accordance with their social valuation. Therefore, public participation in forest ownership is necessary for their provision. Nearly all protected areas are in state-owned lands in Finland, including most of the national parks, nature reserves and peatland protection areas (Vehkamäki and Heinonen 1995).

Another social function has been the employment maintenance function to support the employment in northern and eastern Finland, where the rate of unemployment has been traditionally high and where the FFPS has been a significant employer. For this reason, the FFPS has been subject to macroeconomic function set by the Ministry of Labour, first, to employ its permanent labour regardless of seasonal and economic trends and second, to support seasonally the employment in periods when the rate of unemployment has been at high levels (Saastamoinen 1994).

The FFPS has been also subject to some minor and more temporarily functions, but in this study only these previously described four major economic and social functions are included.

2.2 FFPS roundwood market behaviour

When comparing the functions of FFPS by means of financial indicators, roundwood sales has definitely been the most important one. Roundwood sales revenues have accounted for about 95% of the total turnover of state forests (Metsähallitus...). During the period of 1964–1997 the FFPS's average annual harvest volume has been about 4.5 million m³ with share of 10% of the total commercial harvest volume in Finland (Figure 1).

The Act on FFPS (1169/1993) dictates the principles of FFPS's supply of roundwood. Accordingly, "...the FFPS manages, utilizes and protects natural resources and other property under its administration in a sustainable way". The FFPS's roundwood sales and pricing is controlled by the Act on FFPS's business operations (220/1992). According to this, FFPS has to sell its outputs mainly at market prices. Thus, the prices of roundwood assortments have mainly been determined by markets, following the roundwood price fluctuations of private forests. To some extent, the FFPS may have regional monopolistic (or monopsonistic) market power, but when considering the situation in the whole country, the FFPS market power cannot be seen as significant from the imperfect competition viewpoint.

The decisions regarding the annual roundwood volumes offered for sale by the FFPS have strongly been founded on annual felling plans. Therefore, in the previous empirical studies (Tervo 1977, 1986), the FFPS's price-elasticity of roundwood supply has not been examined,



Figure 1. The annual roundwood fellings of the FFPS (million m³ over bark) and the share of total commercial fellings (%, secondary axis) in Finland 1964–97 (Finnish Statistical..., Tervo 1986).

but the roundwood supply has been assumed fixed at the predefined level regardless of the market conditions. During the period of 1964–1997, the FFPS's annual harvest volumes have been quite steady, but the average annual fluctuations have nevertheless been about 10%. So, the constant annual supply of roundwood assumption deviates from the reality.

The fluctuations in harvest volumes have been caused by roundwood demand levels and on the other hand, presumably by the other functions of the FFPS. Due to the FFPS's social functions and profit function, which can also be considered as restrictions on timber production, there have been temporary reasons for deviations from constant annual fellings.

The factors examined in this study are:

- market factors (assumed exogenous)
- roundwood market prices of NIPF
- interest rate of government bonds
- resource factors (growing stock)
- other functions of the FFPS
- · profit requirement
- employment maintenance
- · conservation and recreation

Profit function

In this study, it is assumed that the magnitude of profit target, and via this, also the harvest volumes, are partly determined by government financial requirements. Those requirements can also be assumed to fluctuate contrary to roundwood demand and price fluctuations, causing negative price-elasticity on FFPS's roundwood supply.

Employment function

Because of the constant employment function, the FFPS has been obliged to organise both harvests and silvicultural works in order to employ its labour and also contractors. This has been carried out by increasing the mechanisation rate of logging less than has been done in the private sector of forestry, and no more than 5 percentage units from the level of the previous year. In addition, harvest volumes had to be rather constant and roundwood fellings and silvicultural works were timed consecutively.

On the other hand, the FFPS had to arrange additional 'employment harvests' when the rates of unemployment were at high levels. In order to maximise the employment effect, these harvests have been carried out mainly in thinnings affecting the supply of pulpwood. The influence of employment target on FFPS's roundwood supply has probably been quite similar to the effect of profit requirement, because the rates of unemployment and timber prices usually have opposite movements in business cycles (e.g. Metsähallitus 1972, 1973, 1992).

Nature conservation and recreation functions

Due to the increased protection functions, mainly roundwood stocks mature for fellings have been translated from commercial forests into protection areas. Moreover, the roundwood volume translated into protection programmes, has been totally out of the commercial use. This may have been substituted in FFPS business operations with harvesting of smalldiameter roundwood or with new commercial forestland acquisitions.

2.3 A hypothesis for northern Finland – does the public harvesting have effects on the NIPF supply of roundwood?

The next step in our study is to examine the effects of the FFPS roundwood supply on NIPF owners' roundwood supply. In northern Finland, the public ownership is a market intervention and an important one, when considering the FFPS's regional harvest volumes and shares of total commercial harvests. In northern Finland the FFPS's shares of both sawlog and pulpwood fellings have fluctuated from 20% to 50% during the period from 1964 to 1997 (Figures 2 and 3).

The inter-dependencies of public and private supply of roundwood in northern Finland are illustrated in Figures 4a and 4b. The aggregate supply curve (S_t) excluding the forest industries is composed of the horizontal sum of supply curves for NIPF (S_p) and FFPS (S_t) quantities. Public supply of roundwood curve is assumed to be first, price-inelastic (Figure 4a), a case when the public harvests are determined by policies and not reflecting the changes in market price. Second, the negative price-elasticity (Figure 4b) of the public harvests is caused by social functions and government's financial requirements, which are assumed to fluctuate in opposite directions with the market prices.

The curves of public supply of roundwood are analysed within the part of the slope, which are consistent with detected market volumes. The public roundwood supply curves (Figures 4a and 4b) are probably not consistent with all price levels and for example, the case in Figure 4b can be described as a backwards bending supply curve.

In the roundwood demand cases, the slopes of demand curves are assumed to be identical. In the case of price-inelasticity of the public supply of roundwood (Figure 4a), the demand first shifts from q_{t1} to q_{t2} , and consequently the price declines from p_{11} to p_{12} . The entire shift in market supply (S_{t1}) is attributable to the shift in NIPF roundwood supply from q_{p11} to q_{p2} .



Figure 2. NIPF owner's sawlog sales (felling season i.e. July 1-June 30) and FFPS's sawlog fellings (calendar year) in Northern Finland 1964–97, mill.m3 (Finnish Statistical..., Tervo 1986).



Figure 3. NIPF owner's pulpwood sales (harvesting year) and FFPS's pulpwood fellings (calendar year) in Northern Finland 1964–1997, mill.m3 (Finnish Statistical..., Tervo 1986).



Figure 4a. Price-inelastic public supply of roundwood.



Figure 4b. Negatively price-elastic public supply of roundwood.

In the case of negative price-elasticity of public supply, the slope of the aggregate market supply curve (S_{12}) changes. In the case of declining total demand $(q_{t1} to q_{t2})$, the public harvest volumes increase from q_{f21} to q_{f22} , whereas the private roundwood supply decreases from q_{p21} to q_{p22} . The decrease in private supply is greater than in the case Figure 4a due to the decrease in market price.

3. Materials and Methods

3.1 Time series data

The study is carried out for the period from 1964 to 1997 in order to cover all needed time series data. All values have been collected on a nominal value basis and adjusted by inflation to 1997 values using the wholesale price index (1949=100). Some variables employed in the NIPF model are briefly described here.

The data is collected for the sawlog markets separately for southern and northern Finland. The quantities of sawlogs are in cubic meters measured over bark for calendar years in FFPS and for felling seasons (i.e. 1 July–30 June) for NIPF. The roundwood traded in a felling season is often the reference for the next calendar year's wood consumption, e.g. in this study the felling season 1993/1994 is assumed to correspond to the calendar year 1994.

The time series of the FFPS's sawlog prices were not available for the whole period. If the FFPS sawlog prices are considered exogenous (no market power), the NIPF sawlog stumpage unit prices (FIM/m³) for felling seasons can be employed in the FFPS sawlog supply model. The co-movements between FFPS and NIPF softwood sawlog prices were tested with Engle-Granger (1987) testing procedure consisting available FFPS annual time series of prices from 1971 to 1987 (n=19). The test indicated that price series were co-integrated: So, there exists the weak law of relative one price between FFPS and NIPF, and the use of exogenous NIPF sawlog prices are justified at least at the country level.

For the public supply of sawlog estimations, the government's borrowing bond rate, and for the corresponding NIPF estimations, the commercial banks' lending rate have been employed. The real interest rates have been achieved by deflating the nominal rates using the wholesale price index.

The FFPS and NIPF annual growing stocks are not available as annual time series. In this study, a simulation procedure is employed to generate the annual time series with a division of the growing stock into sawlog and pulpwood volumes. The method has been developed in an earlier woodlot level study by Leppänen (2000).

The FFPS's annual profit target variable is described with annual cash flow series, where all the incomes and costs have been transformed from accrual-based statements into cash-flow based statements (Valtion...). The annual profit is used as an explanatory variable in the FFPS supply of sawlogs model: most of the annual surplus of FFPS accumulates from sawlog sales.

The conservation and recreational variables have been first measured as a portion of protected areas of the total forest area administered by the FFPS. This proportion is then further investigated and transformed into an interpretable dummy variable form. This kind of representation is of course simplification, because it does not take into account the protection and recreational functions occuring in the commercial forests. The conservation function is a necessary explanatory variable in the sawlog supply model, because protected areas have mainly been old-growth roundwood stocks.

The FFPS employment has been measured as a total sum of labour including permanent and obligatory employees and also contractors.

For the NIPF simultaneous equations model, time series other than roundwood trade are for calendar years. Unit export value of coniferous sawnwood (FIM/m³) was used to describe the final product prices of mechanical forest industries. Other factor prices were described by total net capital stocks as National Accounts estimates after annual changes and depreciations at the end of the year.

The financial assistance for NIPF has been measured as a sum of grants and loans given for drainage and forest road construction, normally carried out as co-operative projects where external contractors are usually employed. In addition, a dummy variable for comprehensive roundwood price negotiations period (1979–1990) is included into the variable set.

3.2 Model specifications

Diving the roundwood markets into supply of sawlogs and pulpwood is a standard approach in modelling of supply and demand for roundwood. In this study only sawlog models are employed.

The FFPS's supply of sawlogs was modelled using ordinary least squares (OLS) method for the whole country. The NIPF supply of roundwood modelling was based on simultaneous equations models in the two-stage least squares (2SLS) framework. The NIPF model setting was separated into northern and southern Finland, with geographically characteristic variables on the supply side and country-level variables on the demand side. The annual FFPS roundwood quantities were included in the geographic NIPF roundwood supply and demand models. A reference model testing (see Brännlund 1990; Hultkrantz 1991) was also carried out for the northern and southern models in order to check, if the northern FFPS roundwood quantities were plausible explanatory variables or only co-moving with some general economic variable.

Because the econometric analysis is based on relative changes, logarithms of the time series were used. In this transformation, because of some annual negative values in certain variables, observations of those variables were first summed with an interpretable positive number (e.g. 100) in order to make all observations positive. Therefore, the elasticities of the some variables do not correspond to the percentage changes.

The testing of stationarity of variables was carried out with Augmented Dickey-Fuller (ADF) and Phillips-Perron test procedures, indicating that the endogenous variables were stationary. However, many explanatory variables were non-stationary, which in the short-term relationship case leads to transformation of variables into differences. Another alternative is the assumption of existing long-term relationship between dependent and exogenous variables. In this case, the interpretation regarding to these variables corresponds to the long-term effects.

4. Results

4.1 Results on FFPS public choice

The estimation results from regression model for FFPS's supply of sawlogs are presented in Table 1. In the model, all variables were statistically significant at 0.05% or 0.01% levels and had the expected signs. The degree of determination (\mathbb{R}^2) was 0.77.

The most interesting result considering the influence on the NIP forest owners, is the negative sign of price coefficient (-0.28). This indicates that the FFPS has increased supply of sawlogs, when the stumpage price has decreased. This is mainly due to the profit requirement and also the employment maintenance, which have had a significant positive

Table 1. Estimated elasticities for the FFPS supply of sawlogs with OLS^{a} method 1964–1997 with t-statistics in parenthesis below the coefficients^b.

Dependent variable: harvested FFPS sawlog quantity in whole country	Coefficient (t-value)	
Constant	-32.48 ***(-3.88)	
Real interest rate of government bonds	0.56 **(2.31)	
Sawlog stumpage price of NIPF	-0.27 ***(-3.38)	
Conservation dummy (1969–1980)	-0.08 **(-2.32)	
Profit	0.06 ***(3.15)	
Initial growing stock of FFPS	7.72 ***(4.65)	
Total labour of FFPS	0.41 ***(4.86)	
Price negotiations dummy (1979–1990)	0.17 ***(4.29)	
R ²	0.76	
DW	1.96	
Heteroscedasticity LM	0.91	
Chow (1964–1979, 1980–1997)	1.47	

^{a)} OLS denotes to ordinary least squares estimation method; R² is the coefficient of multiple determination; DW is the Durbin-Watson first order residual autocorrelation coefficient; ARCH(LM) test is used for heteroscedastisity of the residual term; and the Chow breakpoint test is used for structural change in the model at the end of 1970s.

^{b)} Asterisk denotes to the significance of a variable parameter estimates: ***0.01 % significant, **0.05 % significant, *0.10 % significant, no asterisk: not significant.

influence on annual harvesting. Another interesting result with regard to impacts on NIPF is that the substantial increase in conservation areas in 1969, described in the model with a dummy variable for 1969–1980, had a negative impact on FFPS supply of sawlogs.

The backgrounds for profit requirement and employment maintenance causing the negative price-elasticity of public supply of sawlogs are not empirically studied here.

4.2 Effects of public harvesting on NIPF sawlog supply in northern Finland

In the following section, the analysis on the effects of FFPS supply of sawlogs on NIPF supply of sawlogs is carried out. In Table 2, the estimated elasticities of variables are presented. On the demand side, the variables are not significant apart from the lagged traded quantity. This result was expected as the emphasis of the analysis has not been in detailed demand side modelling. However, the demand variables have expected signs.

On the supply side, the variables are significant and in addition, they have the expected signs. There are also some new findings resulting from the geographic division of the markets

compared with earlier country level studies by Toppinen and Kuuluvainen (1997) and Leppänen et al. (2001). However, these results are not further discussed in this study.

The interesting result here is, however, the sign and significance of the public harvesting variable. As hypothesised in section 2.3, a negative price-elasticity decreases supply of roundwood from NIP forests by increasing the price fluctuation.

When testing for the significance of the northern Finland FFPS sawlog harvesting variable in southern Finland geographic model (the reference model approach, see Brännlund 1990; Hultkrantz 1991), the test result was not significant. Therefore, we can argue here that the FFPS roundwood sales policy really has an impact on NIPF supply of roundwood. This means, in northern Finland that the NIPF owners are suffering from more drastic business cycles than their counterparts in southern Finland.

Dependent variable: traded NIPF sawlog quantity in Northern Finland	Supply	Demand
Constant	-16.06 *** (-3.86)	-5.10 (-0.87)
Sawlog stumpage price of NIPF	0.89 ** (2.72)	-0.08 (-0.09)
Lagged sawlog stumpage price of NIPF	-0.84 *** (-2.94)	-0.71 (-1.27)
Lagged sawlog quantity		0.37 **(2.39)
Initial growing stock of NIPF	4.13 *** (5.02)	
Price negotiations dummy 1979–1990	0.40 *** (4.14)	
Financial assistance for drainage and road building	-0.35 * (-1.87)	
Difference of sawlog quantity from public forests	-0.83 ** (-2.72)	-0.53 (-1.20)
Initial net capital stock		0.08 (0.33)
Export price of sawnwood		1.22 (1.32)
R ²	0.74	0.52
DW	2.11	2.12
Breusch-Godfrey Serial Correlation LM	0.24	0.60
Heteroscedasticity LM	2.49	0.09
Chow (1964–1979, 1980–1997)	0.12	1.62

Table 2. Estimated elasticities of 2SLS sawlog demand and supply models^{*a*}, 1964–1997 with t-statistics in parenthesis below the coefficients^{*b*}.

^{a)} 2SLS denotes to two-stage least squares estimation method; R² is the coefficient of multiple determination; DW is the Durbin-Watson first order residual autocorrelation coefficient; Breusch-Godfrey Serial Correlation LM test is used for first order residual serial correlation testing when lagged endogenous variables are used as explanatory variables; ARCHLM) test is used for heteroscedastisity of the residual term; and the Chow breakpoint test is used for structural change in the model at the end of 1970's.

^{b)} Asterisk denotes to the significance of a variable parameter estimates: ***0.01 % significant, **0.05 % significant, *0.10 % significant, no asterisk: not significant.

5. Discussion

The effects of public forests as an indirect financial instrument can be argued to culminate in the supply of roundwood. When considering the factors affecting public supply of roundwood, the economic and social functions specific to the public forests have to be taken into account. Some of these functions suggest the negative public roundwood price-elasticity, in which case the consequences of this anti-cyclical harvesting behaviour may be negative on non-industrial private forest (NIPF) owners.

In the present study, we examined the Finnish Forest and Park Service (FFPS) supply of sawlogs with empirical data for the whole country, and found that the price-elasticity of sawlog supply has been negative during period 1967–1997. The estimated model was based on the assumption that the negative price-elasticity is caused by binding and predefined profit requirement and partly by labour maintenance, which oblige the FFPS to increase harvesting when the roundwood market price decreases.

With regard to the indirect effects, it can be argued that the public forests in Finland should be used as an indirect financial instrument only with regard to forest conservation. A public good, such as forest biodiversity, can be most efficiently provided in large unfragmented areas (Hanski 2000). If applied widely in public forests, the public supply of roundwood decreases, which favours the NIPF supply of roundwood.

The model concerning the supply of and demand for NIPF sawlogs indicated that in the short term, if the public roundwood supply is following a negative price-elasticity, the implication for the NIPF owners is the unfavourable increase in business cycles. However, for regional wood-consuming industry, this public supply of roundwood behaviour can be favourable. The long-term effect can also differ from the short-term effect: if public forests with the anti-cyclical cutting policy can maintain higher level of wood-consuming industry geographically, then this can benefit also the NIPF owners. However, this case was not considered in this study.

References

- Boyd, R.G. and Hyde, W.F. 1989. Forestry sector intervention. The impacts of public regulation on social welfare. Iowa State University Press, Ames, Iowa. 295 p.
- Brännlund, R. 1990. The effects of subsidized regeneration measures on timber supply, once again. Scan. J. For. Res. 5:133–142.
- Brooks, D.J. 1986. Evaluating the regional and distributional impacts of forestry cost-share payments. Silva Fennica 20(4):319–330.
- Engle, R. and Granger, C.W.J. 1987. Co-integration and error correction: representation, estimation and testing. Econometrica 55:251–276.
- Finnish Statistical Yearbook Forestry. The Finnish Forest Research Institute, annual publication.
- Hanski, I. 2000. Extinction debt and species credit in boreal forests: modelling the consequences of different approaches to biodiversity conservation. Annales Zoologici Fennici 37:271–280.
- Heinonen, H. and Vehkamäki, S. 1995. Accounting systems for state forests from a policy point of view. S4.04-02 Managerial Economics in Forestry, IUFRO XX World Congress 6–12 August 1995, Tampere, Finland. 17 p.
- Hultkrantz, L. 1991. Effects on employment and seasonal unemployment of subsidies to forestry in Northern Sweden. Scan. J. For. Res. 6:243–251.
- Leppänen, J. 2000. Metsätalouden tuloskehitys Etelä-Suomessa vuosina 1960–1996 tapaustutkimus pitkän aikavälin metsälökirjanpidoilla [Abstract: Forestry income development in the light of long-term bookkeeping: a case study from Southern Finland 1960–1996]. Agricultural economics research institute, Publications 94:217–233.
- Leppänen, J., Pajuoja, H. and Toppinen, A. 2001. Effects of Public Support for Forestry on Timber Supply. Scandinavian Forest Economics 37: 257-275. Metsähallitus (The Finnish Forest and Park Service) Annual reports 1964–1997.

Saastamoinen, O. 1997. State forests in Finland – the arguments on public ownership and privatization. In: Saatamoinen, O., Harju, A., Lipsiäinen, S. and Rytkönen, V.-M. (eds.). Economic and legal aspects of forest policy in the Scandinavian countries and Russia. University of Joensuu, Faculty of Forestry, Research Notes 52:45–54.

Tervo, M. 1986. Suomen raakapuumarkkinoiden rakenne ja vaihtelut. [Summary: Structure and fluctuations of the Finnish roundwood markets]. Communicationes Instituti Forestalis Fenniae 137. 66 p.

Tervo, M. 1978. The cut of roundwood and its business cycles in Southern and Northern Finland by forest ownership groups, 1955–1975. Folia Forestalia 365. 40p.

Tikkanen, I and Vehkamäki, S. 1996. Forest management of public lands in Finland. In: Schmithusen (ed.). Public forest ownership and joint management systems. Fortwissenschaftliche Beiträge 17:176–182.

Toppinen, A. and Kuuluvainen, J. 1997. Structural changes in sawlog and pulpwood markets in Finland. Scan. J. For. Res. 12:382–389.

Valtion tulo- ja menoarvio [The State Budget]. Edita Ltd, Helsinki, annual publication.

Forestry Sector Financial Assistance in the Finnish Economy

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Abstract

In the forestry sector, financial assistance from public funds is traditionally used in order to alleviate e.g. market imperfections. Still, transparency of the forestry sector assistance is needed for evaluation purposes. If possible, these methods should facilitate also comparisons between industries in the same country and analyses between countries. Input-output tables are normally used in economics for analysing various industry-interdependent effects but their use can be extended to assistance analyses. The effective rate of assistance (ERA) attempts to quantify the incidence of government aid by industries. ERA is defined as the net assistance to an industry expressed as a percentage of unassisted value added of that industry. In the net assistance, the ERA method includes internal financial assistance and tariffs (border assistance). In this study, the input-output tables with supplements of financial assistance are employed in the ERA calculations. The sectoral assistance is compared within the forestry sector and between sectors for year1995 in the Finnish economy. Instead of the original definition of ERA, we calculate the Output ERA_{to} as the gross and net assistance for an industry of unassisted output value of that industry. In addition, gross and net assistances by industries are calculated to respective labour hours. The Output ERA₁₀ percentages represented in this paper are subject to e.g. underlying Leontief-technology assumptions.

Keywords: effective rate of assistance, ERA, input-output method, financial assistance, evaluation

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1. Introduction

The transparency of financial assistance for forestry is essential for public decision making based on a proper evaluation research. Today, the public financial resources are constrained, and there is a need for detecting those activities which receive and which need the government assistance. There is normally not very clear understanding, how much different industries in the economy are assisted. The general public or politicians probably are accustomed with country-specific assisted industries like agriculture or e.g. ship-building. However, there is not much knowledge, how the given assistance is affecting in the economy, or are the consumers or industries at the end of the industrial chain collecting the benefits of primary assistance.

Forestry products have been in the international trade quite different from e.g. agricultural products. The roundwood trade flow between countries has not been under exceptional level of border protection. The major restriction for significant international roundwood trade has probably been the transport costs, which reduce the benefits of roundwood imports and exports. The roundwood products have not the major subject of e.g. GATT (General Agreement on Tariffs and Trade) negotiation rounds. However, free trade has been a great concern of many politicians and researchers, and consequently there is a vast amount of literature on the indicators of transparency of tariff structures between countries. Theoretical background for one of the indicators – Effective Rate of Protection (ERP) – serves a starting point for a more general financial assistance analysis – Effective Rate of Assistance (ERA) – which is investigated in this study.

The objective of this study is to demonstrate by employing the data on the Finnish economy, how the ERA measurements indicate financial assistance levels between 68 industries. The methodology here relies on the Leontief technology assumption, and the ERA percentages are calculated from input-output tables adjusted with industrial and customs statistics. The direct financial assistance given as accountable aid is included in the analysis, and consequently, e.g. tax concessions are excluded from the evaluation. A conceptual change in ERA calculation is made, and the percentage derived here is defined as Output ERA_{to}, resulting in lower assistance index than the original definition.

With this change in definition, the Output ERA_{to} concept is accountable for the marginal factor revenue impact of an industry, 'a redistribution of the income', as the original concept referring to the marginal value added impact of an industry, without performing the general equilibrium analysis, has long been criticised in the ERP literature (see Ethier 1977; Anderson 1998).

2. Relative Measurements of Border and Internal Assistance

2.1 Border assistance: ERP – effective rate of protection

The background for the ERP theory in the 1960s was rationalised due to the fact that nominal tariff rates on final products did not cover the tariffs on intermediate inputs employed in the production final product (Corden 1966, 1969; Leith 1968; Anderson and Naya 1969). Therefore, the nominal rate of protection failed to describe the degree of protection received by the domestic producers.

In the ERP theory, there are principally two definitions (Bhagwati and Srinivasan 1983). The Corden-Anderson-Naya definition is the "proportionate increment in value added per unit level of an activity brought about by the tariff structure over its free-trade value". The Corden-Leith definition states that "ERP is the proportionate change (due to tariff structure) in the 'price' of value added (with the assumption that such a price can be defined meaningfully)".

The two definitions of ERP generally yield different ERP numbers. However, in a special case of a separable production function where intermediates are used in fixed proportion to output, both definitions amount to the same thing (Bhagwati and Srinivasan 1983). This case is defined in Equations 1a–1d (Chacholiades 1990).

First, domestic price p of final product is defined with the world market price p^w of that and the tariff t on the product [Equation 1a]. Then, 'price of value added' of the final product unit is defined with p_v , which equals to the domestic price of final product unit less the share of the intermediate inputs required for one final product unit. t_m represents the tariff on the intermediate inputs [Equation 1b].

$p = p^{w}(1+t)$	[Equation 1a]
$p_v = p^w(1+t) - p^w(1+t_m)a$	[Equation 1b]

The value added before the introduction of tariff equals v [Equation 1c] and after that, v' [Equation 1d].

$v = p^w - ap^w$	[Equation 1c]
$v' = (1+t)p^{w} - (1+t_{m})ap^{w}$	[Equation 1d]

Finally, the ERP can be defined as the increase in value added to value added at free trade prices [Equations 1e, 1f]

ERP = (v'-v)/v	[Equation 1e]
$ERP = (t - at_m)/(1 - a)$	[Equation 1f]

which is expressed as a percentage.

The effect of an import tariff in an small open economy can be seen in the example of Figure 1 (Chacholiades 1990). In autarky, no international trade is carried out, all products are manufactured domestically, and the equilibrium is in e at price 25. The world supply of a good is a horizontal line S_w at price level 10. Domestic supply is an upwards sloping curve, and in free international trade, the production is equal to 30. By introduction of a tariff t on imports, the domestic price level increases to 15, the total consumption of the good decreases from 150 to 125, the domestic production increases to 45 and the imports decrease by 40 units to 80.

Now we see the welfare effects of tariff. The area 1+2+3+4 represents the decrease in the consumer's surplus after introduction of the tariff. The area 1 represents the increase in the producer's surplus, 2+4 are the deadweight loss due to replacing imports with domestic production, and 3 is the revenue to the public sector due to tariff. The area 2+5 represents the additional costs of producing products domestically after introduction of the tariff. The area 5 is the initial cost of importing the 15 product units (45-30), now produced domestically. The area 6 is the initial cost of importing the 25 units (150-125). The area 7 is the initial producer's surplus before introduction of the tariff.

A general definition of a tariff is equivalent to consumption tax plus a domestic production subsidy on importables. Actually, when the consumption tax is equal to domestic and world production, this situation enables free international trade and domestic production of a supported domestic industry simultaneously, without distorting tariffs. From this viewpoint, it is reasonable to derive a more extensive definition for assistance measurement, Effective Rate of Assistance (ERA), which is to be defined in the following chapter.

2.2 Border and internal assistance: ERA – effective rate of assistance

The definition of effective rate of assistance (ERA) includes the ERP as a sub-concept. Like in traditional definitions of ERP, any general equilibrium or other dynamic effects of financial



Figure 1. The effect of an import tariff (the example of Chacholiades 1990).

assistance cannot be evaluated. However, as a single static indicator, ERA can be seen as a practical tool for identifying "how much assistance is given", but not as a tool for deriving the responses to question "how much does the income change as a result" (see Anderson 1998).

The ERA has in the static form following main assumptions (VATT 1993): perfect competition, similar products are full substitutes, different products are not substitutes, small open economy (flexible export supply and import demand), direction of trade can be detected by using export and import parity prices, the prices of production factors, products and services reflect the social opportunity costs, and finally, a separable production function based e.g. on the Leontief technology.

Next, the calculation of ERA is described within the detailed 68 industry input-output tables for the year 1995 (see also Statistics Finland 1999) adjusted for this study with corresponding customs and industrial statistics. Agriculture (n:o 1) is presented here as a calculation example for Finnish industry, because of the high level and many different forms of assistance.

According to VATT (1993), ERA is calculated for agriculture as follows:

		Million €
1.	output in agriculture, at basic prices	3418
2.	product and production subsidies	159

3.	tariffs on final products	12
4.	assisted output (1+2+3)	3589
5.	intermediate inputs, at market prices	1916
6.	assisted value added (4-5)	1673
7.	other support	1409
8.	production assistance total (2+3+7)	1580
9.	tariffs on inputs	-3
10	.net assistance (8–9)	1577
11	unassisted value added (6-10)	96
12	.ERA (100*(10/11))	1644.91 %

If the ERA percentage is calculated according to VATT (1993), there arises some complications due to the form of assistance.

An alternative approach to ERA is to base the calculation on value added at market prices. In this case, assistance decreases the total output value or alternatively, it can be regarded as income increase of farmers. In contrast to VATT (1993), the intermediate inputs are valued at basic prices, the value added at market prices and also the product and production subsidies are included therein:

		Million €
1.	output in agriculture, at basic prices	3418
2.	product and production subsidies	159
3.	tariffs on final products	12
4.	other support	1409
5.	tariffs on inputs	-3
6.	assisted output (1+2+3+4+5)	4995
7.	intermediate inputs, at basic prices	1942
8.	assisted value added, market prices (6-7)	3053
9.	production assistance total (2+3+4+5)	1577
10	Unassisted value added (8–9)	1476
11	ERA (100*(9/10))	106.84%

In order to avoid these inconsistencies in calculations, in this study the ERA is redefined and results are presented according to the following approach:

	Million €
1. output in agriculture, at basic prices	3418
2. product and production subsidies	159
3. tariffs on final products	12
4. other support	1409
5. tariffs on inputs	-3
6. assisted output	4995
7. production assistance total (2+3+4+5)	1577
8. ERA _{to} (100*(7/1))	46.14%

This approach is applicable to 'price of total output' (not to 'price of value added') and in addition, there are no inconsistencies in calculation definitions. Hereafter, the index calculated here, is referred as Output ERA_{to} . The present calculation also reveals the intermediate product assistance flowing in products between industries.

3. Results

First, the total output and value added structures of the Finnish industries in 1995 are described in Figure 2 (explanations for industry numbers, see Appendix 1). If the proportion of value added of total output is considered, forestry (n:o 2) had an exceptionally high share (91%) compared with any of the other 68 industries. Forest industries (n:o 17–21) had proportions between 27% to



Share of value added, and total output at basic prices, million euros

Industries

Figure 2. Value added (white share of the bar) and total output (total breadth of the bar) in 68 Finnish industries in 1995, million euros (Statistics Finland).

37% and manufacture of furniture (n:o 41) 43%. When total magnitudes of output values are regarded, pulp, paper and paperboard industry (n:o 20) had the highest figure among the industries. From all 68 industries, only wholesale and retail trade (n:o 48) had higher output value than pulp, paper and paperboard industry (see also Finnish Statistical...).



Industries

Figure 3. The accountable assistance including product and production assistance, tariffs on final products, other support and tariffs on inputs in 68 Finnish industries in 1995, million euros (Statistics Finland).

The accountable assistance including product and production assistance, tariffs on final products, other support and tariffs on inputs by industries is presented in Figure 3. Agriculture (n:o 1) received the most assistance. The food sector is also in total assisted as most of the food industries (n:o 7-13) received high levels of assistance. Due to long distances in Finland, land transport (n:o 50) was also among the assisted industries.

In 1995, forestry sector received assistance as follows:

Million €
47.1
15.6
3.0
4.5
18.5
1.0
26.6

Next, the forestry assistance (n:o 2) for non-industrial private forest (NIPF) owners is considered in more detail. Since 1995 the level of given financial assistance has been approximately at 50 million Euros annually, which forms the majority of the total assistance for forestry. This sum has been consisting mainly of grants, because nowadays only few new favourable loans are given to NIPF owners. Of the grant forms, the regeneration assistance is mainly aimed at northern Finland. This is due to climatic conditions and sometimes poor stock volumes in final fellings, both of which often make regeneration unprofitable with private financing.



Figure 4. The grants in detail and loans in total for forestry (n:o 2) between 1993-1997, million euros (nominal prices, Finnish Statistical...).

In Figure 5, the previously presented figures are combined in order to calculate output effective rates of assistance (ERA_{to}). The detailed breakdown of industries and their relative assistance measurements is located in Appendix 1. The Output ERA_{to} calculation reveals the differences between industries and sectors in economy, and in addition, makes the



Figure 5. Output ERA_{to} in 68 Finnish industries in 1995.

comparisons possible between different countries. As in the accountable assistance figures, the agriculture (n:o 1) and food sector (n:o 7–13) have the highest numbers of Output ERA_{10} .

When the accountable assistance by industries is divided by labour hours or number of employees of the corresponding industry, we obtain another relative indicator of assistance level. In Figure 6, the assistance is calculated in Euros per labour hour. As in the Output ERA_{to}, the forestry sector did not have any specific relative assistance number with regard to



Assistance, euros / labour hour

Figure 6. Assistance in euros per labour hour in 68 Finnish industries in 1995.

labour in 1995. However, one very interesting detail concerning the validity of the ERAcalculation is revealed here. The agricultural and food sector, especially the food industries (n:o 7–13), received quite high levels of assistance per labour hour, whereas agriculture (n:o 1) received relatively much less assistance. Thus, different production structures with regard to capital and labour seem to have a significant role in calculations.

The net assistance is calculated as assistance minus product and production taxes. In Figure 7, the Output ERA_{10} is calculated by employing net assistance levels. After this modification, the industry-



Output net ERAto %

Figure 7. Output net ERA_{to} in 8 Finnish industries in 1995.

level assistance is accurately allocated, and those industries, which directly receive the assistance, and those, which finance the assistance for supported industries, can all be recognised.

The net calculation can be performed also with regard to labour (Figure 8). The most negative numbers can be found in industries n:o 23 (manufacture of petroleum products etc.), n:o 44 (electricity, gas, steam, water supply etc.) and n:o 53 (road and railway maintenance). The most assisted industries are as previously, the agriculture (n:o 1) and food sector (n:o 7–13). The forestry sector does not deviate much from the average.



Net assistance, euros / labour hour

Figure 8. Net assistance in euros per labour hour between 68 Finnish industries in 1995.

4. Discussion

The transparency of financial assistance for forestry is essential for public decision making. Effective rate of assistance (ERA) is a single indicator, which can be employed between different industries for comparisons. Moreover, the ERA can be used in comparisons between countries. Input-output data can serve as an information source of economic structure – basic inputs, intermediate and final products. Therefore, input-output method can be extended to financial assistance analyses

In Finland, forestry and forest-based industries obtain relatively few financial or border assistance, i.e. the Output ERA_{to} is very low. In forestry it was 1–2%, and in forest industries it was much less than 1%. However, in general an ERA calculation to be really reliable would require, not only a static, but also general equilibrium analysis. This makes the calculations much more complicated. However, if the comparisons are made properly in a static framework, some deductions can be made of the relative assistance levels between industries.

Although assistance may partly be accountable, it can also not be accountable. This is the case in e.g. tax concessions. Still, they may have a great role e.g. in country comparisons. In Finland, transparency of financial assistance is relatively good in forestry (Finnish yearbook...) and generally between industries (Statistics Finland 1997), but still at least with regard to forestry tax concessions (VATT 1999), the estimates are based on out-of-date information even if the calculation principle was only static in nature. This leads at the moment to overestimates of tax concessions.

Some complications also arise from the fact that even accountable assistance forms may in the ERA formulas lead to inconsistent estimates (VATT 1993). A good example from this viewpoint is the accounting framework with regard to Common Agricultural Policy (CAP) assistance of EU. The CAP financial assistance has been included in both product subsidies and other support and still, the objectives of support have been exactly the same (now the accounting framework is product subsidies, which is the better solution of these two). This makes complications for further analyses, when the assistance flows are analysed from agriculture further to e.g. the food industries, which could be regarded as an indirect assistance.

References

Anderson, J.E. 1998. Effective protection redux. Journal of International Economics 44:21-44.

- Anderson, J.E. and Naya, S. 1969. Substitution and two concepts of effective rate of protection. American Economic Review 59:607–612.
- Bhagwati, J.N. and Srinivasan, T.N. 1983. Lectures on international trade. The MIT press. 414 p.
- Chacholiades, M. 1990. International economics. McGraw-Hill, Inc. 595 p.
- Corden, W.M. 1966. The structure of a tariff system and the effective protective rate. Journal of Political Economy 74:221–237.
- Corden, W.M. 1969. Effective protective rates in the general equilibrium model: A geometric note. Oxford Economic Papers 21(2):135–141
- Ethier, W.J. 1977. The theory of effective protection in general equilibrium: effective rate analogues of nominal rates. Canadian Journal of Economics 10:233–245.
- Finnish Statistical Yearbook of Forestry. Finnish Forest Research Institute. Various years.
- Leith , J.C. 1968. Substitution and supply elasticities in calculating the effective protective rate. Quarterly Journal of Economics 82(4):588–601.
- Statistics Finland 1997. Yritystoiminnan julkinen rahoitus 1995 [Offentlig finansiering av företagsversamhet]. Julkinen talous Offentlig ekonomi 1997:1. In Finnish and Swedish.
- Statistics Finland 1999. Panos-tuotos 1995 Taulukot [Input-Output 1995 Tables]. National Accounts 1999:10. VATT 1993. Elinkeinotoiminnan tuki ERA-menetelmällä mitattuna. Työryhmämuistio (Pj. Rolf Myhrman, siht. Janne Känkänen). Government Institute for Economic Research (VATT), Discussion papers 46. 58 p. +
- Annexes. In Finnish, abstract in English. VATT 1999. Verojärjestelmän kautta annettava tuki. Government Institute for Economic Research (VATT), VATTmuistioita 43. 18 p.

APPENDIX 1. Output ERA_{to} -% and Output net ERA_{to} -%, and assistance and net assistance per labour hour.

				Output		
		T O L 95 /	Output	Net	Assist. /	Net assist.
Ind	u s t r y	N A C E	ERA _{to}	ERA _{to}	hour	/ hour
			%	%	euro/h	euro/h
1	A migulture and related complex estimities	011 014	46.14	45.01	4.60	4 5 9
2	Forestry logging and related service activities	011 - 014	1 05	45.01	4.09	4.58
2	Forestry, logging and related service activities	015 05	0.24	8.42	2.61	0.00
3	Fishing and numming	10	9.54	0.21	2.01	2.55
4	Mining and quarrying of energy producing materials	10	0.70	0.21	0.45	0.15
2	Mining of metal ores	13	1.43	-0.53	1.55	-0.50
6	Other mining and quarrying	14	0.42	-1.34	0.36	-1.15
7	Production, processing, preserving of meat, fish, products thereof	151, 152	12.69	12.48	13.68	13.45
8	Processing and preserving of fruit and vegetables	153, 154	3.84	3.34	4.07	3.55
9	Manufacture of dairy products	155	17.27	17.02	28.05	27.65
10	Manufacture of grain mill products, starches and starch products	156	17.34	17.05	28.06	27.59
11	Manufacture of prepared animal feeds	157	7.98	7.52	14.09	13.28
12	Manufacture of other food products	158	1.06	0.49	0.72	0.33
13	Manufacture of beverages and tobacco products	159, 16	2.48	0.37	2.90	0.44
14	Manufacture of textiles	17	1.94	1.52	0.92	0.72
15	Manufacture of wearing apparel; dressing and dyeing of fur	18	1.21	0.78	0.41	0.26
16	Manufacture of leather and leather products	19	0.29	-0.15	0.11	-0.05
17	Sawmilling and planing of wood : impregnation of wood	201	0.74	0.42	0.79	0.45
18	Manufacture of veneer sheets, plywood, laminboard, particle board	202	0.45	-0.05	0.23	-0.03
19	Manufacture of other products of wood	203, 204, 205	0.54	0.20	0.28	0.11
20	Manufacture of nulp, naner and nanerhoard	211	0.15	-0.43	0.33	-0.94
21	Manufacture of articles of noner and nanerhoard	212	0.11	-0.45	0.13	-0.51
21	Publishing and printing	212	0.67	0.24	0.13	0.51
22	Monufacture of refined patroloum products, colea, publicar fuel	22	0.07	2.64	0.44	0.15
23	Manufacture of herical performing products, coke, nuclear fuer	23	-0.04	-2.04	-0.13	-9.17
24	Manufacture of basic chemicals	241	-0.02	-1.58	-0.05	-2.29
25	Manufacture of other chemical products and man-made fibres	242247	0.05	-0.65	0.05	-0.54
26	Manufacture of rubber products	251	-0.06	-0.59	-0.04	-0.38
27	Manufacture of plastic products	252	0.01	-0.59	0.01	-0.41
28	Manufacture of glass and glass products, non-refractory ceramic goods	261, 262	0.61	0.04	0.32	0.02
29	Manufacture of ceramic tiles and bricks, cement, articles of concrete	263268	0.66	-0.33	0.44	-0.22
30	Manufacture of basic iron and steel and of ferro-alloys	271	0.16	-0.22	0.31	-0.44
31	Manufacture of basic metals n.e.c.	272275	0.09	-0.26	0.16	-0.48
32	Manufacture of fabricated metal products	28	0.33	-0.02	0.20	-0.01
33	Manufacture of machinery and equipment n.e.c.	29	0.29	-0.13	0.22	-0.10
34	Manufacture of office machinery and computers	30	-0.57	-0.64	-0.94	-1.06
35	Manufacture of electrical and apparatus n.e.c.	31	0.19	-0.16	0.14	-0.12
36	Manufacture of radio, television and communication equipment and apparat	32	-0.23	-0.47	-0.30	-0.61
37	Manufacture of medical and precision products	33	0.43	-0.09	0.28	-0.06
38	Manufacture of motor vehicles, trailers and semi-trailers	34	0.75	0.41	0.49	0.27
30	Building and repairing of shine and hoate	351	1.17	0.87	0.07	0.73
40	Manufacture of other transport equipment n.e.c.	352 355	1.17	0.87	0.57	0.75
40	Manufacture of furniture	361	3 31	2.01	1.43	1.26
42	Manufacture of furmiture	362 366	2.69	2.91	1.43	1.20
42	Manufacturing n.e.c.	362300	2.08	2.59	1.14	1.02
45	Recycling	57	0.00	-0.95	0.00	-1.72
44	Electricity, gas, steam and water supply	40	0.39	-3.19	0.67	-5.54
45	Collection, purification and distribution of water	41	1.54	0.98	1.26	0.80
46	Building of complete constructions or parts thereof, related service activities	4501, 4509	0.09	-2.14	0.03	-0.76
47	Civil engineering	4502	-0.01	-2.23	-0.01	-0.88
48	Wholesale and retail trade	50, 51, 52	0.09	-1.33	0.03	-0.42
49	Hotels and restaurants	55	0.83	-3.34	0.28	-1.11
50	Land transport; transport via pipelines	60	3.66	-5.20	1.18	-1.68
51	Water transport	61	1.95	1.22	1.12	0.70
52	Air transport	62	-0.03	-0.89	-0.04	-1.13
53	Road and railway maintenance	630	0.00	-3.05	0.00	-9.20
54	Activities of travel agencies and tour operators; tourist assistance activities	633	0.06	-0.45	0.08	-0.65
55	Other supporting transporting and auxiliary activities	631, 632, 634	0.62	-1.16	0.28	-0.52
56	Post and telecommunications	641, 642	0.11	-1.03	0.04	-0.39
57	Financial intermediation and insurance	65, 66, 67	0.86	-4.56	0.53	-2.81
58	Letting and operations of dwellings	7021	0.70	-0.89		
59	Management of real estate on a fee or contract basis	7032	-0.02	-1.06	-0.02	-0.78
60	Other real estates activities	701 7022 7031	0.02	-0.78	0.02	-0.78
21	Business activities	701, 7022, 7031	0.02	1 / 2	0.03	-0.91
61	Dusticess activities	/1/4	0.52	-1.43	0.12	-0.55
62	r uone auministration and defence; compulsory social security	13	-0.06	-0.27	-0.02	-1.00
63	Education	80	0.15	-2.74	0.06	-1.19
64	Health and social work	85	0.02	-3.80	0.01	-0.91
65	Sewage and refuse disposal, sanitation	90	1.69	0.73	1.33	0.58
66	Activities of membership organisations n.e.c.	91	0.73	-4.03	0.23	-1.25
67	Recreational, cultural and sporting activities	92	0.45	-2.86	0.18	-1.13
68	Other service activities	93	0.61	-0.72	0.12	-0.14
1-68	Total / average		1.73	-0.27	0.86	-0.13


Financial Instruments in the Swedish Forest Policy

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Abstract

The purpose of this paper is to provide some information on the Swedish forest policy and its implications for the set-up of financial instruments. Forestry is an important part of the Swedish economy. As Sweden entered EU the forest area/person was 20 times bigger in Sweden than in the previous EU 12. Sectoral integration of environmental aspects was introduced in the Forestry Act 1975. The 1994 forest policy states that environmental and production objectives are equal. Forestry should also be an economically self-sustained business. Payment of incentives should be limited to extra costly environmental measures. To create room for increased financial inputs by forestry for the environment, the special tax on forestland was removed and some regulations in the forestry act were removed or eased. In conclusion, three observations that merit consideration in the EFFE (Evaluating the Financing of Forestry in Europe) project are outlined: (i) the forest policy in a country must be adapted to the conditions of the country according to the subsidiarity principle; (ii) environmental adaptation of forestry is necessary and this may result in considerable costs for the forest owners; and (iii) financial instruments merit to be considered in a broad sense in order to be correctly understood when comparing countries.

Keywords: financial instruments, Sweden, forest policy.

1. Introduction

Swedish forests cover almost 25% of the EU forest area. This paper provides some information on the Swedish forest policy and its implications for the set-up of financial instruments in the country. It is not an official statement on behalf of the Swedish government, but rather the personal conclusions of the author.

Forestry has for a long time been, and still is an important part of the Swedish economy. Therefore, any distortions of the free market for forest-based products may create

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considerable problems for Sweden. As Sweden entered EU the forest area/person was 20 times bigger in Sweden than in the previous EU 12. A consequence is that heavy subsidies in forestry would be very expensive for the taxpayers. Another consequence is that forests are closer to the people in Sweden than in many other European countries. This is also reflected in The Right of common access to the forests, which distinguishes Swedish forests from those in most other EU countries.

2. Swedish Forest Policy

The principle of sectoral integration of environmental issues was introduced in the Forestry Act in 1975. The 1994 Swedish forest policy puts equal emphasis on the environmental and production goals. This is illustrated in Figure 1. There is a balance between decaying wood and a woodpecker to your right and major forest products to your left. Another important principle is that forestry is market-based and self-sustained. This means no subsidies for forestry production and trust in the forest owners' s willingness to assume the responsibility for production and ordinary environmental values. Such a trust makes it even more essential to conduct regular evaluations of the effects of the forest policy. Government subsidies should be limited to extra costly environmental measures.



Figure 1. Balance between forestry production and environmental objectives in the Swedish forest policy (Ekelund and Liedholm 2000).

3. Transfer of Responsibility to the Forest Owners

For people, not familiar with Swedish forest history it may seem odd that the government should trust the forest owners to assume costs for environmental action. However, this was in the 20th year after the inclusion of environmental adaptation in the Forestry Act. By then most forest owners were already behaving according to the Act. The 1994 policy was developed in close concertation with the Forest Owners' Associations as well as with other organisations. A number of obligations for the forest owners were removed or eased. The economic effects of this liberalisation were considerable.

The obligations that were removed included:

- The special tax which meant that the forest owner every year had to pay a tax amounting to 0.8% of the taxation value of the forest estate, i.e. the value of the forestland and that of the growing forest;
- To have a forest management plan;
- To do pre-commercial thinning; and
- To do thinning.

The obligations in the Forestry Act that were considerably eased included that:

- Minimum rotation ages were shortened. For the poorest Scots pine sites this meant a reduction from 130 years to 110 years, while reduction was from 65 to 45 years for the best Norway spruce sites;
- More species were allowed when measuring if the number of seedlings required for acceptable regeneration; and
- The allowable cut on forest estates was increased.

4. State support to Forestry in Sweden

The pyramid in Figure 2 illustrates how government support is adapted to the environmental values in the forests.

The basis of the pyramid represents some 80% of the forest area. This is where general environmental consideration shall suffice to maintain the environmental values. The government offers information and education as well as advice to assist forest owners in reaching both environmental and production goals. Inventories also support work towards environmental goals.

Certain environmental values can only be maintained if forest management is adapted to the extra costly environmental requirements. Such management is needed on 10–15% of the forest area. Most of this management is paid for by the forest owners themselves. However government support is offered for environmental reasons to unprofitable forestry to maintain selected broadleaved species as well as to active environmental measures such as prescribed burning.

The top of the pyramid represents 5–10% of the forest area. This land holds the most important environmental values. Government support is granted through Nature Preservation Agreements and Habitat Protection Payments or the area is made a National Park or a Nature Reserve.



Figure 2. Adaptation of Swedish government support to forestry depending on the environmental properties of the forestland (Ekelund and Liedholm 2000).

5. Conclusion

The EFFE (Evaluating the Financing of Forestry in Europe) project may turn out to provide very useful results if certain observations are duly considered from the beginning. Among these, I think it would be good to include the following three observations:

- 1. The forest policy in a country must be adapted to the conditions of the country according to the subsidiarity principle. For a country depending economically on its forests like Sweden, it is very important that conditions allowing for the continuation of forestry as a self sustained business are maintained. It is an important national interest that neither the European Union nor its member states subsidises forestry or forest-based products in a way that distorts competition.
- 2. Environmental adaptation of forestry is necessary if EU and its member states shall meet its obligations. This may cause considerable costs for the forest owners that mean an infringement on the property rights to the land. Forestry conditions and the institutional set-up vary a lot between countries. Therefore it is appropriate to use the subsidiarity principle and solve these situations in different ways depending on the conditions.
- 3. Financial instruments merit to be considered in a broad sense in order to be correctly understood when comparing countries. A major explaining factor when comparing countries may very well be the forest area per person in a country. The absence of obligations for forest owners is also a financial instrument. Knowledge is a help for the forest owners to reach their objectives. Therefore inventories and education as well as advice to forest owners ought to be duly considered when describing the financial instruments of forest policy.

References

Ekelund, H. and Liedholm, H. 2000. Silva Provobis – Forest for people, Forest and environment in Sweden. Skogsstyrelsen. Jönköping, Sweden.

Regeringen: Regeringens proposition 1992/93 – En ny skogspolitik. Riksdagstrycket 1992/93, Stockholm, Sweden.

Skogsstyrelsen. 1988. Skogsvårdslagen, Handbok. Skogsstyrelsen, Jönköping, Sweden

Skogsstyrelsen. 1994. Sweden's New Forest Policy. Skogsstyrelsen, Jönköping, Sweden

Skogsstyrelsen. 1994. The Forestry Act. Skogsstyrelsen, Jönköping, Sweden.

The LIFE-Fund of the European Union as a Means to Support the Development of the Implementation of the Swedish Forest Policy

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Abstract

The purpose of this paper is to present the experiences of the Swedish Forestry Administrations' co-operation with the LIFE-fund of the European Union. LIFE is the only financial instrument specifically designed for support of development and implementation of the environmental policy of the EU. It has three major areas of action: Environment, Nature and Third Countries. In 1994, the Swedish Forest Administration started working with LIFE. The activities include some 50 organisations in 6 EU member states. The total turnover of 8 projects is expected to reach some 15 million euro this year. In its third phase, the LIFE-instrument has been more specifically targeted at EU policy. Accordingly, it has become more difficult to use for innovative forestry demonstrations. In conclusion, four important benefits of co-operation with LIFE are outlined: (i) it strengthens the development of environmental aspects of the implementation of the Swedish forest policy; (ii) it makes us benefit from partnerships that we would probably not have developed otherwise; (iii) it makes us provide more knowledge with a European relevance and makes our organisation more visible as one of the players shaping the environmental future in Europe; and (iv) the increased funding creates positive environmental effects in demonstration areas.

Keywords: financial instruments, European Union, environment, LIFE, forest policy

1. Introduction

This paper introduces some of the experiences of the Swedish Forest Administrations' (SFA) co-operation with the LIFE-fund of the European Union. These co-operations have much in common with other project funding.

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SFA consists of the National Board of Forestry and ten legally independent Regional Forestry Boards. SFA is in charge of the implementation of the forest policy, which is based on environmental and forestry production objectives that are equally important.

LIFE is the only financial instrument specifically for support of development and implementation of the environmental policy of the EU.

2. Environmental Policy of the European Union

The environmental policy of the European Union has been gradually developed through successive Environmental Action Programmes. The 6th Environmental Action Programme "Our future, Our Choice" was decided in June 2001. It runs through to the year 2010. As I understand it, I think that the main new feature in this Programme is the ambition to empower and involve the general public in the implementation of the Programme.

There are four priority areas and five key approaches in "Our Future, Our Choice", Table 1. I'd like to offer a piece of advice to all of you. Study this Programme! Try to imagine what it will mean in practical implementation! "Our Future, Our Choice" will guide the development of EU legislation and many opportunities for EU co-funding for ten years.

Four Key areas	Five Key approaches
Climate Change	Ensure the implementation of environmental legislation
Nature and Biodiversity	Integrate environmental concerns in relevant policy areas
Environment and Health	Work with business and consumers to find solutions
Natural Resources and Waste	Ensure better and more accessible information on the environment for citizens
	Develop a more environmental attitude to land use.

Table 1. Key Areas and Key Approaches in "Our Future, Our Choice".

There are basically five means for implementation of the EU Environmental Policy:

- 1. Framework legislation provides for a high level of environmental protection while guaranteeing the operation of the internal market. The Water Framework directive is an example.
- 2. Technical instruments include the Eco-labelling, the Community system of environmental management and auditing (EMAS), and the system for environmental impact assessment.
- 3. European Environmental Agency was set up to gather and disseminate comparable environmental data. Its work has become more and more crucial for the adoption of new measures and for assessing the impact of decisions already adopted.
- 4. Sectoral integration, i.e. that each sector shall include the suitable environmental aspects in the development and implementation of its policies.
- 5. LIFE, that is the only EU financial instrument devoted solely to funding of environmental projects.

3. LIFE - the EU Financial Instrument Devoted Specifically to the Environment

LIFE is an acronym meaning "L'Instrument Financier pour l'Environnement. It is the only financial instrument of the EU that exclusively targets the environment. LIFE is implemented through projects. A project proposal is an offer by the applicant to contribute to the development and implementation of EU environmental policy. Proposals are subjected to a strict evaluation procedure. It results in a ranking of proposals where the best entries in this competition are awarded LIFE-support.

There are three major areas of action: Environment, Nature and Third Countries. While all three areas aim to improve the environment, each has its specific priorities. LIFE is open to persons or companies of whatever legal status, who reside in the eligible countries.

LIFE dates back to 1992. It is implemented in phases. The third phase runs from 2000 to 2004 with a total budget of 640 million euro. While 47% of the resources are allocated to LIFE-Environment and LIFE-Nature, respectively, 6% are devoted to third countries.

EU accession candidate countries may participate in LIFE-Environment and LIFE-Nature on the basis of agreements with EU. In June 2001 this included at least Estonia, Hungary, Latvia, Romania and Slovenia.

LIFE-Third Countries finances technical assistance in the establishment of environment administrative structures, nature conservation and demonstrations to promote sustainable development. The eligible countries are Albania, Algeria, Bosnia-Herzegovina, Croatia, Cyprus, Egypt, Israel, Jordan, Lebanon, Malta, Morocco, Syria, Tunisia, Turkey, the West bank and Gaza and the Baltic shoreline of Russia (Kaliningrad and St. Petersburg regions).

4. LIFE-Nature Supports EU Nature Protection Policies

LIFE-Nature projects aim at the conservation of natural habitats and of wild fauna and flora of EU interest. They should support the implementation of the Natura 2000 network of protected areas as well as the preservation of species according to the Wild birds and Habitat directives. This is being implemented in a very strict sense. The rules of procedure make it difficult to present a project proposal, at least for SFA.

For LIFE-Nature, the rate of support is normally maximum 50%. However, it may be more for priority species or priority habitats, as well as for NGOs and objective 1 areas for structural fund support. The priority habitats or priority species are defined in Habitats and Birds Directives. Projects should total at least 300 000 Euro.

5. LIFE-Environment Supports Development and Implementation of EU Environmental Policies

LIFE-Environment supports innovative demonstrations for industry; demonstration, promotion and technical assistance for local authorities; and preparatory actions to support community legislation and policies. The rate of support for LIFE-Environment is normally maximum 50 of the eligible costs. But for income generating projects the maximum is 30%. Projects ought to total at least 1 million euro and the EU support will normally not exceed 1.5 million euro. Projects must be innovative but they can neither focus research nor be based on activities that could be supported by other community instruments, such as the structural funds. The average success rate for proposals is 20–30%.

In its third phase, LIFE Environment has basically five main areas of action:

- 1. Integration of considerations on the environment and on sustainable development in landuse development and planning, incl. urban areas and coastal regions.
- 2. Promotion of sustainable management of groundwater and surface water.
- 3. Minimising environmental impact of economic activities by placing the emphasis on prevention, notably through the development of clean technologies.
- 4. Prevention, reuse, recovery and recycling waste of all kinds and ensuring the sound management of waste streams.
- 5. Reduction of the environmental impact of products through an integrated approach throughout the various production, distribution, consumption and end-of LIFE processing stages, in particular by developing environment friendly products.

6. Project Funding as Support to Forestry in Sweden

The creation of good projects has become increasingly important for the SFA since it had to decrease its personnel by 50% in the late 1990s. Co-operation with the LIFE-fund has some features in common with co-operation with other sources of funding.

The financial opportunities for purely Swedish support to forestry projects depend on not only state support for environment and unemployment, but also on co-operation with regional government and municipalities as well as NGOs preferably concerning environment. There is of course also the private forestry sector which may support forestry production, but it has very limited resources to spare to fund projects carried out by somebody else. The availability of most EU-funding depends on national co-funding from government sources. This includes the EU programmes for Interreg, Rural Development and EU-Objective 1, 2, 3 and Leader+. The LIFE-fund does not require input form government funding.

This brief review provides us with an important understanding. When we think about financial opportunities we must focus on priorities and objectives other than forestry production. We must review the opportunities with each financial instrument and compare them with our needs. If there is an opportunity we need to find partners. Every partner has its own objectives. We must find a balance between all objectives. This includes our own objectives as well as those of the financial instrument and those of our partners. A project proposal may get support, but if so the difficult part follows. Can we remain friends throughout the implementation of the project in spite of the differences between the partners?

7. Adapting to the Realities of LIFE

The EU/LIFE financial instrument has become more streamlined with every phase. This means that it is now more closely tied to some of EU environmental policies than ever before. In the application guide, limited environmental thematic areas are carefully specified. Evaluation procedures have become stricter and more transparent. The demands for strengthening project design and management have grown. The focus on dissemination has increased.

In the LIFE regulation, there is a thematic area called Land-use development and planning. This would seem to include almost everything we want to do for the environment in forestry. But in the instructions for writing the application, it is stated that proposals on Urban Environment, Air quality and Noise abatement as well as Integrated Coastal Zone Management are welcome. You may conclude that proposals on land-use development and planning that refer to other environmental aspects of forestry are less welcome.

Thus, in order to meet our need for better adaptation of forestry to the needs of people in urban areas, we could not develop a forestry project. Instead, we have developed a partnership including municipalities, a private organisation and an NGO to define what needs to be done from the non-foresters perspective. We also developed a co-operation with Office National des Forêts in France. This helps us achieve credibility for the project at European level.

Since LIFE is for demonstration projects we must also measure the impact of our activities in the demonstration areas. But there were no methods available for this. Thus elaboration and demonstration of such a method also had to be included in the project. We have even included international training courses on the subject in English as well as French.

These adaptations are costly and make the LIFE-support financially less effective for the objective we have originally envisaged. But on the other hand, we will learn a lot from our partners, and it may well be that the result will be even better than if we had done this on our own.

8. Overview of LIFE Co-operations of the Swedish Forestry Administration

In June 2001 three LIFE-co-operations of SFA were more or less terminated and three were still being implemented. The map, Figure 1 shows the location of the demonstration areas in these six projects. The include partnerships with more than 40 organisations in six EU member states. Two additional projects are expected to start this year. The total turnover of these 8 LIFE-co-operations is expected to reach 15 million euro this year. Out of this, more than 5 million euro refers to activities in countries other than Sweden.

9. White-Backed Woodpecker Landscapes and New Nature Reserves

The beneficiary was the National Board of Forestry. The partners included the Swedish Environmental Protection Agency, 5 County Forestry Boards and 6 County Administrations. The budget (1996–1999) was some 3.1 million Euro.

This LIFE-Nature project did a diversity of conservation actions on 10 areas of western Taiga that are important for these Woodpecker populations. It has served as a role model for a new method of combining instruments for biodiversity promotion and co-operation between forest owners, environmental and forestry authorities as well as NGOs.

The project was invited by the European Commission to present its experiences during the LIFE-week 1999. It was introduced as a pioneering project for forest management and as a good example of co-operation between LIFE- Nature projects and landowners. It was also invited to Italy in 2001, and presented its experiences at "Seminario Strategie per la Conservazione e la Ricostituzione delle Foreste Europee.

10. Local Participation in Sustainable Forest Management based on Landscape Analysis

The beneficiary is the National Board of Forestry. The partners are the Finnish Forestry Development Centre Tapio and 3 Regional Forestry Boards. The budget 1996–2000) was some 2.5 million euro.



Figure 1. Location of the Demonstration Areas in the LIFE-co-operations of the Swedish Forest Administration in the year 2000.

The project has integrated environmental and landscape aspects into forestry development at five locations in Sweden and Finland, in particular with respect to small private holdings. It has gathered experience of local co-operation between the local forest authorities and forest owners and other concerned organisations. Project experiences are being integrated in the day to day co-operation with forest owners in Sweden and Finland.

Experiences have also been used by the Liaison Unit of the Ministerial Conference for the Protections of Forests in Europe in the preparation for and also in the discussion during the second Workshop on National Forest Programmes in Lillehammer, Norway in July 2001. (Alexander Buck, personal communication, 27/6/2001)

11. Demonstration of Methods to Monitor Sustainable Forestry

The beneficiary is the National Board of Forestry and there are partners in Denmark, Finland, France and Germany. The budget (1998–2002) is some 2 million euro. The project demonstrates methods to monitor all aspects of sustainable forestry.

New methods have been developed and relevant methods are being tested in these countries. Unexpected important knowledge has resulted, as for instance in Sweden where a detailed inventory of a demonstration area seems to provide a new understanding of the frequency of certain red-listed species, in particular insects.

The mailing list of professionals interested in the project includes 90 persons in 23 countries. Project personnel representing Sweden, France and Germany participated in the first Workshop on the improvement of pan-European indicators for Sustainable Forest Management that was held in Triesenberg, Liechtenstein in March 2001. (Erik Sollander, personal communication, 6/8/2001). In a recent publication by the European Commission (European Communities 2001) the project was presented as a success story for Europe's environment.

12. An Integrated Liming Strategy with a Whole-Catchment Approach

The beneficiary is the Regional Forestry Board Södra Götaland. The partners include national, regional and local authorities. The budget (1999–2001) is some 0.8 million Euro. The project has demonstrated an integrated strategy of liming catchments to prevent acidification impacts on forest soil and freshwater ecosystems. This includes application prerequisites and the biological and economical advantages of the method.

An exciting project result is that salmon trout after being absent for 40 years has returned to the stream in one of the treated watersheds. One of the projects' observations is a comparison of the content of non-organic Aluminium in the streaming water from two treated catchment areas and two untreated areas. The effect of the treatment is striking. Figure 2 illustrates that for one treated and one untreated stream.



Figure 2. Development of Non-Organic Aluminium in a stream treated with lime and an un-treated reference stream in the LIFE-project: An integrated liming strategy with a whole catchment approach. The arrows indicate the time of the treatments.

13. Demonstration of Sustainable Forestry to Protect Water Quality and Aquatic Biodiversity

The beneficiary is the Forestry Commission, SW Scotland. It co-ordinates the UK partners. The Regional Forestry Board in Västra Götaland co-ordinates the Swedish partners. The budget (1999–2003) is some 0.8 million euro. The project will show how to manage forests without damaging aquatic ecosystems. This is being done through catchment planning and field demonstrations that will be followed by guided tours to demonstration areas.

The project generates experience that will be of help for the future implementation of the EU Water Framework Directive. It has already attracted interest on a European level, and people from six countries participated in a project Workshop in Kinna in Sweden, 2001.

14. Demonstration of Methods to Identify and Preserve the Biocultural Heritage in European Forests

The beneficiary is the Regional Forestry Board Värmland-Örebro. The partners are Office National des Forêts and CEMAGREF, France; the National Board of Forestry and two Regional Forestry Boards; the County Administrative Board of Örebro and the Local Municipality of Hällefors in Sweden. The budget (1999–2002) is some 0.8 million euro.

The result will be six permanent demonstrations of the biocultural heritage. They reflect a diversity of European conditions. These sites, a comparison of the national experiences and professional input from other European countries will stimulate the discussion on and the preservation of the biocultural heritage in Europe. This is quite important, since there are nature preservation areas that are left for free development, even though they need active management to preserve their natural values.

15. Conclusion

The LIFE-instrument provides us with four important benefits:

- 1. It strengthens our efforts to develop the environmental aspects of the implementation of the Swedish forest policy. It is true that this is only the case to the extent that the forest policy is the same as EU environmental policy. A consequence may be that such aspects are favoured.
- 2. It makes us develop partnerships that we would probably not have developed otherwise. This helps us improve our understanding of forestry and environment in other countries as well as to make Swedish forestry conditions understood abroad. It also makes us cooperate and integrate our efforts with non-forestry partners in other organisations in Sweden. Therefore, the approach to development will be even more integrated with the needs identified by other sectors of the society.
- 3. It makes us provide more knowledge with a European relevance and makes our organisation more visible as one of the players shaping the environmental future in Europe.
- 4. The increased funding creates positive environmental effects in the demonstration areas.

References

European Commission. 2001. LIFE Homepage. Bruxelles, Belgium. http://europa.eu.int/comm/life/home.htm European Commission. 2001. Environment 2010: Our Future, Our Choice. The Sixth Environment Action

Programme of the European Community 2001-2010. Bruxelles, Belgium. http://www.europa.eu.int/comm/ environment/newprg/index.htm European Communities. 2001. LIFE – Environment in action. 56 new success stories for Europe's environment.

Office for Official Publications of the European Communities. Luxembourg.

IVL, Svenska Miljöinstitutet AB. 2001. Aneboda, Sweden http://www.ivl.se/affar/grundl_miljos/Proj/lifevital/ index.asp

Skogsstyrelsen 2001. Jönköping, Sweden. http://www.svo.se/eng/life/default.htm

Effect of Public Financing on the Profitability of Drainage Investments in Private Forest Holdings

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Introduction

Investments for forest improvement measures have played an important role in the development of the Finnish forests. Since the start of the forest improvement activity in the end of the 1920s, drainage has been the most important measure for public financing until the 1970s. The most intensive period of forest drainage occurred between the beginning of the 1950s and the end of the 1970s (Figure 1). Proportionally, the largest part of the drainage objects was on privately owned and company forest. According to the latest National Forest Inventory, about 5 million ha of peatlands have been drained for forestry out of a total peatland area of 9 million ha. Of these drained areas 3.5 million ha are on private land (Finnish Statistical ... 1999). The largest part of the drained area is in South Finland; the amount of private forest is also greatest here.

About 15% of the present cutting potential is the result of the forest improvement measures of the last decades. It is mainly forest drainage that has contributed to this added forest growth. Presently, one-fifth of the growing stock, and one-quarter of the annual volume growth or 18 million m³, is on peatland. The annual volume growth on the drained peatlands is about 15 million m³ (Tomppo and Henttonen 1996).

By now, over 4 billion FIM in present value has been used for forest drainage in the private forests (Finnish Statistical... 1999). Of this sum, between 80 and 90% has been through public financing (Figure 2). The actual investment peak in the drainage of the private peatland forests occurred in the 1960s and 1970s.

From the private forest owner's point of view it was no easy task to carry out a drainage project because of high investment costs. Consequently, the state participated substantially by assisting the projects financially through subventions and loans at low interest rates. Furthermore, in order to get as many private forest owners (there are about 300 000 private forest holdings) as possible to participate in these projects and as the drainage projects usually were joint ventures, all the planning and supervision costs were paid by the state. The public financing contributed to the willingness of the forest owners to invest in forest drainage. Secondly, the subventions had a decisive effect on the profitability of the investment.

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Figure 1. Forest drainage 1955-98, by forest ownership category.



Figure 2. Public financing in the drainage of private peatlands, 1967-95 (in 1995 money).

Forest drainage of peatlands initiates a chain of continuous forest growth that in principle will never end. The initial investment will actually force the forest owner to various silvicultural measures that are required, in order to both maintain and fully exploit the increment of the site obtained through drainage, as compared to the undrained alternative. The aim of this presentation is to illustrate how public subventions have contributed to the profitability of drainage investments in the long term. This is partly an ex-post study, as the initial investments are considered to have taken place in 1970 and the value of the stumpage price and maintenance costs are in 1995 money

Bases for Calculation

The point of origin for the profitability comparison was the initial drainage projects carried out during 1970 because, by area, the peak in forest drainage on private forests occurred during that year. In the calculations, the drainage cost information of 1970 by region was used as initial drainage costs. The maintenance costs of the drainage areas (maintenance ditching, silviculture of the new growth) were determined according to 1995 money. The undrained comparison did not cause any silvicultural costs.

According to the forest improvement legislation of 1970 the forest owners received subventions for their drainage projects and the remaining costs were covered by forest improvement loans. The amount of the subventions varied between 20 and 50%, increasing from south to north by financing zones (which were determined by climatic criteria). After 2–10 years free of interest, the loan was repaid during 24 years in equal amounts. Considering the prevailing inflation, the actual value of the loan was very low for the forest owner. The bases for the costs for maintenance ditching were determined according to the practice prevailing in 1995, the subvention percentage being between 30 and 70% according to financing zone.

The data for the investment output was based on stand growth and removal measured on long-term sample plots in drained peatland forests. These were distributed in accordance with the most common peatland site types. The estimates of the timber assortments of the removal were based on both measured data and previous studies. The stumpage price used in the calculations was the mean of the prices of timber sold in private forests between 1992 and 1995. Each timber assortment item had its own price according to the stumpage prices stated above. The stumpage prices of the removal of the undrained sites were set with the corresponding prices.

The profitability of drainage is assessed by comparing the net present values of growing tree stands on the drained and undrained alternatives using different combinations of financing. The comparisons are made on the peatland site types that have been most intensively drained for forestry, for South and North Finland separately. In the first (1) alternative the profitability is examined with the presupposition that the forest owner has financed the project himself; in the second (2) alternative the forest owner is supposed to have received the maximum subvention allowed for the region in question, for both initial and maintenance drainage; in the third (3) alternative the forest owner receives both the maximum subvention, in addition to which the investment costs not covered by this subvention will be met with a low interest loan. The basic year for the calculations is 1970, which is the year of initial drainage; all income and costs are according to 1995 money.

Results

Pine mires

The results of the profitability are presented with discounting rates of interest of both 3 and 5%. In South Finland, the pine bogs (low sedge, cottongrass and dwarf-shrub types, productivity corresponding to xeric heath forest site types after drainage) represent a large part of the drained areas. Using the 3% discounting rate of interest the present value of the drained alternative was clearly greater than on the undrained (Figure 3). When the interest rate was raised to 5% the drained alternative became unprofitable in comparison to the undrained. The final result was similar in all financing alternatives: not even public financing would have resulted in a positive present value for the investment.



Figure 3. The net present values for the pine mires, which are corresponding to xeric heath forest site types in South Finland (rates of interest 3 and 5 %).

The present value of (the tree stands) of the drained alternative was over 4000 FIM/ha. If the objective in South Finland was for a more fertile pine swamp site type (tall sedge pine swamp site types corresponding to sub-xeric heath forest site types after drainage) the present value of the drained alternative raised to about 8000 FIM/ha, when using a discounting rate of interest of 3% (Figure 4). On the drained alternative, all financing alternatives had a better result (than the undrained) with both 3 and 5% discounting rates of interest. On the more fertile pine swamps drainage raised the present value to about 6000 FIM/ha with a discount rate of interest of 3%. With an interest rate of 5% the corresponding present value of the drained alternative was 2000 FIM/ha higher than that of the undrained.



Figure 4. The net present values for the pine mires, which are corresponding to sub-xeric heath forest site types in South Finland (rates of interest 3 and 5 %).

In North Finland drainage was focused on the most fertile pine swamp site types (herb-rich pine swamp site types corresponding to mesic heath forest site types after drainage), because the growth conditions are considerably poorer than in South Finland. With an interest rate of 3%, the increase in the present value after drainage of pine swamps in North Finland was only 600–1000 FIM, depending on the financing alternative (Figure 5). If the discount rate of interest was raised to 5%, the present value, calculated as the difference between the different growing alternatives, became negative when the forest owner used the own financing alternative. On the other hand, public financing kept the investments barely profitable, e.g. the present value was positive.



Figure 5. The net present values for pine mires, which are corresponding to mesic heath forest site types in North Finland (rates of interest 3 and 5 %).

Hardwood-spruce mires

In South Finland the drainage activity was mainly focused on Vaccinium myrtillus and tallsedge spruce swamps (corresponding to mesic heath forest site types after drainage). Drainage resulted in a considerable increment, which is also reflected in the financial result. With an interest rate of 3% the difference between the growing alternatives (drained and undrained alternatives) is about 10 000 FIM/ha (Figure 6). With an interest rate of 5%, the corresponding value is (still positive) 4000–5000 FIM/ha. There was no big difference in profitability between the financing alternatives.

In North Finland, the drainage activity was focused on hardwood-spruce mires of growing capacities corresponding to those of mesic heath forests after drainage. When using a discount rate of interest of 3% the drained alterative was clearly profitable (Figure 7). With the own financing alternative the present value was 1000 FIM/ha higher and with the loan and subvention alternative 1600 FIM/ha higher (than the undrained alternative). Use of the 5% interest rate proved to be too high and the undrained alternative was more profitable for all financing alternatives.



Figure 6. The net present values for the hardwood-spruce mires, which are corresponding to mesic heath forest site types in South Finland (rates of interest 3 and 5 %).



Figure 7. The net present values for the hardwood-spruce mires, which are corresponding to mesic heath forest site types in North Finland (rates of interest 3 and 5 %).

Conclusions

A great majority of the drainage projects in private forests were carried out as joint ventures, with often tens of (forest holdings as) partners. This is mostly due to the small size of the average forest holding (27 ha). Because of this, the state usually paid the planning and supervision of the projects. The long effect of the drainage investments over time also

contributed to directing the subventions to drainage. Accordingly, the aim of this subvention policy was to boost the forest owners' willingness to initial drainage and simultaneously to improve the profitability of private investments.

By now, only a fraction of the results of the drainage projects in 1970 have been realized. On the other hand, the increment on these sites has been considerable. Based on the profitability calculations presented above, the drainage investments can be considered to be successful with the present price and cost level (here 1995).

The results of the profitability calculations indicate that the productivity requirements of 3% are fulfilled in almost all drainage projects on both pine mires and hardwood-spruce swamps, even with the own financing alternative. However, the forest owner is not usually satisfied with such a low profit but aims at a profit level of 5%. In such a case, the profit requirements will be unfulfilled only on the poor pine bogs in South Finland even if the investment would have been promoted with subventions and loans. In North Finland the profitability requirement of 5% is already too high for own financing. Public financing, however, will raise the profit above the required 5% on pine swamps, and on hardwood-spruce swamps the requested profit level is nearly reached. By present values, the profitability is clearly the best in the hardwood-spruce swamps of South Finland.

Based on the calculations the conclusion can be drawn that it has been possible to, at least partly, compensate the regional profitability differences by public financing. However, the decrease in she stand productivity between South and North Finland is so great that the differences in the profitability cannot be totally compensated for with any public subventions. It seems that, with the present prices, the drainage investments result in a profit of 4-5%, provided that the future cutting possibilities of the drained areas are utilized. From the point of view of public subvention policy, this activity can be considered to be successful because of the added cutting potential for decades ahead.

References

Finnish Statistical Yearbook of Forestry 1999. 1999. Metsätilastollinen vuosikirja 1999. The Finnish Forest Research Institute. Helsinki, Finland. 352 p.

Tomppo, E. and Henttonen, H. 1996. Suomen metsävarat 1989–1994 ja niiden muutokset vuodesta1951 lähtien. Metsäntutkimuslaitoksen metsätilastotiedote nro 354. Metsätilastollinen tietopalvelu. 18 p. (In Finnish).

Financial Instruments of Forest Policy in Portugal in the 1980s and 1990s

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Abstract

This paper reviews the main programmes of financial incentives to forestry in Portugal through the 1980s and 1990s. First, these programmes are put in perspective with respect to the trends in forest resources and forest policy since the mid-19th century. Then, the main measures, beneficiaries and outputs are presented for each programme, together with an implementation analysis comparing the targets and outputs and giving plausible hypotheses to explain the implementation failures.

The main conclusions of the paper are a long-term trend of increasing public financing to private forestry, with some remaining problems: unsustainable sources of public funds, and rates of afforestation and reafforestation still insufficient to make the forest industries competitive and to compensate for the damages caused each year by forest fires.

Keywords: Portuguese forests, (re)afforestation, financial incentives

1. Trends in forest resources since the mid-19th century

When looking at Portuguese forests today it is important to bear in mind that they are mostly the result of a triplication in forest land since the mid-19th century, interrupting centuries of deforestation due to multiple factors: clearing of forests for farming, overexploitation of timber resources for shipbuilding and charcoal production, burning of forests by shepherds, etc.

Until the 1950s, there was simultaneous growth of forest and agricultural land. This was possible as there was a large amount of uncultivated land fit for cultivation in the 19th century from the long process of deforestation. With the intense rural emigration in the 1960s and 1970s, agricultural land started to decrease, while forests continued to expand. However, since the 1970s, the growth in forest has not taken up all the abandoned farmland, the result being an increase in uncultivated land fit for cultivation after its secular fall.

Andreas Ottitsch, Ilpo Tikkanen and Pere Riera (eds.)

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 Table 1. Land use in Continental Portugal since 1867.

Species	1867	1902	1910	1920	1929	1939	1950/56	1963/66	1968/78	1980/85	1995/98
1. Forest and other wooded land	1240000	1736938	1956500	2022491	2332000	2467000	2832268	2825700	2969120	3108200	3349327
A) Forest land by tree-species dominance											3201131
a) Conifers - Maritime pine - Other conifers	210000	250000	430194	913689	1132000	1161000	1189524	1287600	1293040	1252300	976069
b) " <i>Montados</i> ": - Cork oak - Holm oak	370000 121000 249000	712986 325493 387492	782653 365995 416658	868850 413713 455137	940000 560000 380000	1050000 690000 360000	1274490 651406 623084	1215400 636800 578600	1192480 656580 535900	1128700 664000 464700	1174390 712813 461577
c) Other oaks and chestnut - Other oaks - Chestnut	60000 n.d. n.d.	173952 78165 95787	130986 47006 83980	173952 78165 95787	193000 108000 85000	188000 108000 80000	170000 94000 75000		99840 70550 29290	143200 112100 31100	171478 130899 40579
d) Eucalyptus	0	_	_	_	8000	n.d.	113288	98900	213720	385800	672149
e) Other	600000	600000	612667	66000	59000	68000	84966		170040	198200	207045
B) Other wooded land	n. a.	n. a.	n. a.	n. a.	n. a.	148196					

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Species	1867	1902	1910	1920	1929	1939	1950/56	1963/66	1968/78	1980/85	1995/98
2. Agricultural land	1886000		3111882	3229000	3282000	3380000	4762000		4205882	3902362	2972883
Uncultivated land fit for cultivation	5462862	n. a.	3426618	3245671	2883162	2648000	885594		1279860	1419300	2054571
Productive, but uncultivated land (fallow, grazing, etc.)	2116000		1926000	1639000	1565000	1484000	395594	n. a.	n. a.	n. a.	n. a.
Other uncultivated land fit for cultivation	3346862		1503780	1606671	1318162	1164862	490000	n. a.	n. a.	n. a.	n. a.
3. Land unfit for cultivation	291000	374000	81700	382700	382700	384000	400000	n. a.	425000	450000	503081
4. Total land area	8772520	8772520	8772520	8772520	8772520	8772520	8772520	8772520	8772520	8772520	8772520
5. Inland watercourses	107342	107342	107342	107342	107342	107342	107342	107342	107342	107342	107342
6. Total area	8879862	8879862	8879862	8879862	8879862	8879862	8879862	8879862	8879862	8879862	8879862
Forest coverage (1./4.)	14.1%	19.8%	22.3%	23.1%	26.6%	28.1%	32.3%	32.2%	33.8%	35.4%	38.2%

Sources: sources and methods of estimation explained in detail in Mendes (2001)

2. Afforestation: the main stated priority of forest policy since its beginning

The large amount of uncultivated land fit for cultivation and without a productive use existing in the mid-19th century (38.2 % of the total land area) explains why afforestation was, by far, a major priority of the Forest Services established at that time. However, since those days, there has been a wide gap between the wishes of forest policy makers and foresters and the actual implementation of forest policy. If we look at where the Forest Services started their activities, we see is that they were devoted almost entirely to the management of some state owned forests representing a very small part of the total forest land in the country.

By the end of the 19th century and in the beginning of the 20th century, forest policy and Forest Services priorities moved to another front also in the public domain, more precisely the afforestation of the 25 600 ha of dunes along the coast which remains until today one of the most socially valuable projects carried out by Forest Services.

The next front to which forest policy and Forest Services moved their priorities was the afforestation of the communal lands in Northern and Central Portugal. After some preparatory work, this afforestation finally started in the 1930s, after the political regime had taken a dictatorial turn. These political conditions have to be mentioned because this afforestation was often implemented in a authoritative way, against the traditional uses of those lands by the local communities. The major output of this programme (*"Plano de Povoamento Florestal"* – PPF) was the afforestation of 318 000 ha from 1935 until 1972, mostly with maritime pine. The management of these forests on behalf of the local communities made up the essential of the Forest Services activities from the 1930s until the present days. The Forest Services had to give part of the proceeds from the communal forests to the local communities, but they were allowed to keep the rest, making these services a potentially self-funded public agency.

3. Where and who actually made most of the afforestation since the mid-19th century?

The gap we mentioned before between the stated priorities of forest policy and Forest Services and their actual practice has to do with the fact that their three major fronts of intervention (public forests, afforestation of the dunes, and communal forests) are certainly a valuable part of the total forest land in the country, but far from being the main one. Also they are certainly not the domains where most of the afforestation observed since the mid-19th century was carried out as detailed trends in forest land use show:

- conifers (mostly maritime pine) rose from 210 000 ha in 1867 to 1 293 040 ha in 1968–78 which cannot be explained by the afforestation of 25 600 ha of dunes and 318 000 ha of communal lands, even if these 343 600 ha were entirely made up of pine forests which they were not;
- cork oak and holm oak forests rose from 370 000 ha in 1867 to 1 174 390 ha in 1995–98 which again, cannot be imputed essentially to the action of the Forest Services because these forests are mostly in the South, far from the main domains of intervention of this agency;
- eucalyptus rose from a situation of almost non-existence in the mid-19th century to 672 149 ha in 1995–98 as the result the direct investment of the pulp and paper companies and to the investment of non industrial private forest owners stimulated by the demand from those companies.

As we will see later on, most of this investment in eucalyptus plantations has not benefited from public incentives. So what are today the main three segments of Portuguese forests owe most of

their growth since the mid-19th century not so much to public interventions, but to other factors and actors. Among these factors certainly processes of natural regeneration might have played an important role, but we should not forget the actions of non- industrial private forest owners' (NIPFOs). In fact, according to data referring to 1995, this type of owners are responsible for 76.6% of the forest land, pulp and paper companies manage 7.7%, and only the 2.2% of state owned forests and part of the 13.4% of communal forests are left for the direct intervention of the Forest Services.

	То	otal	Co	onifers				Broa	adleave	s		
					Euca	lyptus	Corl	k Oak	Ot	her	Tot	al
	Area	%	Area	%	Area	%	Area	%	Area	%	Area	%
State forests	72	2.2	60	5.6	0	0.0	0	0.0	15	2.0	15	0.7
Communal forests	l 430	13.4	410	37.9	0	0.0	0	0.0	20	2.7	20	0.9
NIPF	2453	76.6	581	53.7	482	71.7	687	96.4	700	95.2	1869	88.2
Forest industries	246	7.7	30	2.8	190	28.3	26	3.6	0	0.0	216	10.2
TOTAL	3201 1	00.0	1081	100.0	672	100.0	713	100.0	735	100.0	2120	100.0

Table 2. Forest lands by types of management and tree species in 1995 (1000 ha).

Sources: INE (1997), DGF (1991, 2001), completed with data collected from the pulp and paper industry and some own estimates.

Table 3. Forest holdings size distribution in 1995 (%).

Regions				Forest ho	ldings clas	s sizes (h	ia)	
-		0-4	5-9	10-19	20-49	50-99	100 and more	Total
Northwest	N.° holdings	89.7	6.4	2.2	1.2	0.2	0.3	100.0
	Forest area	34.4	13.6	9.0	10.2	4.1	28.7	100.0
Northeast	N.º holdings	90.6	6.6	2.2	0.4	0.1	0.1	100.0
	Forest area	53.7	19.9	13.2	5.4	3.4	4.4	100.0
Central	N.º holdings	91.5	5.8	1.7	0.8	0.1	0.1	100.0
West	Forest area	53.1	18.4	10.7	10.8	2.4	4.6	100.0
Central	N.º holdings	73.1	14.3	7.3	3.9	0.7	0.7	100.0
East	Forest area	18.1	13.8	14.1	15.3	5.9	32.8	100.0
Ribatejo	N.º holdings	84.8	6.5	3.6	2.5	1.1	1.5	100.0
Oeste	Forest area	8.3	3.8	4.1	6.6	6.7	70.5	100.0
Alentejo	N.º holdings	23.8	12.0	15.6	14.9	11.3	22.4	100.0
	Forest area	0.5	0.9	2.5	5.4	9.2	81.5	100.0
Algarve	N.º holdings	58.9	14.2	11.6	9.5	3.5	2.3	100.0
	Forest area	7.5	7.5	12.5	23.2	17.9	31.4	100.0
Continental	N.º holdings	85	8	3	2	1	1	100.0
Portugal	Forest area	15	7	7	9	7	55	100.0

Source: INE (1997)

4. Afforestation remains the main stated priority of forest policy

Whatever might have been the relative roles of forest policy and private initiative in the triplication of forest land since the mid-19^h century, afforestation remains today, as it was at that time, the main stated priority of forest policy, both for public policy makers and for private stakeholders. Several reasons contribute to these attitudes:

- a) forest land and forest production are still far from having reached the maximum of their economic and ecologic potential:
 - further growth in forest area up to 5 280 000 hectares (60.2 % of the land area) is possible through afforestation of 1 068 000 ha of marginal agricultural lands non suitable for farming and about 863 000 ha of other lands with forest potential (Banco Português de Investimento et al. 1996);
 - substantial productivity gains (around 20% more in annual increments of *Pinus pinaster* and *Eucalyptus globulus*) resulting from improved forest management and use of better plants (Banco Português de Investimento 1996);
- b) afforestation and reafforestation through the 1970s, 1980s and 1990s supported by public incentives lagged far behind the area of deforestation due to forest fires (the former was only 54% of the latter) and have not taken up most of the land released from agriculture due to farm out-migration (agricultural land fell by 1 233 000 ha during this period while forest and other wooded land increased only by 380 207 ha);
- c) timber and cork production are lagging behind the demand from the forest industries leading to increases in the real prices paid for these products by the industries, since mid-1995.

	Bur	nt area		Afforestation & reafforestation		
Fo	prest	Scrubs	TOTAL	annual	cumulated	
annual	cumulated					
				181272	181272	
354487	354487	162562	517049			
63649	418136	26148	89797	17920	199192	
27436	445572	12121	39557	19785	218977	
32427	477999	16953	49380	18742	237719	
26580	504579	26133	52713	20829	258548	
79440	584019	66815	146255	18278	276826	
58612	642631	40910	99522	24882	301708	
49848	692479	26420	76268	22936	324644	
8628	701107	13807	22435	21183	345827	
62165	763272	64070	126235	17410	363237	
79549	842821	57703	137252	20888	384125	
125488	968309	56998	182486	17575	401700	
39701	1008010	17311	57012	21803	423503	
23839	1031849	26124	49963	17193	440696	
13487	1045336	63836	77323	34390	475086	
87554	1132890	82014	169566	69546	544632	
30497	1163387	58059	88556	23472	568104	
11466	1174853	19068	30524	39588	607692	
57393	1232246	100975	158368	34691	642383	
31052	1263298	39561	70613	38294	680677	
68646	1331944	90958	159604			
	Fo annual 354487 63649 27436 32427 26580 79440 58612 49848 8628 62165 79549 125488 39701 23839 13487 87554 30497 11466 57393 31052 68646	Burn Forest annual cumulated 354487 354487 63649 418136 27436 445572 32427 477999 26580 504579 79440 584019 58612 642631 49848 692479 8628 701107 62165 763272 79549 842821 125488 968309 39701 1008010 23839 1031849 13487 1045336 87554 1132890 30497 1163387 11466 1174853 57393 1232246 31052 1263298 68646 1331944	Burnt area Burnt area Forest annual cumulated Scrubs 354487 354487 162562 63649 418136 26148 27436 445572 12121 32427 477999 16953 26580 504579 26133 79440 584019 66815 58612 642631 40910 49848 692479 26420 8628 701107 13807 62165 763272 64070 79549 842821 57703 125488 968309 56998 39701 1008010 17311 23839 1031849 26124 13487 1045336 63836 87554 1132890 82014 30497 1163387 58059 11466 1174853 19068 57393 1232246 100975 31052 1263298 39561 68646 1331944	Burnt area Forest annual cumulated Scrubs TOTAL 354487 354487 162562 517049 63649 418136 26148 89797 27436 445572 12121 39557 32427 477999 16953 49380 26580 504579 26133 52713 79440 584019 66815 146255 58612 642631 40910 99522 49848 692479 26420 76268 8628 701107 13807 22435 62165 763272 64070 126235 79549 842821 57703 137252 125488 968309 56998 182486 39701 1008010 17311 57012 23839 1031849 26124 49963 13487 1045336 63836 77323 87554 1132890 82014 169566 30497 1163387 58059	Burnt area Affor reaff Forest cumulated Scrubs TOTAL annual annual cumulated 181272 354487 354487 162562 517049 63649 418136 26148 89797 17920 27436 445572 12121 39557 19785 32427 477999 16953 49380 18742 26580 504579 26133 52713 20829 79440 584019 66815 146255 18278 58612 642631 40910 99522 24882 49848 692479 26420 76268 22936 8628 701107 13807 22435 21183 62165 763272 64070 126235 17410 79549 842821 57703 137252 20888 125488 968309 56998 182486 17575 39701 1008010 17311 57012 21803	

Table 4. Areas of forest fires, afforestation and reafforestation in Continental Portugal since 1968 (ha).

Source: DGF for burnt area; tables 6 and 7 for afforestation and reafforestation

Years	Final For	est Product	GDP deflator (basis 1995)	(2)/(3)
	Volume index	Implicit price index		
	1	2	3	4
1980	100	100	11.8	8.47
1981	73.39	124.21	13.9	8.94
1982	75.59	134.53	16.8	8.01
1983	80.07	145.54	20.9	6.96
1984	88.55	175.42	26.1	6.72
1985	91.15	228.83	31.8	7.20
1986	92.68	248.95	43.8	5.68
1987	95.29	288.14	48.2	5.98
1988	92.43	326.31	53.6	6.09
1989	114.83	325.45	60.1	5.42
1990	101.82	408.22	67.6	6.04
1991	100.69	368.69	75.8	4.86
1992	93.07	347.23	83.9	4.14
1993	86.92	414.51	89.8	4.62
1994	78.05	513.71	95.2	5.40
1995	87.70	478.64	100.0	4.79
1996	83.51	567.41	103.1	5.50
1997	74.39	638.62	105.9	6.03
1998	84.50	733.61	110.2	6.66
1999	78.11	873.23	113.7	7.68

Table 5. Volume and price indices of the Final Forest Product.

Sources: (1) and (2): own estimation (Mendes 2001); (3): 1970–1998: Fondo Monetario Internacional (2000), Estadísticas Financieras Internacionales: Anuario; 1999: Banco de Portugal (2000), Relatório do Conselho de Administração.

5. The main programmes of financial incentives to private forestry in the 1980s and 1990s

As said before, the main front of forest policy in Portugal since the 1930s, that is, the afforestation of communal lands in the Northern and Central regions, was coming to an end in 1974, when the dictatorial regime finished its days. While this engagement in communal forests was declining, the Forest Services made some moves towards the support of private forestry with the creation of the Forestry Development Fund (*"Fundo de Fomento Florestal"* – FFF), a public forest service initiated in 1966 for that purpose. The action of this agency, however, was not enough to respond to the needs of the forest industries, especially the pulp and paper industry. This lead the forest policy makers to the first major programme of public intervention in private forestry since the Forest Services creation in the 19th century. That was the so-called "Portuguese Forest Project" (PFP) funded by the World Bank which was implemented from 1981 to 1988.

After this came a new external source of funds open to the funding of forest programmes, more precisely the EEC pre-accession funds. It was with this money that the next major programme of public intervention in private forestry was funded. That was the so-called "Forest Action Programme" (PAF, in the Portuguese initials) which was implemented from 1987 to 1995.

The third generation of public interventions in private forestry came when Portugal was already a full member of the EU, eligible for support from the structural funds and other EU financial means. It was with this money that were funded the two main forest programmes which were in action from 1994 to 1999:

- the "Forest Development Plan" (PDF, in the Portuguese initials);
- Regulation (EEC) 2080/92, this one continuing beyond 1999.

The area of (re)afforestation and stand improvements financed by these programmes are presented in Tables 6 and 7 taken from the contribution of Mendes to the CESE report (CESE 1996), updated with more recent data.

	Total		PPF	Forest S	ervices
Years	Area	Dunes	Commun	al forests	FFF
until 38	38 318	17 345	20 973		0
Total 39/65	249 348	8 255	241 093		0
1966/80	181 272	0	55 828	10 627	114 817
Total	468 938	25 600	317 894	10 627	114 817

Table 6. (Re)afforestation and stand improvements financed by public programmes until 1981 (ha).

Source: DGF

6. The Portuguese Forest Project

6.1 Context and procedural characteristics of the forest policy process

The Portuguese Forest Project (PFP) was prepared in a time when the country was coming out from the peaceful revolution of 1974 which had overthrown a long lasting dictatorial regime. On the economic side, this political change combined with the 1974 "oil chock" brought about serious macroeconomic problems, namely large and increasing government budget and current account deficits from 1974 to 1980 which lead to a stabilization programme supported by an agreement signed with the International Monetary Fund. This helped to reverse the worsening in the macroeconomic situation, but, in 1982–84, the same type of problems happened again which lead to another stabilization programme supported by the International Monetary Fund covering the period from October 1983 to February 1985.

In the first years after the Revolution the decades of right wing economic interventionism were replaced by left wing interventionism. When the PFP was prepared and implemented the traces of this traditions were still very string in the economy and in the public administration.

Another outcome of the 1974 Revolution was the occupation of the large farms in Southern Portugal by landless farm workers which took the cork oak forests away from the control of their former owners for some time until they got their land back in the 1980s.

Finally it is worth mentioning another outcome of the 1974 which was the nationalisation of many private companies, including some pulp and paper companies which were consolidated in one group called PORTUCEL.

Concerning the Forest Services, except for some changes in the personnel at the top ranks of the agency, their basic structure inherited from the old political regime was not changed. For 20 years after the 1974 Revolution, they remained a centrally managed and specialised directorate general in the Ministry of Agriculture, controlled by professional foresters who knew each other well, since they all came from the single school of forestry existing in the country until the late 1970s. The regional and the local levels were hierarchically dependent

Years	TC	TAL	FFF	PI	FP	F	PAF	Reg.	797/85	Reg. 20	80/92**		PDF**	
	Affor. & Reaffor.	Stand impr.		Forest Services	PORTU- CEL	Affor.	Stand impr.	Affor.	Stand impr.	Affor.	Stand impr.	Affor.	Stand impr.	Reaffor.
1981	17920	0	8979	1441	7500*									
1982	19785	0	2837	9448	7500*									
1983	18742	0	301	10941	7500*									
1984	20829	0		13329	7500*									
1985	18278	0		10778	7500*									
1986	24882	0		17382	7500*									
1987	22936	13435		7390	7500*	8046	13435							
1988	21183	30719		1199	7500*	12484	30719							
1989	17410	52156				17410	52156							
1990	20888	41511				20888	41511							
1991	17575	20254				15320	19644	2255	610					
1992	21803	24197				16906	21948	4897	2249					
1993	17193	12306				11312	9995	5881	2311					
1994	34390	72640				6054	11480			20171.3	1993.9	4199.62	24776.18	3965.11
1995	69546	130118				5138	7106			40318.6	2279.3	13652.06	51186.57	10437.8
1996	23472	37100								18981.3	985.1	2889.17	12642.52	1601.42
1997	39588	69357								30087.1	577.8	6150.02	29190.29	3351.37
1998	34691	65877								24861.7	293.9	4324.71	30892.07	5504.4
1999	38294	52819								30599.6	720.3	2040.68	13804.5	5653.75
TOTAL	499405	622489	12117	71908	60000	113558	207994	13033	5170	165019.6	6850.3	33256.26	162492.1	30513.85

Table 7. (Re)afforestation and stand improvements financed by public incentive schemes since 1981 (ha).

Sources: data collected from DGF and IFADAP

* annual average ** projects approved for funding; included those that were cancelled later

on the Director General the Forests and their geographic organisation was structured in view of the management of the public and communal forests. After the golden days of the afforestation of the commons, the Forest Services in the 1970s and 1980s were suffering from an ageing of human and material resources in many parts of their structure. This fact together with the profile of the personnel of these services described before might have contributed for some institutional inertia to which we will come back later.

With this type of Forest Services, and in a situation where the pulp and paper companies were the most organised stakeholder in the forest sector, the NIPFOs were lacking collective organisation and the environmental groups were still weak, it is no surprise that the forest policy process had the following characteristics¹:

- technocratic and central agency driven process;
- without participatory and intersectoral coordination mechanisms;
- with some corporatist leaning towards the needs of the pulp and paper companies.

It is also no surprise that such type of policy process had as an output a programme with the following characteristics:

- fixed targets;
- strong reliance on instruments appealing to direct public interventionism;
- weak reliance on the private sector (except the pulp and paper company) for implementation.

6.2 Forest policy outputs: measures funded and beneficiaries

The major objective of this programme was to overcome a projected shortfall in timber supply to the export oriented pine-based and pulp and paper industries through the establishment of commercial forest plantations of conifers and eucalyptus, especially in Northern and Central Portugal where there was more under-utilised potential for these species. So the programme did not cover the cork oak forests in the South (Alentejo) which, by that time, were still mostly in the hands of farm workers' co-operatives resulting from the occupations of the large farms after the 1974 Revolution.

Planned and implemented in a period of the Portuguese political history marked by strong public interventionism in the economy, this programme, like the previous ones, is still one where the state played a direct role in afforestation. More precisely the main direct agents in the implementation of this programme were two state controlled agencies: the Forest Services and the nationalised pulp and paper company (PORTUCEL).

The Forest Services assumed the direct responsibility for preparing and implementing the afforestation projects in two types of lands:

a) in the public and communal lands under the management of those services; and

- b) in the lands of NIPFOs willing to accept afforestation under the following conditions:
 - all the technical responsibility and almost all the funding of the investment costs were was on the shoulders of the Forest Services;
 - the landowners had to commit themselves to keep their lands in this kind of use and manage the new plantations appropriately;
 - the public funding of the investment costs was a loan which had to be paid back by the forest owner with 40% of the revenues from the fellings of the new plantations when they come to age, until the total amortisation of the loan, for no more than 60 years.

¹ For a theoretical perspective on this and other types of approaches to policy planning see Mendes (2000c).

The programme also provided a loan to PORTUCEL for afforestation of the lands already owned by company, or in new lands bought or leased in for this purpose.

There were also funds available to support the creation of cooperatives of private forest owners and for the organisation of a public forest extension service within the structure of the Forest Services. We should remember that since their creation in the 19th century, these services lived most of their life focused on the management of public or communal forests leaving without enough technical support the three fourths the forest lands in the hands of NIPFOs.

6.3 Forest policy outcomes: implementation analysis

Comparing with previous programmes, the PFP represents an increase in the annual average of afforestation supported by public intervention:

- from 1939 until 1965 the average was 9235 ha per year;
- from 1966 until 1980 the average was 12085 ha per year;
- with PFP the average rose to 16489 ha.

Table 8. Targets and outcomes of the Portuguese Forest Project.

	Targets	Outcomes
Time horizon Afforestation (ha)	1980/85	1981/88
 By the Forest Services total area conifers eucalyptus other broadleaves natural regeneration 	90000 60500 16000 13500	71908 50026 8429 7886 5586
 2. By PORTUCEL (pulp and paper company) - total area - conifers - eucalyptus 	60000 30500 29500	60000 n. a. n. a.
Creation of a forest extension service	Х	nothing was done
Credit for co-operatives of forest owners	Х	nothing was done

Let us compare now the outcomes of PFP with the targets initially set for the programme. The targets for PORTUCEL were fully accomplished. Concerning the Forest Services, there were large implementation failures:

- afforestation: from the 90 000 ha the Forest Services were supposed to plant, only 71 908 ha were established, even after extending the project horizon for three years;
- creation of a forest extension service: nothing was accomplished;
- support for the creation of co-operatives of forest owners: nothing was accomplished.

The data available are not detailed enough to identify in which type of ownership category was the intervention of the Forest Services more important. However, based on the data in Tables 8 and 9, it seems a plausible hypothesis that most of the afforestation done by the

Regions	Con Number	nmunal for	rests	Pr Number	ivate fores	Total		
	of projects	ha	%	of projects	ha	%	ha	%
Northwest	129	21 778	27.9	197	6 297	12.2	28 075	21.6
Northeast	212	38 442	49.3	63	4 153	8.1	42 595	32.8
North	341	60 220	77.3	260	10 450	20.2	70 670	54.5
Central West	124	12 488	16.0	191	4 993	9.6	17 481	13.5
Central East	34	4 954	6.4	147	14 965	28.9	19 919	15.4
Ribatejo-Oeste	e 1	270	0.4	155	9 503	18.3	9 773	7.5
Alentejo	0	0	0.0	281	10 455	20.2	10 455	8.1
Algarve	0	0	0.0	15	f1 451	2.8	1 451	1.1
TOTAL	500	77 932	100.0	1 049	51 817	100.0	129 749	100.0

Table 9. Distribution by region and ownership category of the afforestation funded by PFP

Source: Louro (1988)

Forest Services was on the commons of Northern and Central Portugal and not on the lands of NIPFOs. The afforestation in this kind of lands was done mostly by PORTUCEL either by leasing in or by buying lands from these owners.

If this hypothesis is true, as far as the action of the Forest Services is concerned, the PFP was not a radical change in afforestation policy compared to the policy implemented since the 1930s. It was actually an incremental change in the continuation of the afforestation of communal lands by the Forest Services, with a new source of funds (World Bank loan instead of state budget). This means that the Forest Services stayed mostly in their familiar places (communal lands), and did not make substantial moves towards the NIPFOs either by relying on their private initiative and providing them financial incentives for afforestation, or by providing indirect measures such as extension services and capacity building (co-operatives).

Still as an hypothesis, we propose two contributing factors to explain these implementation failures:

- institutional inertia in the Forest Services making difficult the reconversion from decades of direct state interventionism to a posture of facilitating the private initiative;
- substantial differences, from the point of view of the NIPFOs, between the incentives
 provided by the type of afforestation under the responsibility of the Forest Services and the
 one under the responsibility of PORTUCEL.

Institutional inertia seems a plausible hypothesis given the fact that the Forest Services, since their beginnings in the 19th century, focused most of their activity on the public and communal forests. Most of the foresters working in those services at the time this programme was conceived and implemented were educated in that type of activity. Also in many segments of the Forest Services, there was an ageing of the human and material resources preventing a more active posture to reach out to the large and dispersed mass of NIPFOs. This type of factor is an example of "path dependence" and "lock in" effects in policy making and implementation: policies are not independent from their "initial conditions".

The main differences we see in the types of incentives for the NIPFOs embodied in the afforestation done by the Forest Services and by PORTUCEL are the following:

 a) by opting in for a Forest Services project, a NIPFO not only does not receive any cash, but also might have to spend some money to pay part of the forest investment costs which is not the case if he sells or leases out his land to PORTUCEL;

- b) by opting in for a Forest Services project, a NIPFO puts himself under the burden of a debt that him or his successors have to pay back, which is not the case if he sells or leases out his land to PORTUCEL;
- c) by opting for a Forest Services project, a NIPFO locks in his land in one type of use which has the following inconveniences:
 - it is a use of very long duration;
 - the potential benefit may not go to the current land owner (he might be dead when the plantations come to age);
 - it is subject to high risks (many of the plantations were with maritime pine, a species very vulnerable to forest fire) beyond the control of the land owner;
 - in order to catch the benefits from the forest investment the owner has to incur in forest management costs which are high and not supported by public incentives;
 - by locking in his land to this type of use, the land owner might forego potentially more profitable alternative uses (urbanisation, for example);
- d) if the forest owner prefers to put his land under a long term lease to PORTUCEL the land use is also frozen for a long time, but, at least here, he gets the compensation of an annual cash rent, with no cost of maintenance of his property.

So with this type of incentive structure, it is not a surprise to see the NIFPOs behaving in the following manner:

- for many of them it was not individually rational to opt in for the programme, that is, they were better off staying out given the type of reasons we mentioned before;
- for those who opted in, there were many cases where they didn't behave in a manner compatible with the targets of the programme by not fully complying with the duties attached to this option.

We still lack a good empirical study about what remains today of these Forest Services afforestation projects in private lands, but we know about many stories of failures on those that were implemented (destruction by fire, lack of proper maintenance, etc.) and we ear complaints from these forest owners about their disfavoured position compared to the situation of those who opted for the programmes that came after the PFP.

7. The Forest Action Programme

7.1 Context and procedural characteristics of the forest policy process

The Forest Action Programme (PAF) came in a different political and social environment than the PFP:

- the country was going to become a member of the EEC in 1986 and therefore was eligible for financial support from the structural funds even before that date, through the pre-accession funds;
- while the industrial demands behind the PFP were still very important, new demands were emerging in the Portuguese society, namely the environmentalist pressure against fast growing species and the rise of land use planning regulations where the municipalities became major stakeholders, with an agenda not always compatible with the interests of forest owners and forest industries;
- as the problem of forest fires was getting worse and environmental awareness was rising, the type of projects supported by the PFP, that is, afforestation based on monospecific

plantations almost exclusively oriented for timber production, was getting more and more criticisms;

- the large farms in the South were in the process of being returned to their former owners who, in many cases, were willing to make improvements in their cork oak forests which were left aside in the PFP;
- in this changing environment more attention was called for afforestation with broadleaves (fast growing species excluded) and for stand improvement;
- on the political and economic fronts, direct state interventionism was definitely regressing with privatizations of nationalized companies and a growing appeal to the initiative of the private sector.

In a context of mounting criticisms to the past action of the Forest Services, new social demands to the forest sector on the rise, and a changing economic and political environment more prone to the private initiative, those with responsibilities in the Forest Services were not able to carry on institutional changes capable of adjusting successfully to this new situation.

During the period through which this programme was prepared and implemented there was no major institutional change in the Forest Services which remained the major public agency for forest policy planning and implementation. The main change was the liquidation of Forest Products Institute (Instituto dos Produtos Florestais – IPF) which had resulted from the consolidation of public agencies existing before the 1974 revolution for the state regulation of the domestic and foreign trade of forest products. This institute was funded by a tax paid by the forest industries suppressed, in a obscure way, during the negotiations of the 1988 state budget in the parliament, due to lobbying of some of these industries. With the extinction of this institute was lost, without proper substitute, what had been, for some decades, the better source of statistical and economic data on the Portuguese forest sector. This loss still waits to be fixed.

Loosing confidence on their own capacities and loosing sight of their public responsibilities in building capacity for the development of the initiative of NIPFOs, the Forest Services turned from a posture of "technocratic and direct interventionism" to one of "incentive-based regulation" (Mendes 2000c) with provision of attractive subsidies paid with EEC cheap money, and reliance on the private sector (NIPFOs and forest contractors) for implementation. This policy turn raises the issue of the transaction costs faced by the NIPFOs when applying for these public incentives. These costs are different among these owners. The Forest Services could have had an active role in lowering these costs especially with those NIPFOs for whom they were relatively higher. As we will see, the Forest Services were very passive in this matter.

7.2 Forest policy outputs: measures funded and beneficiaries

Looking back at the implementation failures of their own direct interventionism in a recent past, the Forest Services switched almost 180° and decided to entrust most of their hopes in the private initiative of forest contractors and forest owners. To do so they thought they had a powerful instrument which was the cheap money coming in from the EEC. So they formatted a programme which introduced major changes compared to the PFP:

- instead of loans to be repaid with the revenue from fellings, the financial incentives to forest owners turned to be grants varying between 30 and 100 % of the total investment cost;
- the favourable treatment given to eucalyptus plantations in the PFP suffered drastic reductions and finally was suppressed, which was accompanied with new regulations restricting these plantations;
- the most favourable treatment turned to other broadleaves, including the cork oak forests, with some attempts to promote multiple use forestry (grazing and agro-forestry, etc.);
- stand improvement which was almost left out from the PFP, became a major target for financial incentives to forestry.

With this type of incentives, the pulp and paper companies and other stakeholders interested in expanding eucalyptus plantations could not count any more on public financial incentives. With the pulp and paper companies almost out from the benefit of this programme, we didn't see the other two main segments of the Portuguese forest industries (wood based and cork industries) to come in. So the main stakeholders of this programme in the private sector were the NIPFOs and the forest contractors.

The Forest Services remained as an agent directly eligible for public funds, in case they presented projects for public or communal forests, these being the type of projects with the most favourable incentives provided by this programme.

So compared with previous programmes, the major innovation in terms of stakeholders brought about by this programme was the development of a private business of forest contractors. We still lack an empirical study about the implementation of PAF, but from what we could observe so far on this matter, it is a plausible hypothesis that this network of contractors played a major role in stimulating and assisting the NIFPOs who applied for the public incentives provided by PAF.

Again, like in the PFP, there were funds available in the PAF for the organisation of forest extension services which could have had an important role in lowering the transactions costs faced by the NIPFOs when applying for these incentives. This would have contributed to raise the number of the NIPFOs interested in the programme. However, as we will see in a short while, such role was not played by the Forest Services and might have been played mostly by the forest contractors.

7.3 Forest policy outcomes: implementation analysis

To the credit of PAF, compared with the PFP, is the fact the annual average of afforestation and stand improvement supported by public financial incentives more than doubled, rising from 16 489 ha to 36 068 ha. Stronger reliance on the private sector for implementation in a country where 76.6 % of the forest are in the hands of NIPFOs, together with a more attractive profile of financial incentives might have been important factors contributing to this policy outcome.

This positive note should not deviate our attention from large implementation failures in all the main components of this programme:

- for a target of 400 000 ha of afforestation, only 113 561 ha were planted;
- for a target of 400 000 ha of stand improvement, only 211 054 ha were improved;
- for a target of 100 000 ha of grazing lands in forests nothing was accomplished;
- nothing was done to set up a forest extension services and to organize associations of forest owners, as was initially planned.

We will come back to the plausible reasons for these failures. For the moment let us look at the outcomes of the programme.

Looking first at the types of beneficiaries, 70.2 % of the total investment supported by PAF was for private forestry. From the remaining 29.8 %, more than half was for public projects in the North which were almost entirely in communal lands. These projects, however, represented only 17.4 % of the total investment supported by PAF which is much lower than what happened in the PFP. So with PAF, the direct engagement of the Forest Services in

	Table 10). Targets	and o	outcomes	of PAF.
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	Targets	Outcomes
Time horizon	1987/94	1987/95
Afforestation (ha)	400 000	113 561
Improvement of existing stands (ha)	400 000	211 054
Establishment of grazing areas (ha)	100 000	0
Forest roads (km)	7 700	6 690
Divisional roads (km)	3 400	2 903
Dams	400	1 053
Forest extension services	Х	nothing was done
Total cost of the programme in 1000 escudos	62 939 400	32 553 020
- Private projects		22 214 235
- Public projects		10 338 785

Source: DGF

 Table 11. Distribution by region and ownership category of the total investment funded by PAF

Regions		Public projects			Private projects	
C	Number of projects	1000 escudos	%	Number of projects	1000 escudos	%
Northwest	88	2 335 368	31.6	183	1 228 478	7.1
Northeast	120	1 977 833	26.7	166	3 761 323	21.6
North	208	4 313 201	58.3	349	4 989 801	28.9
Central West	125	1 657 909	22.4	181	1 115 790	6.4
Central East	24	623 791	8.4	215	3 460 266	19.9
Ribatejo Oeste	26	340 268	4.6	303	1 876 481	10.8
Alentejo	20	249 756	3.4	437	3 046 302	17.5
Algarve	5	214 978	2.9	246	2 909 979	16.7
TOTAL	408	7 399 903	100.0	1 731	17 398 619	100.0

Source: IFADAP

communal forests was regressing. Also in most of the projects in private forests supported by PAF there was neither the direct intervention of the Forest Services, nor the direct investment of the forest industries (pulp and paper or other). So it is here that comes in our hypothesis about the major role played by forest contractors, since most of the NIPFOs are not large enough to plan and implement forest projects on their own.

Looking now in more detail to what types of NIPFOs might have been more active in opting in for this programme, the data available are insufficient to give a clear answer, since only indirect evidence is provided on this subject. These data are about the distributions by regions and by tree species of the areas of new or improved forests supported by the programme. What these distributions show us compared to the PFP is the following:

- while with PFP 54.5 % of the plantings were in the North, with PAF the percentage of the North in afforestation and stand improvement fell to 21.3 %;
- the Central region also lost ground;
- the region which was on the rise was Alentejo;

Regions	PFP		gions PFP PAF					
			Affores	tation	Stand imp	rovement	To	otal
	ha	%	ha	%	ha	%	ha	%
North	70 670	54.5	40 443	35.6	28 671	13.6	69 114	21.3
Centre	37 400	28.8	29 137	25.7	33 395	15.8	62 532	19.3
Lisbon &	9 773	7.5	13 137	11.6	43 823	20.8	56 960	17.6
Tejo Valley								
Alentejo	10 455	8.1	13 861	12.2	88 395	41.9	102 256	31.5
Algarve	1 451	1.1	16 984	15.0	16 720	7.9	33 704	10.4
TOTAL	129 749	100.0	113 561	100.0	211 054	100.0	324 615	100.0

Table 12. Regional distribution of the plantings and stand improvements funded by PFP and PAF

Source: Instituto Florestal

Table 13. Tree species composition of the plantings and stand improvements funded by PFP and PAF

PFP			PAF					
Species			Affores	tation	Stand imp	rovement	To	tal
_	ha	%	ha	%	ha	%	ha	%
Maritime pine	65 083	49.9	46 938	41.3	63 180	29.9	110 118	33.9
Eucalyptus	37 929	28.8	10 375	9.1	5 107	2.4	15 482	4.8
Cork oak	1 809	1.4	22 307	19.6	94 534	44.8	116 841	36.0
Others	27 087	20.5	33 941	29.9	48 233	22.9	82 174	25.3
TOTAL	131 908	100.0	113 561	100.0	211 054	100.0	324 615	100.0

Source: Instituto Florestal

• this regional shift is consistent with what happened in the tree species distribution, where the maritime pine (the dominant species in Northern and Central Portugal) fell from 49.9% in the PFP to 33.9% in the PAF, and cork oak (the dominant tree in Alentejo) rose from 1.4% in the PFP to 36.0% in the PAF.

These data are enough to state, as a plausible hypothesis, that with PAF, there was a major shift in the beneficiaries of the public incentives compared to the PFP, the forest owners in Alentejo gaining ground and the forest owners in Northern and Central Portugal loosing their dominant position in this matter. In terms of species, cork oak and other long rotation broadleaves emerged as the main beneficiaries of public support instead of eucalyptus and maritime pine. This is an expected outcome, given the profile of private forest ownership distribution (small scale forestry predominant in Northern and Central Portugal; large scale agro-forestry predominant in Alentejo), the lack of collective organisation of NIPFOs in the regions of small scale forestry and the total inaction of the Forest Services during the PFP and the PAF to promote this kind of capacity building, in spite of the funds available for this purpose.

This should not be taken as a criticism to the NIPFOs in Alentejo who did their best to apply for the public incentives available in the PAF. It is simply an attempt to explain why things happen the way they did. Also the revival of the cork oak forests in Alentejo is certainly an welcome result of this programme after almost fifty years of stagnation and even degradation of what is still the forest product where Portugal has the leading position in the world, but where shortness in supply is creating increasing problems to the industry. Let is move now to the analysis of the large implementation failures which happened in this programme. Still as hypotheses that should be submitted to empirical testing, we propose the following list of factors for those failures:

- optimism in target setting;
- institutional inertia on the side of the Forest Services;
- absence of what had been so far the main private direct investor in forestry (the pulp and paper companies);
- government budget constraints.

Concerning the first factor in the list, it is an obvious one if we consider the following facts:

- the recent experience with the PFP was an average of 16 489 ha of afforestation per year;
- for the PAF the target was set at 100 000 ha of afforestation and stand improvement per year;
- on the top of these irrealistic targets, given the recent experience in the country in this matter, was also the fact that in the PAF compared to the PFP, the major and best organised private investor in forestry (pulp and paper industry) was practically out.

A great deal of this irrealistic optimism can still be imputed to a technocratic approach to policy planning which was the dominant characteristic of the policy process leading to the PFP. As explained by one of us in another paper (Mendes 2000c), this type of approach does not care very much about the implementability constraints (individual rationality and incentive compatibility constraints) faced by public policy in private economies.

We talked already before about the institutional inertia on the side of the Forest Services, but we want to add some further remarks on this topic:

- so large mistakes in target setting as the ones we have just mentioned are a sign of serious weaknesses in the policy planning capabilities of the Forest Services;
- in a time where the political an economic winds were turning to the side of private business, the Forest Services overestimated the attractiveness of the new financial incentives and the initiative of NIPFOs;
- the Forest Services also easily forgot or were unable to carry on their responsibilities in the implementation of indirect measures to support the collective organisation of NIPFOs.

Coming now to the last factor in the list, it is often credited as having been the main reason for the implementation failures which happened in the PAF, forgetting the role of the other factors that we have just mentioned. The government financial constraints contributed to the implementation failures because they prevented the country from supplying all the public money needed to match the EEC funds available. If this is true, it is probably also true that with weak forest policy planning and implementation structures, there was not enough strength on the side of the forest institutions to claim for the money needed to match all the EEC funds that were available.

8. Regulation (EEC) 2080/92 and the Forest Development Plan

8.1 Forest policy outputs: measures funded and beneficiaries

Regulation (EEC) 2080/92 is a EU policy measure not specific to Portugal. It supports the afforestation of agricultural lands with the initial purpose of reducing farm surpluses. The PDF, on the other hand, was a programme specific to Portugal, financed by the EU structural funds within the Common Support Framework for the period 1994/99.

One feature common to these two programmes is the fact that they pursued the orientation started with PAF towards a stronger reliance on the private sector for implementation and the provision of financial incentives taking the form of grants.

With Reg. 2080/92 cork oak in the south is getting much more support than in previous afforestation programmes. Reg. 2080/92 also introduced a very attractive financial incentive which did not exist before: a prime to compensate the loss of agricultural income for 20 years.

This PDF supported the following types of actions:

- afforestation;
- stand improvement and reafforestation, including the forests damaged by fires less than 5 years ago;
- maintenance costs of the plantations for 5 years after the first restocking;
- installation and amelioration of forest nurseries;
- selection and production of good quality seeds and seedlings;
- construction and amelioration of forest roads and water reservoirs;
- multiple use of forest lands (grazing, apiculture, gaming, aromatic and medicinal plants, etc.).

This programme also had the following features:

- it favoured grouped projects consisting of, at least, 5 contiguous, forest holdings;
- it did not support plantations with fast growing species.

PDF pursued the orientations initiated with PAF, taking new steps further:

- financial support for forest nurseries;
- stronger support for multiple use of forest lands;
- financial support for maintenance costs for 5 years after the first restocking;
- tighter restrictions for eucalyptus plantations and other fast growing species;
- more incentives for other broadleaves.

8.2 Forest policy outcomes: implementation analysis

Starting with a positive tone, taking PDF together with Regulation 2080/92 and comparing with PAF, the annual average of afforestation and stand improvement supported by public incentives rose from 36 068 ha to 60 905 ha. Adding to this, we should say that by the end of the Second Common Support Framework, there was an overbooking of applications which could not be funded by the PDF and had to wait almost two years for the Third Common Support Framework started in 2001. In one hand, this overbooking denotes the implementation problems that can arise when public incentives rely so heavily in external sources of funds. On the other hand, this denotes an increasing capacity on the side of the NIPFOs and forest contractors to organise themselves in order to carry on forest investment and management plans, if public funds are available to support their own effort.

Concerning this capacity building in private forestry, there is an important event to point out about what happened in the 90s, even though the space is now to short to make a more extended analysis of this fact. We are referring to the emergence of the forest owners' associations. In 1977 there were 19 associations of this kind. In 1998 the number rose to 67 and by the end of 1999 there were 110. Their start up benefited from some EU co-funded programmes included in the Second Common Support Framework:

• financial support for most of the investment and operating costs was provided by one programme aimed at agricultural organizations, but not specifically tailored to forest owners' associations;

· convergence of NIPFOs to membership in these kind of associations was stimulated by the PDF and Regulation 2080/92 because forest owners need technical advice to apply for these programmes.

With few exceptions, these associations did not yet come to an age at which they can make a substantial difference in forest management in their territories. So, for now, what is safe to say is that they represent an important qualitative change in the right direction: in a country where 76.6% of the forest land is the hands of NIPFOs the majority of whom own small holdings, substantial improvements in forest management need some form of collective organisation like this.

Searching now for the profiles of the main beneficiaries of PDF and Regulation 2080/92, we come to similar hypotheses as for PAF. More exactly, PDF and Regulation 2080/92 reinforced the policy shift initiated with PAF with much less support for eucalyptus and maritime pine plantations, and much more support for cork oak and other long rotation broadleaves. This shift had the same regional effects has the ones we mentioned about the PAF, that is, the Northern and Central regions lost ground in the public support compared to Alentejo.

Regions	PAF		PDF*	:	Reg. 2080/92	
	1000 esc.	%	1000 esc	%	1000 esc.	%
Northwest	5 102 294	15.6	3 493 807	12.5	509 349	1.5
Northeast	7 342 143	22.6	3 182 961	11.3	7 856 600	23.3
North	12 444 437	38.2	6 676 768	23.8	8 365 949	24.8
Central West	3 664 463	11.3	3 388 810	12.1	201 395	0.6
Central East	5 102 701	15.7	5 899 183	21.0	3 888 479	11.5
Ribatejo Oeste	3 004 529	9.2	5 146 932	18.3	2 063 833	6.1
Alentejo	4 349 086	13.4	4 176 548	14.9	14 582 730	43.3
Algarve	3 987 802	12.3	2 766 117	9.9	4 583 771	13.6
TOTAL	32 553 020	100.0	28 054 358	100.0	33 686 157	100.0

Table 14. Regional distribution of the investment funded by PAF, PDF and Reg. 2080/92.

Sources: data collected from Instituto Florestal and IFADAP

excludes the projects cancelled until 15/11/2001; includes all types of projects financed by PDF (afforestation, reafforestation, stand improvement, nurseries, forest research and planning)

Tree species	PAF		PDF	7*	Reg. 2080***	
	ha	%	ha	%	ha	%
Maritime pine	46 938	41.3	97 970**	43.3	5 539	3.5
Pinus pinea	n.a.	n.a.	12 855	5.7	29 474	18.7
Eucalyptus	10 375	9.1	4 972	2.2	282	0.2
Cork oak	22 307	19.6	81 682**	36.1	65 596	41.6
Holm oak	n.a.	n.a.	6 950	3.1	26 061	16.5
Chestnut	4 625	4.1	2 875	1.2	8 1 3 0	5.2
Carob	n.a.	n.a.	309	0.1	2 141	1.3
Others	29 316	25.8	18 649	8.2	20 366	12.9
TOTAL	113 561	100.0	226 262	100.0	157 589	100.0

Table 15. Tree species composition of the plantings and stand improvements funded by PAF, PDF and Reg. 2080/92.

Sources: data collected from Instituto Florestal and IFADAP * refers to all the projects approved for funding, including those that later have been cancelled ** includes monospecific and mixed stands *** refers to the projects approved until 31/8/99.

Table 16. Area of the projects funded by Reg. 2080/92.

Regions	Arable land afforested		Stand impr	ovement
0	ha	%	ha	%
Northwest	1719.54	1.0	62.56	0.9
Northeast	31375.2	19.0	321.1	4.7
Central West	955.6	0.6	12.9	0.2
Central East	21378.4	13.0	642.8	9.4
Ribatejo Oeste	10190.9	6.2	3074.7	44.9
Alentejo	76997.2	46.7	2480.0	36.2
Algarve	22402.7	13.6	256.2	3.7
TOTAL	165019.6	100.0	6850.3	100.0

Source: data collected from IFADAP

Table 17. Area of the projects financed by PDF.*

Regions	Affor	estation	Reafforestation of burnt forests		Reafforestation of other land		Stand improvement	
	ha	%	ha	%	На	%	ha	%
Northwest	661	14.9	3112	17.3	754	6.5	10340	6.5
Northeast	344	7.7	1052	5.9	339	2.9	6612	4.1
Central West	672	15.1	3576	19.9	1067	9.2	21598	13.5
Central East	732	16.5	6509	36.2	2688	23.3	27752	17.4
Ribatejo Oeste	717	16.1	3093	17.2	3619	31.4	37389	23.4
Alentejo	758	17.1	267	1.5	2865	24.8	43628	27.3
Algarve	562	12.6	352	2.0	210	1.8	12386	7.8
TOTAL	4445	100.0	17969	100.0	11541	100.0	159605	100.0

Source: data collected from IFADAP * does not include the projects cancelled until 15/11/2001

9. Final remarks

As final remarks about all these programmes, we would like to point out the following facts:

- looking at public support to afforestation and stand improvement in Portugal in the long run, we see that it has increased throughout the XXth century (9235 ha per year from 1939 to 1965, 12 085 ha per year from 1966 to 1980, 16 489 ha per year with PFP, 36 068 ha per year with PDF and 60 905 ha per year with PDF and Regulation 2080/92);
- besides this quantitative trends, there is also a qualitative change in the right direction with an increasing focus in the improvement of private forestry which represents the large majority of Portuguese forests;
- these trends, however, have not been enough to compensate for the damage caused every year by forest fires (680 677 ha of afforestation and reafforestation from 1966 to 1999 against 126 3298 ha of forests burnt between 1968 and 1999) and for supplying the forest industries at levels they claim to be necessary to maintain and improve their competitiveness.

The last remark is about one thing that the programmes covered in this paper have in common: all of them relied very heavily on external sources of funds matched by public domestic funds subject to the annual bargaining about the government budget. This implies that financial incentives to forestry have been very vulnerable to external negotiations and internal political bargaining. It also implies that public financial incentives to forestry in Portugal have not been based, up to now, on sustainable sources of funds: loans from the World Bank could not continue forever and transfers of structural funds to Portugal will not continue forever at their current levels. Since, with very few exceptions, private investment in forestry will not happen without generous public support, the main challenge that lies ahead for the Portuguese forest sector, forest industries included², is to build up sustainable sources of funds for that kind of support which means, among other things, funds less reliant on external sources. This looks like an enormous challenge given the current problems in Portuguese public finances which call for less and not for more public expenditure. So if this challenge is to be seriously faced, a solution should be found without adding to the deficit in the government budget³.

References

- Banco Português de Investimento; Agro-Ges; Jaakko Pöyry. 1996. Proposta para o Desenvolvimento Sustentável da Floresta Portuguesa. Lisbon. (mimeo)
- CESE 1996. O Sector Florestal Português. [Lisbon]: CESE-Conselho Para a Cooperação Ensino Superior-Empresa. (mimeo).
- Direcção Geral das Florestas Divisão de Estudos. 1991. Perfil Florestal Portugal (mimeo).
- Direcção Geral das Florestas. 2001. Inventário Florestal Nacional. Portugal Continental. 3.ª Revisão, 1995–1998. Relatório Final. Lisbon: Direcção Geral das Florestas.
- Instituto Nacional de Estatística. 1997. A floresta nas explorações agrícolas 1995. Lisbon: Instituto Nacional de Estatística.
- Instituto Nacional de Estatística. 1998. Estatísticas Agrícolas 1997. Lisbon: Instituto Nacional de Estatística. Louro, Victor. 1988. Projecto Florestal Português Banco Mundial. Relatório Final de Execução (Referido a
- 87.12.31). Lisbon: Direcção Geral das Florestas-Direcção de Serviços de Fomento Florestal e Silvopastorícia. Mendes, Américo M. S. Carvalho. 1997. Uma sugestão para a regulamentação do fundo financeiro permanente
- previsto na Lei de Bases da Política Florestal. Forestis, Year 2, N.º 4, March, pp. 4-5. Mendes, Américo M. S. Carvalho. 1998. Forest Policy in Portugal: main issues at stake. In: Tikkanen, Ilpo; Pajari, Brita (eds.). Future Forest Policies in Europe – Balancing Economic and Ecological Demands. EFI Proceedings N.º 22. European Forest Institute. Pp. 351-390.
- Mendes, Américo M. S. Carvalho. 2000a. O sector florestal português: necessidades de organização colectiva do sector privado e medidas de política pública que é urgente tomar. Keynote speech made at the invitation of the President of Republic at opening of the Round Table on Forest Policy held during the "Open Presidency Week" about the Forest Sector, in the Technological Centre for the Wood Industries, Lordelo, April 3rd.
- Mendes, Américo M. S. Carvalho. 2000b. Financiamento do desenvolvimento florestal: é preciso uma reforma estrutural. A Folha-Jornal de Notícias da Floresta, Year 3, N.º 9, September/October, p. 5.
- Mendes, Américo M. S. Carvalho. 2000c. National Forest Programmes and policy planning: An Economic Outlook at the Normative Approaches. In: Glück, Peter; Solano López, José Maria; Rojas-Briales, Eduardo; Schanz, Heiner; Zimmerman, Willi (eds.). COST Action E19. National Forest Programmes. Social and Political Context. Madrid, 18-21 October, 2000. Proceedings. Pp. 71-81.
- Mendes, Américo M. S. Carvalho. 2001. O sector da cortiça em Portugal. Notas económicas sobre o seu passado, presente e futuro. Porto: Universidade Católica Portuguesa Faculdade de Economia e Gestão (draft book).

² Increasing short supply of industrial forest products (roundwood, pulpwood and cork) is a problem affecting the competitiveness of the forest

³ One of us, in several occasions (Mendes, 1997, 1998, 2000a, 2000b), has already contributed to the necessary discussion of this type of solutions, but the debate has not yet gained its momentum, in a context where the structural funds from the EU are still flowing to the country.

Financial Forest Policy Instruments in the Netherlands – Two Examples

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Abstract

In the Netherlands, the pressure on forest businesses is high: most businesses are struggling financially, but at the same time they are faced with an increasing demand from society for their products and services. Since Dutch woodlands are considered to be a major national asset, the Dutch government subsidises the woodland management through different financial instruments. Two important instruments are the Management Programme (*Programma Beheer*) and the Estates Act (*Natuurschoonwet*). The (recently introduced) Management Programme is a performance-related subsidy for combined management of nature, woodlands and landscape elements. The Estates Act provides favourable tax arrangements to estate owners for maintaining and managing their property. This article describes the two instruments and the experiences of Dutch forest managers with these instruments.

Keywords: Estates Act, forest policy, financial instruments, Management Programme, the Netherlands

1. Introduction

In the Netherlands only 339 000 hectares (10%) is covered with woodlands. With an average population density of approximately 465 persons per km², this means that the per capita forest area is only 0.02 hectares (Statistics Netherlands 2001). Despite the small area, these woodlands have a multiplicity of functions for the Dutch society. The demands for the different products and services from the woodland have increased considerably in the last decades and are most likely to increase in the years to come (Hoogstra 1999).

The policy document 'Nature for People, People for Nature' ('*Natuur voor Mensen, Mensen voor Natuur*') of the Dutch Ministry of Agriculture, Nature Management and Fisheries (2000)

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reflects the importance of Dutch woodlands for society. The main objective is the sustainable use and sustainable management of our woodland areas. However, sustainable use and management also depend on economic sustainability. In the Netherlands many forest businesses are struggling financially. Woodlands larger than 200 hectares are sometimes self-financing, but areas smaller than 50 hectares usually require additional investments.

Everyone agrees that this situation has to change. On the one hand, ways are being sought to make users pay a contribution towards forest management. On the other hand, woodland is considered to be a major national asset and Dutch owners satisfy their social obligation, so the government subsidises the woodland management with different financial instruments. This paper describes two of these financial instruments: the Management Programme (*Programma Beheer*) and the Estates Act (*Natuurschoonwet*). The information in this article is partly based on the results of a qualitative evaluation of policy instruments for the Dutch government.

2. Management Programme

2.1 Introduction

The Management Programme (Ministry of Agriculture, Nature Management and Fisheries 2001a) is the new subsidy scheme for the management of nature, woodlands and landscape in the Netherlands, launched at 1 January 2000. This Management Programme includes the subsidy schemes for (1) agricultural nature management and (2) nature management. Section 2 will focus on the latter scheme only. This scheme for nature management contains subsidies for (permanent) woodlands. The principles of the new scheme and the reasons for introducing it are described in Section 2.2. Section 2.3 goes into the scheme related to woodland management. Section 2.4 provides an overview of the opportunities and bottlenecks of the scheme experienced by woodland managers.

2.2 Background of the scheme

The Dutch government had a number of reasons for introducing a new subsidy system. The first reason was to give private owners of nature areas a more important role in the management. The previous subsidy scheme focused on the development of new nature areas by public organisations (e.g. nature conservation organisations). The new scheme gives private managers more opportunities to develop new nature areas and moreover it increases their opportunities in the management of existing nature areas.

The second reason was a change in the method of approach. The Dutch government wished to be able to control the effects of nature management. In the past, the government subsidised only the maintenance of an area, more or less regardless of the results. The present scheme pays for the results achieved and leaves it to the manager how to achieve the results. This means more freedom for the owners/ managers, but it also implies a certain risk for them.

The third reason was that the government wanted to pay more attention to nature management outside the National Ecological Network. The National Ecological Network is a connected network of valuable natural areas, woodland and water areas and important landscape features which together form the backbone of Dutch countryside (Kuiper 2000). Whereas the previous schemes focused on areas within the National Ecological Network, the new scheme also provides possibilities outside the network.

The new scheme is based on the following three principles (Ministry of Agriculture, Nature Management and Fisheries 2001a):

Paying for results.

Subsidies are granted for fixed nature conservation targets. These targets specify the quality criteria to be met in order to receive the grant.

More responsibility for the manager.

In the new system a manager is free to deploy his own expertise and possibilities in order to achieve the nature conservation target.

Subsidising by fixed procedure.

In order to receive a grant a manager has to go through 3 stages:

- the manager asks for a subsidy order (such an order lasts six years);
- the manager receives a yearly loan;
- the manager asks for settlement of the subsidy after six years and receives final payment.

2.3 Relevance of the scheme for woodland management

In the subsidy scheme nature managers receive subsidies for fixed nature conservation targets. The Dutch Ministry of Agriculture, Nature Management and Fisheries has specified targets for nature, woodland and landscape in close collaboration with the nature and forest sector. Each target has been translated into so-called working packages. A working package specifies the quality criteria to be met for the specific target. Criteria are for example the minimum area, the species of both flora and fauna and management prescriptions. A total of 45 working packages is defined, varying from swamp, bog, pool and lake to heather, grassland, drift sands, woodland, orchard and duck decoy.

Six of the packages focus on woodland:

- Basic package 'woodland'
- Plus package 'conversion to woodland with high nature values'
- Plus package 'woodland with high nature values'
- Plus package 'natural woodland'
- Plus package 'coppice and withe-thicket'
- Plus package 'middle forest'

The distinguishing characteristics of the packages are based on the percentage of native tree species, maximum area of exotic species, average number of dead trees per hectare. Table 1 gives an overview of these packages. A more detailed description is given in Appendix 1.

Example of working package

Plus package 'woodland with high nature values':

At least 70% of the area consists of one or more native tree species; at least 50% of the area is mixed forest; regeneration areas are at most 2 ha; areas with more than 80% exotic tree species are at most 2 ha; at least 70% of the area has per ha 4 (standing or lying) dead trees with a DBH of at least 30 cm (15 cm in the case of wet soils); instead of this latter condition: it is not allowed to remove trees or shrubs from 70% of the area.

Each package has a fixed subsidy amount based on the (estimated) costs of management of that specific type of woodland. Subsidies range from 45 euro per hectare per year for the basic-package 'forest' to 1284 euro per hectare per year for the plus-package 'coppice of willow, ash and alder' (see Table 1).

Working package	Minimum area (ha)	Subsidy (euro/ha/year)	Management prescriptions
Basic package – woodland	5	45	none
Plus package	5	62	none
 conversion to woodland with high nature values 			
 woodland with high nature values 	5	62	none
- natural woodland	40/10 ¹	69	no removal of trees/shrubs from the area
 coppice and withy-thicket 	0.5	237/12842	regeneration by coppicing
- middle forest	0.5	126	regeneration coppice layer by coppicing

Table 1. Overview of woodland-packages.

¹ 40 ha for soils without calcium, 10 ha for remaining soils
² NLG 522 per ha per year for oak, NLG 2829 per ha per year for willow, ash and alder

Accessibility requirements also form part of the subsidy conditions. The full sum of money is only granted if the woodland has open public access. On top of this, subsidies are available for maintaining the recreational aspects of woodland under certain conditions like minimum opening times. The subsidies are 14 euro per hectare per year for areas with a low recreational rating or 23 euro per hectare per year for areas with a high rating. The latter subsidy however is only granted to a woodland area when it is situated in a national park or in certain municipalities with high population pressure (Kuiper 2000).

2.4 Experiences with the new scheme

In general Dutch forest managers see the new subsidy scheme as a positive development and they find the intention of the scheme good (or at least an improvement compared to previous schemes). The scheme is carefully organised and has a firm juridical basis. On average, the forest managers support the scheme, which is probably also due to the fact that the forest sector actively participated in the realisation of the scheme. Nonetheless, some problems have occurred.

One of the main problems is the fact that communication and information are not optimal. Especially with a difficult scheme as the subsidy scheme for nature management communication should be well organised. Organisations like the nature conservation organisations, the State Forest Service and co-operatives of forest owners/managers have more knowledge and experience to comprehend the scheme, hence extra attention should be paid to communication and information towards private forest owners.

Another problem is that it is not clear what will happen if a forest manager does not reach the target in the period of the subsidy order because of external circumstances (e.g. environmental pollution). For the time being, forest managers hope for a generous attitude of the government, but it is not a firm basis.

Although the subsidy scheme was intended for all managers of nature areas and woodlands, water companies (owning 1.5% of Dutch woodland) are excluded from the scheme. In the first evaluation this will certainly be a subject for discussion.

Furthermore, the scheme still discriminates between 'public' organisations (e.g. nature conservation organisations) and the 'private' owners. Especially the possibilities for private owners to develop new nature areas are much less than the possibilities for the public organisations.

Finally, some of the managers fear that the quality of nature will not improve because forest managers aim for lower nature targets in order to be certain to receive a subsidy.

So far the above mentioned problems are mainly considered as growing pains of the new system. The opinion is that the problems can be solved as long as persons and parties involved are willing to tackle these problems.

3. The Estates Act

3.1 Introduction

The Estates Act of 1928 gives owners of real estates tax reductions (e.g. inheritance tax, income tax, capital tax, corporation tax), provided that the estate is preserved and the natural beauty at the estate is supported. This paragraph describes first of all what an estate is and how it qualifies for the Estates Act (3.2). Subparagraph 3.3 goes into the management of the estate when it is under the Estates Act. The paragraph concludes with an overview of the experiences of forest managers with the Estates Act (3.4).

3.2 What is an estate?

To qualify for the Estates Act, an estate has to fulfil certain conditions. The Estates Act defines an estate as (Ministry of Agriculture, Nature Management and Fisheries 2001b)

a real estate (including buildings and structures belonging to the estate), situated in the Netherlands, entirely or partly covered with woodlands, which natural beauty is of such quality that existence of the estate in its characteristic form is desirable.

The estate has to meet following conditions (Laser 2000):

Minimum area of the estate.

The minimum area of an estate is at least 5 hectares. Exceptions are made for ancient country estates, which should be at least 1 hectare. An ancient country estate is defined as an estate with a protected monument or with an historical garden or park of at least 1 hectare.

Percentage of woodland.

At least 30% of the area of the estate has to be covered with woodlands (this does not apply for ancient country estates). If the area of the estate consists of nature areas for more than 50%, the percentage of woodland has to be at least 20%. Estates with a woodland percentage of more than 20%, but less than 30% and not more than 50% of nature areas can qualify if the owners intend to afforest.

Use of the estate.

The use of the estate may not interfere with the natural beauty of the estate. Areas used or intended to be used for the following aims, are excluded: industrial aims, mining operations, cultivation under glass, car or motorsports, dumps, intensive recreation (e.g. playgrounds, amusement parks, sports fields), storage of goods other than goods from the estates' woodlands or farmland.

A continuous area.

The estate consists of a continuous area and not of two or more different parts. Small roads, dikes, waterways, railways, etc. are allowed as far as they do not affect the natural beauty or the unity of the estate.

In order to qualify, the owner (or the long-lease tenant or the tenant for live) requests the Ministry of Agriculture, Nature Management and Fisheries and the Ministry of Finance to classify his estate under the Estates Act (Ministry of Agriculture, Nature Management and Fisheries 2001b).

In 2001 the Estates Act will be adapted. The definition of an estate will be broadened, so more estates can qualify for the Estates Act. Next to this the conditions regarding the minimum area are accentuated (so combining smaller estates into a one estate in order to fulfil the conditions is not as simple as it is in the current act).

3.3 Management under the Estates Act

In order to remain qualified under the Estates Act the manager of the estate has to manage the estate in such a way that the character of the estate is not damaged. The act describes two ways that could damage the character:

Lack of maintenance, examples are the loss of avenues due to negligence and the growth of aggressive tree species in woodlands with high nature values.

Other circumstances, examples are the construction of a golf course or camping ground in the woodlands and reforestation with tree species other than the original species.

If this is observed, two sanctions are possible:

- 1. Final withdrawal of the estate from the Estates Act. During a period of 10 years the estate is not qualified under the Estates Act. After this 10 years the owner can submit a new request for qualification. Qualification is only possible if the damage is repaired. Qualification of the estate within the 10 years period is possible if the estate has a new owner.
- 2. Conditional withdrawal of the estate from the Estates Act. The damage is limited and can be repaired within a short period of time. The government withdraws the estate for a (temporary) period of time, with a maximum of 5 years.

3.4 Experiences with the Estates Act

At this moment about 1100 estates are classified under the Estates Act. Approximately 75% of these estates are in private ownership. The other 25% are in possession of the government, nature conservation organisations, investment companies and churches (Innovation Centre Wageningen, 2001).

The estates owners/tenants see the Estates Act as an important financial instrument. Next to this in some cases the estate owners see the act also as a status symbol.

In general the broadening of the definition of an estate (expected in 2001) is seen as a positive development. However the qualification of a combination of estates as one estate (in order to fulfil all conditions) will become more difficult. This is seen as a negative development, because a number of estates (that would have qualified under the current act) will not qualify for the revised act. In the adaptation of the scheme the involvement of representatives of the sector is limited.

4. Conclusion

Forest managers are content with the two financial forest policy instruments as discussed in this article. Especially the new subsidy scheme for nature management, an output oriented subsidy scheme, is seen as an improvement compared with former subsidy schemes. The fact that the new scheme is formulated in close co-operation with representatives of the forest sector, indicates again the importance of participation of stakeholders in policy development. The (lack of) involvement of stakeholders in the adjustment of the Estates Act shows this once again: the support for the changes in the Estates Act is only for part of the changes.

The problems of the subsidy scheme also show the importance of communication and information towards the users of financial instruments. Important is that communication and information is adjusted to the expertise and knowledge of the users. This can vary greatly between forest owners/managers in the Netherlands.

References

Hoogstra, M.A. 1999. Maatschappelijke betekenis van nieuwe bossen: een model ter bepaling van de optimale locatie, omvang en inrichting van nieuwe bosgebieden vanuit maatschappelijk oogpunt. Social value of new forests: optimum location and area from a social point of view. Delft : Delft University Press. In Dutch.

Innovation Centre Wageningen 2001. Landgoederen: aantal en doelstellingen. Estates: number and objectives. In Dutch. http://www.isw.agro.nl/Dossiers/landgoed/aantalendoelstelling.htm

Kuiper, L.C. 2000. Dutch Forests. Zeist: Stichting Probos

Ministry of Agriculture, Nature Management and Fisheries 2000. Nature voor mensen, mensen voor natuur. Nature for people, people for nature. 's-Gravenhage: Ministry of Agriculture, Nature Management and Fisheries. In Dutch.

Ministry of Agriculture, Nature Management and Fisheries 2001a. Programma Beheer. Management Programme. In Dutch. http://www.minlnv.nl/thema/groen/natuur/

Ministry of Agriculture, Nature Management and Fisheries 2001b. Natuurschoonwet. Estates Act. In Dutch. http://www.minlnv.nl/infomart/regeling/landsch/regirl8.htm

Statistics Netherlands, 2001. Netherlands Official Statistics. http://www.cbs.nl/en/

Laser, 2000. Handleiding Natuurschoonwet 1928. Manual Estates Act. S.I.: s.n. In Dutch.

Appendix

Description of the packages

Basic package 'woodland': at least 90% of the area is woodland under the Forest Law; at least 5% of the area consists of one or more native tree species; regeneration areas are at most 2 ha; areas with more than 80% exotic tree species are at most 2 ha:

Plus package 'conversion to woodland with high nature values': at least 90% of the area is woodland under the Forest Law; at the beginning of the subsidy order at least 20% of the area consists of one or more native tree species and at the end the area meets the conditions under A; or if at the beginning the area satisfies the conditions under A, at the end the area has to meet the conditions under B; or if at the beginning the area satisfies the conditions under A, at the end the area has to meet the area has to meet the conditions under C;

[A] at least 35% of the area consists of one or more native tree species; at least 25% of the area is mixed forest; regeneration areas are at most 2 ha; areas with more than 80% exotic tree species are at most 2 ha; at least 35% of the area has per ha 4 (standing or lying) dead trees with a DBH of at least 30 cm (15 cm in the case of wet soils).

[B] at least 52% of the area consists of one or more native tree species; at least 37% of the area is mixed forest; regeneration areas are at most 2 ha; areas with more than 80% exotic tree species are at most 2 ha; at least 52% of the area has per ha 4 (standing or lying) dead trees with a DBH of at least 30 cm (15 cm in the case of wet soils).

[C] at least 70% of the area consists of one or more native tree species; at least 50% of the area is mixed forest; regeneration areas are at most 2 ha; areas with more than 80% exotic tree species are at most 2 ha; at least 70% of the area has per ha 4 (standing or lying) dead trees with a DBH of at least 30 cm (15 cm in the case of wet soils).

Plus package 'woodland with high nature values': at least 70% of the area consists of one or more native tree species; at least 50% of the area is mixed forest; regeneration areas are at most 2 ha; areas with more than 80% exotic tree species are at most 2 ha; at least 70% of the area has per ha 4 (standing or lying) dead trees with a DBH of at least 30 cm (15 cm in the case of wet soils); instead of this latter condition: it is not allowed to remove trees or shrubs from 70% of the area.

Plus package 'natural woodland': at least 95% of the area consists of one or more native tree species; at least 70% of the area has at least 40 living trees with a DBH of 30 cm or more per ha (15 cm in the case of wet soils); management prescriptions have to be followed.

Plus package 'coppice and withy-thicket: at least 90% of the area is coppice, at least 60% of this coppice is older than 25 years; at least 80% of the area consists of one or more native tree species; the diameter of the shoots at 50 cm above the stool is at most 10 cm; the area is at least 30 m wide); management prescriptions have to be followed.

Plus package 'middle forest': at least 90% of the area is actual or former middle forest, at least 60% of the coppice is older than 25 years; at least 70% of the area consists of one or more native tree species; there are at least 25 leave trees with a height of at least 15 m per ha; the area is at least 30 m wide); management prescriptions have

Preconditions and Driving Factors in (Non-)Developing Financial Instruments in Swiss Forest Policy – A tentative Politico-Economic Analysis

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Abstract

While the origins of financial instruments in Swiss forest policy are to be found in the 19th century, when the first Federal Forest Act was created, significant development of financial instruments started only recently. We analyse this development within the framework of political economics. Our principal thesis states that policy is shaped in favour of the general public. User restrictions have been established to guarantee collective non-wood services, and costs are borne to a large extent by forest owners. From the perspective of political economics this thesis is unusual. We explain it by particular characteristics of forestry in Switzerland.

Keywords: non-wood services, ownership, natural disasters, political economics, property rights

1. Introduction

In the second half of the 20th century there was a continuous deterioriation of the profitability of timber production in Switzerland (Schmidhauser and Schmithüsen 1999). Increasing labour costs, decreasing timber prices since 1980, and costs of regulations have not been offset by rationalization efforts. This development is partly due to the liberalization of the timber market that started in 1960 when Switzerland joined the European Free Trade Association. In the years following, interest groups of forestry politically failed to bring about trade or support measures in favour of Swiss timber production.

Since then, it has been debated whether through this development not only the survival of Swiss forestry is threatened, but also the supply of non-wood services (e.g. Steinlin et al.

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1975). Consequently, there has been a demand for financial support of forestry in order to improve the profitability of timber production and to compensate the non-covered costs of forest tending activities, in particular in forests with protective functions. Recently, this call has partly been successful. Although the origins of financial instruments in Swiss forest policy are to be found a hundred years earlier, when in 1876 the first Federal Forest Act was created, significant public funding of forestry only started at the end of the 20th century. This gives rise to our research questions: Why and how were financial instruments in Swiss forest policy developed, and who are the winners and losers?

We approach our research questions from the perspective of political economics¹. A tentative, but comprehensive, explanation of the introduction and evolution of financial instruments in Swiss forest policy is proposed. Section 2 outlines the theoretical framework. In Section 3 we derive hypotheses and describe the methodical approach. Section 4 gives a politico-economic interpretation of the development of financial instruments in Swiss forest policy. In section 5 preconditions and driving factors of (non-)developing financial instruments are identified. Section 6 presents our conclusions and an outlook.

2. Theoretical Framework

The basic assumption of political economics is that economic processes and political decisions are analogous (Herder-Dorneich 1992).² Political economics applies the methodology of economics to the study of politics and is as such inherently interdisciplinary (Mueller 1997). It rests on an economic view of the world that is characterized by a close integration between human behaviour and institutions (Frey 1992). Human behaviour is determined by expected benefits and costs, and ultimately by wishes (preferences) and constraints that are mainly imposed by institutions. Institutions, e.g. laws or informal behavioural norms, can be regarded as agreements influencing expectations, and therefore, shaping repeated human interactions (Picot and Dietl 1990). The core of the economic view of the world is a model of human behaviour that helps to analyse human action. Frey (1992) distinguishes in this model five elements:

Individuals act: Any event that can be observed on the aggregate level is the result of individual actions. According to the postulate of methodological individualism the individual agent is taken as the fundamental building block for all economic analysis (Mueller 1997).

Incentives determine behaviour: It is assumed that individuals act systematically, and therefore, predictably. They compare advantages (benefit) and disadvantages (cost) of possible actions considering the information available to them (concept of 'bounded rationality'; Simon 1982, cited in Frey 1992).

Distinction between preferences and constraints: First, it is assumed that constraints are observable, and preferences not. Second, it is postulated that preferences will remain unchanged while we observe the behaviour (fundamental economic hypothesis; Varian 1996). Consequently, changes in individual behaviour can be attributed to observable modifications of constraints and hypotheses deduced from this model are empirically testable.

Individuals generally behave selfishly: Individuals are neither good nor bad; they reasonably pursue their own interests (Sen 1988, cited in Frey 1992). Selfishness may take

¹ Together with B.S. Frey (1992) we prefer the expression 'political economics' to the more frequent 'political economy'. Through the term 'economics' it is stressed that we mean a discipline and a methodical approach in contrast to 'economy' (enterprises, households, markets, prices, etc.) that is the subject of traditional economic analysis.

Our approach applies the reasoning of behaviourally oriented economics, also known as 'new political economy', 'new institutional economics', 'nonmarket economics', or 'public choice' (insofar as it is restricted to politics).

quite different forms depending on the context. Among friends, selfishness means something else than in an anonymous environment.

Institutions determine the individual's possibility set: Institutions can be interpreted as constraints. Constraints are costs understood in an extensive way. We distinguish monetary constraints (e.g. income, prices), time constraints (e.g. time for consumption, action) and other physical or psychic restrictions (e.g. subjective risk perception).

On the basis of these five elements we can derive the generalized law of demand: If for an individual the cost of an action rises in comparison to other action's costs, the first action is carried out less. This trivial law explains how individuals act not only in economy, but also in politics or in other fields. In the same way, institutions are the result of human action and can be subject to economic analysis (Bromley 1989). Institutional change is synonymous with change in property rights (Demsetz 1967, cited in Bromley 1989).

3. Hypotheses and Methodical Approach

From this theoretical framework follows the general hypothesis that there exists no institution that pursues general welfare. In particular, while it cannot be expected that politicians, i.e. individuals in government and parliament, and administrators, should pursue common interests, they do have their own goals, which they seek to advance (power, prestige, income, job security) (Downs 1957, cited in Frey 1992). They supply political programmes that help them to pursue their own interests while staying in power. In a democratic system they need the support of voters and of the parliament. They prefer those programmes that promise high benefit (augmenting power, prestige, income, job security) and little cost (loss of votes, budget), or even on the contrary (gain of votes, budget). On the other hand there are demands from voters, taxpayers, consumers and interest groups for political programmes. Each individual prefers those programmes in which expected benefits (e.g. maintained forests) exceed expected costs (e.g. taxes, charges). In order to be politically successful, individuals have to organize themselves. An important hypothesis here is that, because of the 'free-rider' problem, the probability of organizing interests decreases with increasing number of persons concerned (Olson 1965). Consequently, taking free-riding seriously means that public goods are insufficiently produced.

Applying political economics reasoning leads to the following hypotheses about the expected behaviour of the most important actors involved in forest policy making:

Members of federal and cantonal governments and parliaments want to be re-elected. They look for opportunities to offer political products in order to acquire a strong image. They are interested in developing financial instruments in forest policy if the expected benefit (e.g. prestige, attention of mass media) exceeds the expected cost (e.g. resistance of taxpayers).

Foresters and officials of federal and cantonal forest administration are mostly interested in developing financial instruments, because this leads to an increase in available budgets and job security.

The more forest owners have difficulties in surviving in the markets the more they are prone to invest in rent-seeking activities, i.e. in getting financial support from the government while preventing property rights restrictions as far as possible.

Consumers of timber and non-wood services are not interested in governmental interventions unless the provision of these goods and services seems to be threatened. However, large user groups are not expected to be well organized. They are a typical example of so-called latent interests (Olson 1965).

Federalism and elements of direct democracy enhance tax resistance, and therefore, restrict possibilities of government, parliament and administration to expand public expenditure.

Consequently, the influence of consumers and citizens on the supply of public services is more effective (Kirchgässner and Pommerehne 1994).

Crises reduce tax resistance. In addition, citizens become used to higher government expenditure. Therefore, after a crisis expenditure does not decrease but is rather channeled to other tasks (displacement effect; Henrekson 1990, cited in Kirchgässner and Pommerehne 1994).

In order to find answers to our research question we look at the historical development of Swiss forest policy from the perspective of political economics. Our tentative, but comprehensive, approach refers to a period of about 170 years. In this paper we undertake a first step, i.e. we adhere to the qualitative method of 'appreciative theorizing' (Nelson and Winter 1982; cited in Nelson 1995: 50) or 'storytelling'³ (Blaug 1990: 127). The basic features of this method are problem-orientation and connection to the historical context.

4. Politico-Economic Interpretation of Swiss Forest Policy

We distinguish five phases in developing Swiss forest policy and financial instruments.

1. The stony path to a federal forest policy $(1834-1874)^4$. At the beginning of the 19th century, timber scarcity existed in Switzerland as in the rest of Europe (Schuler 2000). However, the call for a federal forest policy was engendered by concern about collective non-wood services, in particular the protective functions of forests (Marchand 1849, cited in Schuler 1995; Landolt 1856, cited in Tromp and Bloetzer 1974). Cantonal forest officers advocated a federal legislation. This was a challenge for the federalistic political system, where all competences belong to the cantons as long as they are not explicitly transferred to the Confederation by a majority of citizens and cantons (Federal Constitution 1848/1999, Art. 3). Motivated through the floods of 1834, 1837 and 1839 several cantons passed Forest Acts. According to Landolt (1870, cited in Bloetzer 1992) none of the mountain cantons had yet been successful in establishing an effective forest legislation. From the politico-economic perspective, forest owners were successful in preventing an erosion of their property rights.

An outstanding role in promoting a federal legislation was taken by the Swiss Forestry Society (SFS), which was founded by officers from mainly cantonal forest administrations in 1843 (Tromp and Bloetzer 1974). The forest article, which was finally introduced in the Federal Constitution in 1874 within the scope of a total revision, originated from the SFS (Tromp and Bloetzer 1974). It related only to mountain forests. Decisive in this process was another natural disaster in 1868. It provoked the introduction of the first financial instrument in Swiss forest policy (Federal Resolution concerning grant of subsidies for protection measures and afforestations, 21.7.1871; cited in Bloetzer 1992). These first measures were partly financed by private funds, collected after the inundations in 1868.

2. Extension and deepening of federal forest policy $(1874-1914)^5$. In 1875, the first federal forest director was installed in office. He prepared the first Federal Forest Act (1876), which in its fundamentals remained unchanged until 1991 (third Federal Forest Act). Important restrictions of property rights were the obligation to maintain forests, ban on sale of public forests, the abolition of detrimental rights of forest use ('servituts'), the prescription of sustainable harvest in public forests, and the right of the cantonal government to expropriate land for afforestation to establish protection forests. A basic feature has remained the principle of auxiliary financing: federal contributions are conditional on cantonal financing.

^{3 &#}x27;Storytelling' is a technique of institutional economics that according to Blaug goes back to Ward (1972). It is a 'method of theorizing that binds together facts, low-level generalizations, high-level theories, and value judgement in a coherent narrative' (Blaug 1990: 267).

 ⁴ For historical information on the development of forest policy and economy in the 19th century it is referred to Schuler (2000: 94-111).

⁵ The historical information in this paragraph originates mainly from Bloetzer (1992).

In the beginning, the federal forest legislation had little effect. Therefore, financial support was augmented and wage contributions for cantonal forest officers were introduced. In this phase, the only plebiscite concerning forest policy took place (1897). On the initiative of the non-mountain cantons, it demanded an expansion of the legislation to the whole country. It was accepted by a large majority (64% of population, 73% of cantons). The adaptation of the forest legislation was accompanied by further extension and deepening, particularly of financial incentives (second Federal Forest Act 1902): wage contributions to forest officers and foresters were expanded, and newly introduced were compensation payments for farmers, contributions to transport facilities and support of joint cultivation (private forest owners). On the other hand property rights of forest owners were further restricted by a ban on clearing in public and private forests with protective functions. Finally, forests were declared to be accessible to the public (civil law 1907, Art. 699).

An important reason explaining why it was possible to extend and deepen forest policy in this period is that costs of user restrictions tended to decrease. The costs of user restrictions mainly depend on the variables influencing pressure on forests. On the one hand these are the price and availability of wood and its substitutes (e.g. coal, cement); on the other hand these are scarcity of agricultural land for subsistence and market production (e.g. employment and income opportunities outside agriculture, availability and price of agricultural products). These developments were in harmony with the objectives of forest legislation (decreasing scarcity of timber, fuel wood and food because of trade liberalization, technological progress and improved transport facilities).

3. Consolidation of federal forest policy (1914–1945). Although during the First and the Second World Wars, timber production significantly increased, the forest conservation policy was, according to Bloetzer (1992), successful. It seems that in this time of crisis, timber production was profitable and restrictions were accepted (wartime economy and legislation). The most important institutional change in this period was the ban on clearing in private forests without protective functions of 1923. Another attempt to restrict property rights by prescribing reserve-funds for public forest owners in the federal legislation failed because of the opposition of forest owners who feared the loss of their financial autonomy (Ley 1981a). At the suggestion of the SFS, forest reserve-funds to compensate exploitation were established, but public forest owners were only temporarily obliged to keep such funds. Most public forest owners still dispose of forest reserve-funds (Schmithüsen and Schmidhausen 1998). Further efforts of the SFS for a major revision of the Federal Forest Act in direction of a comprehensive forestry law in 1919 (Bavier 1922, cited in Ley 1981a) and 1943 (Bloetzer 1992) were fruitless.

4. Ineffective lobbying for forestry (1945–1983). After the Second World War pressure on forests increased and profitability of timber production decreased. Despite a restrictive practice, in 1950–1970, authorizations to clear woodland for building activities steadily increased (Bloetzer 1992). By 1970 timber prices had approached the level of neighbouring countries and Switzerland had become a timber export country (Steinlin et al. 1975). For many public forest owners forestry turned from a source of income to a financial burden (Ley 1981b).

While the Swiss Farmer's Association in 1947 succeeded in bringing about a revision of the Federal Constitution concerning protection and support of agriculture (Baur et al. 1994), the forestry lobby, i.e. the Swiss Forestry Society (SFS) and the Swiss Forest Owner's Association (SFOA), failed in achieving a comparable treatment of the forest sector. And last, but not least, the forestry lobby was not successful because of the opposition of the cantons, which refused to shift more competences to the Confederation (personal communication, Bloetzer 2001). In the 1960s and 1970s, further efforts of forestry circles to mitigate the increasing pressure on Swiss forestry as a consequence of the liberalization of timber markets were not effective either.

Apart from that, most of the postulates the SFS formulated in 1943, concerning minor revisions of the second Federal Forest Act, were fulfilled (e.g. forest definition, administration of forest districts by full time foresters, forest education; Bloetzer 1992).

On the initiative of a parliamentarian in 1969, the Federal Department of Home Affairs set up a commission to analyse forestry and the wood industry in Switzerland and to elaborate a concept for future policy. This concept by Steinlin et al. (1975) contained important positions concerning the property rights of forest owners: (1) It was proposed that public forests owners are bound by law to minimal forest tending activities; (2) It was argued that global remuneration of non-wood services is neither sensible nor feasible. Both positions met with resistance by forest owners and forest officers.

In 1978 the federal government set up a commission to prepare the revision of the Federal Forest Act, but since the government programme 1979–1983 assigned it low priority, the revision was not pursued. Worse, in 1984, forest policy was reallocated to the policy field 'disentanglement and redistribution of competences of Confederation and cantons' (Swiss Federal Council 1988). This can be interpreted as a further weakening of forestry interests. SFS and SFOA did not succeed in attracting political attention to forestry. On the whole, their lobbying activities proved to be ineffective.

5. Reorientation and widening of federal forest policy (1984–2001). Until 1983 funding policy did not alter, although the economic situation of forestry had continuously deterioriated. The situation completely changed in 1984, when the phenomenon 'Waldsterben' (forest decline) was widely covered in the mass media and the political arena (Zimmermann 1991). Abruptly, politicians took vivid interest in forest policy, which is illustrated by the sudden increase of motions and postulates in the parliament (Swiss Federal Council 1988). The parliament reacted immediately and consented to give financial support to forestry. Instruments for financing forest tending activities were introduced in three steps (Bloetzer 1992): (1) the parliament passed the Federal Resolution to finance measures against forest damages (4. 5. 1984); (2) on the initiative of a further parliamentary motion, the legal basis for financing tending activities in mountain forests was created (Motion Lauber, 5.6. 1984); and (3) the Federal Resolution to finance tending activities in young forest stands followed (23. 6. 1988).

Of equal significance was that in 1985 the revision of the Federal Forest Act was removed from the policy field 'disentanglement and redistribution of competences of Confederation and cantons'. It restored the importance of forestry. In 1986, the federal government authorized the Federal Department of Home Affairs to pursue the revision of the Federal Forest Act. In the first draft, the federal government followed the arguments put forward by Steinlin et al. 1975 (Swiss Federal Council 1988). It was planned to introduce an obligation of minimal tending activities. The concerted opposition of forest owners and environmental circles prevented this drastic restriction of property rights. On the other hand, the federal government clearly rejected global remuneration of non-wood services, but decided to introduce new financial instruments to guarantee the provision of non-wood services.

The design of these new financial instruments reflects a subtle change in property rights. It distinguishes between indemnities ('Abgeltungen') and financial support ('Finanzhilfen'). Indemnities are paid when measures are ordered by public forest authorities and costs are not met (e.g. temporary minimal tending activities to maintain protective functions). Financial support is given to specified, but voluntary, measures of public interest (e.g. cost of measures to maintain forest reserves). The ultimate legitimization for financial instruments was and remains to maintain tending activities in forests with protective functions (Swiss Federal Council 1988). The third Federal Forest Act passed in 1991.

At last, the efforts of the SFS to reorient the Federal Forest Act from a forest police regulation ('Forstpolizeigesetz') to a comprehensive forest law ('Waldgesetz'), that encompasses all

significant forest functions (wood and non-wood services), had been successful. The phenomenon 'Waldsterben' made the breakthrough possible (Swiss Federal Council 1988). Forestry circles were able to establish new financial instruments and gain more finances through an alliance with environmental interests and research (Zimmermann 1991). The price of this success was the participation of more actors in the legislation process and consequently a partial weakening of forestry interests. For about 150 years, forestry interest groups had been alone in designing forest policy and in deciding about forestry practices (Kissling-Näf and Zimmermann 1996). Now they had to share their power with newcomers, in particular with advocates of nature and landscape interests (Schmidhausen 1997, cited in Schmithüsen and Zimmermann 1999). Furthermore, on the legal basis of the Federal Regional Planning Act, public interests were strengthened by the new forest decree that prescribes participation of local population in forest planning (Kissling-Näf and Zimmermann 1996).

However, the new forest policy was threatened from the start (Poffet 1994). It had been designed in a period of rather healthy public finances. As early as in 1991 the financial state of public households worsened and forestry administrations and circles had to prevent an erosion of forest finances, last but not least, because the phenomenon 'Waldsterben' had vanished from the political arena.

To sum up, financial instruments were initiated in 1874 because of the catalytic effect of a first crisis (floods). Until the second crisis (phenomenon 'Waldsterben'), financial instruments were developed in an incremental process, driven and designed almost exclusively by forestry circles (Kissling-Näf and Zimmermann 1996). During this process, restrictions on the property rights of forest owners were increasingly expanded from the mountains to the whole country, from public to private forest owners, from prescriptions for sustainable harvesting to a ban on clearing, etc. Only in the second crisis, though, was a significant expansion of finances possible. At the same time, the dominance of forestry circles has been broken by new interests, in particular by nature and landscape interest groups. Like the first and the second Forest Acts, the third Federal Forest Act also focused on allocative objectives (maintaining forests) in contrast to distributive objectives (remunerating forest owners). In addition, the new law institutionalized participation of the general public in forest planning.

5. Explaining (Non-)Developing Financial Instruments

The present politico-economic interpretation provides first empirical evidence for our hypotheses. In explaining developing financial instruments, we distinguish between preconditions and driving factors. Driving factors that helped developing financial instruments were natural events and lobbying activities of the Swiss Forestry Society. Preconditions that hindered developing financial instruments are particular characteristics of forestry in Switzerland concerning nature, and the political system, as well as ownership and forest organization. Thus, our model explains (non-) development of financial instruments.

Driving factors that helped developing financial instruments were:

Natural events: Swiss forest policy was the answer to a crisis, i.e. the flood disasters in the 19th century. The first Federal Forest Act (1876) initiated a significant change in property rights. Exploiting forests was basically restricted without compensation. Financial instruments were limited to investment contributions (roads, land consolidation, afforestation). A basic change occurred with the total revision of the Federal Forest Act in 1991, in which the legal basis for financing forest tending activities was created. Again a natural event, suspected forest decline because of emissions (phenomenon 'Waldsterben'), is seen as the driving factor of this policy change.

Lobbying activities of the Swiss Forestry Society (SFS): We conclude that apart from natural disasters the most important driving factor in developing forest policy including financial instruments has been the Swiss Forestry Society. The SFS filled the gap left by forest owners. Their political lobbying became successful because of the catalytic effect of natural events that attracted the attention of politicians and the public, and created acceptance.

Preconditions that hindered developing financial instruments are:

Nature: Switzerland is a mountainous country. Some 53% of the surface lies above 1000 m altitude. The potential damage by natural hazards related to mountains is great. Therefore, forests are an important means of risk mitigation. Some 80% of forest area lie above 600 m altitude, 53% of forests belong to mountain forests and 42% stand on surfaces steeper than 40% (Brassel and Brändli 1999). Since the beginning, forest policy has aimed primarily at maintaining and improving protective functions of forests (Schuler 2000; Swiss Federal Council 1988). In its main features it has remained a forest police regulation that helps to prevent damage. Consequently, there is no juridical public obligation to compensate ownership restrictions (Tromp and Bloetzer 1970).

Political system: The political system is based on federalism, direct democracy and communal autonomy (Linder 1999). According to several authors, the design of the political system in Switzerland restrains expansion of government expenditures (Kirchgässner and Pommerehne 1994; Frey 1997; Feld and Kirchgässner 1998). Recent empirical evidence is given by the fact that in the 1990s public budget deficits increased with the highest rates in the Confederation, followed by the cantons, while the municipalities showed the best budget discipline. Moreover, forest policy is a joint task of the Confederation and the cantons and is designed according to the principle of subsidiarity. The Confederation gives only auxiliary financing. If the parliaments of the cantons do not decide to increase financial support for forestry, neither does the Confederation. We conclude that the political system promotes a design of forest policy in accordance with public interests and slows down the development of financial instruments in favour of forest owners or the wood industry.

Ownership: 68% of forests are owned by corporate entities (boroughs, municipalities, corporations) and 5% are state forests (cantons, Confederation). With its high significance of communal forestry, Switzerland is a special case (Ley 1981b). Accordingly, short-term economic interests (production of marketable timber) are balanced by countervailing interests (provision of non-marketable non-wood services). Moreover, the survival of public forest enterprises showing deficits is in general not threatened. Deficiencies of timber production can be made good through extra incomes from other business activities or reserve-funds (boroughs, corporations) or through financial support (municipalities, cantons, Confederation). Finally, public forest owners have the drawback of not being a political clientele.

Private forestry also shows characteristics that prevent the establishment of further financial instruments. First of all, ownership is very fragmented with an average forest surface of 1.3 ha. Thus, it may provide extra income or serve for self-supply, in particular where forestry is integrated in agriculture, but in general it is not a major business activity. Further, for many private forest owners other values than income generation might prevail.

These particular and heterogeneous ownership characteristics contribute to the difficulties in organizing forest owners and help explain why rent-seeking activities of the Swiss Forest Owner's Association are hardly effective.

Forest organization: Swiss forest organization was built up by the Confederation and the cantons to execute the Federal Forest Act. Forest officers are assigned simultaneously economic and sovereign functions. Cantonal forest services largely plan and conduct timber production. Similar to corporate entities, forest services have ambivalent interests (timber and non-wood services). They may reduce their efforts, but in general they maintain a minimum

level of tending and harvesting activities. Consequently, many collective non-wood services are maintained even when timber production is not profitable.

6. Conclusions and Outlook

The present politico-economic interpretation of historical data detected 'anomalies' in Swiss forest policy. Our principal thesis states that forest policy is shaped in favour of the general public. Public funding can be seen as a means to guarantee the collective non-wood services of the forest, particularly a variety of protection services (floods, avalanches, falling stones, land-slippage, water protection, etc.), and more recently of nature conservation (close-to-nature silviculture, forest reserves). Property rights of forest owners have been restricted in an incremental process beginning in 1874 with the partial shifting of cantonal competencies in forest legislation to the Confederation. Corresponding user restrictions serve public interests and costs are borne to a large extent by forest owners. The design of the new financial instruments also favours public interests, because allocative reasoning (maintaining non-wood services) is predominant over distributive reasoning (remunerating non-wood services).

From the perspective of political economics our thesis is unusual. It means that latent interests of the public are unusually well represented in contrast to the interests of forest owners or wood industry. It is shown that these anomalies are to a large extent the result of natural characteristics (high damage potential in a mountainous country) and institutional particularities (political system, communal forestry, forest organization) of forestry in Switzerland. Forest owners were on the whole politically not important enough to succeed with their lobbying activities. The driving factor in establishing financial instruments seems to be the Swiss Forestry Society (SFS) together with the cantonal and federal forest authorities. Profiting from the catalytic effect of natural crises the forestry lobby was partially successful with its claims for financial support for forestry. Since the 1960s, however, it lost its dominant position in shaping policy. It has to consider other interests, mainly from the fields of nature and landscape policy.

For the future we expect the preconditions as well as driving factors to remain unchanged on the whole. First, politicians will be interested in forest policy mainly in relation to natural disasters (e.g. storm Lothar in 1999). Secondly, the prerequisites for successful rent-seeking are unfavourable: foresters are well organized but politically weak; forest owners are insufficiently organized, and moreover, public forest owners have the drawback of not being a political clientele. Thirdly, public household budgets are under pressure, and forest services and administration have to prevent an erosion of the *status quo* (e.g. New Public Management project effor2). Fourthly, the influence of interests and policy changes outside of forestry in shaping forest policy and financial instruments will further increase; in particular the influence of nature/landscape, energy and climate/CO₂ policies, but also the influence of policies concerning public administration (NPM) or education and research. Instead of investing in rent-seeking, Swiss forest owners are challenged to improve orientation of forestry towards their customer, i.e. consumers of timber and non-wood services.

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References

Baur, P., Meyer, L. and Rieder, P. 1994. Politökonomische Analyse der Getreidepolitik. Nationales Forschungsprogramm 27, Wirksamkeit staatlicher Massnahmen, Reihe "Schlussberichte". Bern. 69 p.

Blaug, M. 1990. The methodology of economics: Or how economists explain. Cambridge University Press. 296 p.

Bloetzer, G. 1992. Zur Entwicklung der schweizerischen Forstgesetzgebung. Schweizerische Zeitschrift für Forstwesen 143: 607–627.

Brassel, P. and Brändli, U.-B. (Red.) 1999. Schweizerisches Landesforstinventar. Ergebnisse der Zweitaufnahme 1993–1995. Haupt, Bern/Stuttgart/Wien. 442 p.

Bromley, D. 1989. Economic interests and institutions: The conceptual foundations of public policy. Basil Blackwell, Cambridge, Massachusetts. 274 p.

Effor2 – A New Public Management project of the Swiss Forest Agency, launched in 1997 http://www.effor2.ch/ Feld, L.P. and Kirchgässner, G. 1998. Fiskalischer Föderalismus. Wirtschaftswissenschaftliches Studium Heft 2: 65–70.

Frey, B.S. 1992. Economics as a science of human behaviour: Towards a new social science paradigm. Kluwer Academic Publishers, Boston/Dordrecht/London. 254 p.

Frey, B.S. 1997. Neubelebung: Direkte Demokratie und dynamischer Föderalismus. In: Borner, S., Rentsch, H. (Hrsg.) Wieviel direkte Demokratie verträgt die Schweiz? Rüegger, Chur/Zürich. Pp. 183–203.

Herder-Dorneich, Ph. 1992. Neue Politische Ökonomie als Paradigma. Jahrbuch für Neue Politische Ökonomie 11: 1–15.

Kirchgässner, G. and Pommerehne, W.W. 1994. Die Entwicklung der öffentlichen Finanzen in föderativen Systemen. In: Grimm, D. (ed.). Staatsaufgaben. Nomos, Baden-Baden. Pp. 149–175.

Kissling-Näf, I. and Zimmermann, W. 1996. Aufgaben- und Instrumentenwandel dargestell am Beispiel der Schweizer Forstpolitik. Arbeitsberichte Professur Forstpolitik und Forstökonomie. Allgemeine Reihe 96/1. 34 p. Ley, Ch.1981a. Die Forstreservefonds öffentlicher Waldeigentümer: Entstehung, Funktion und

Weiterentwicklungsmöglichkeiten. Mitteilungen der Eidg. Anstalt für das Forstliche Versuchswesen 57/3: 189– 355.

Ley, Ch.1981b. Der Wald im Gemeindehaushalt. Schweizerische Zeitschrift f
ür Forstwesen 132: 397–410. Linder, W. 1999. Schweizerische Demokratie: Institutionen, Prozesse, Perspektiven. Paul Haupt, Bern/Stuttgart/ Wien. 428 p.

Mueller, D.C. 1997. Public choice in perspective. In: Mueller, D.C. (ed.). Perspectives on public choice: a handbook. Cambridge University Press. Pp. 1–17.

Nelson R.R. 1995. Recent evolutionary theorizing about economic change. Journal of Economic Literature 23: 48–90.

Olson, M. 1965. The logic of collective action. Harvard University Press, Cambridge, Massachusetts.

Picot, A. and Dietl, H. 1990. Transaktionskostentheorie. Wirtschaftswissenschaftliches Studium 4: 178–183.

- Poffet, G. 1994. Bundesbeiträge und Entwicklung im Forstwesen. In: BFS, BUWAL (Hrsg.). Jahrbuch Wald- und Holzwirtschaft der Schweiz. Bern. Pp. 14–26.
- Schmidhauser, A. and Schmithüsen, F. 1999. Entwicklung der Finanzierung einer multifunktionalen Waldbewirtschaftung in den Forstbetrieben öffentlicher Waldeigentümer im schweizerischen Alpenraum. Schweizerische Zeitschrift für Forstwesen 150: 416–428.
- Schmithüsen, F. and Schmidhauser, A. 1998. Verbreiterung der Ertragsbasis als Voraussetzung für die Finanzierung einer multifunktionalen Leistungserstellung der Forstbetriebe öffentlicher Waldeigentümer in der Schweiz. Centralblatt für das gesamte Forstwesen 115, Heft 2/3: 99–121.
- Schmithüsen, F. and Zimmermann, W. 1999. Forestry Case Study Switzerland. Arbeitsberichte Professur Forstpolitik und Forstökonomie. Internationale Reihe 99/1. 25 p.

Schuler, A. 1995. Naturgefahren und die Bedeutung der Wälder im "Haushalt der Natur". Schweizerische Zeitschrift für Forstwesen 146: 629–640.

Schuler, A. 2000. Wald- und Forstgeschichte. Skript zur Vorlesung. ETH Zürich. 148 p.

Steinlin, H., Schelbert, H. and Crettol, G. 1975. Gesamtkonzeption f
ür eine schweizerische Wald- und Holzwirtschaftspolitik. Hauptbericht der vom Eidg. Departement des Innern eingesetzten Expertenkommission. Hrsg. Oberforstinspektorat. Bern. 417 p.

Swiss Federal Council. 1988. Botschaft zu einem Bundesgesetz über Wald-erhaltung und Schutz vor Naturereignissen. Bundesblatt 140. Bd. III: 173–223.

Tromp, H. and Bloetzer, G. 1970. Zur Frage der Entschädigung der Waldeigentümer. Schweizerische Zeitschrift für Forstwesen 121: 894–899.

Tromp, H. and Bloetzer, G. 1974. Entstehungsgeschichte der eidg. Oberaufsicht über die Forstpolizei bis zur Gründung des Eidg. Oberforstinstpektorates vor 100 Jahren. Schweizerische Zeitschrift für Forstwesen 125: 883–894.

Varian, H.R. 1996. Intermediate Microeconomics: A Modern Approach. Fourth edition. W.W. Norton & Company, New York, London. 650 p.

Zimmermann, W. 1991. Zur politischen Karriere des Waldsterbens. Arbeitsberichte Professur Forstpolitik und Forstökonomie. Allgemeine Reihe 91/3. 13 p.

Experiences from Belgium: Financing Private Forest Owners in Flanders

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Abstract

In many European countries non-industrial private forest (NIPF) owners own more than half of the forest area. As the demand for forest services expands, NIPF woodlands are becoming increasingly important. This is particularly true in Flanders, a densely populated region in northern Belgium with less then 10% forest area. When developing forest policies, governments can not deny this extensive group of forest owners. Measures to improve forest protection, sustainable forest management and forest extension can only be effective if the majority of the NIPF owners are involved. As the situation is generally one of very small fragmented forests, the key problem is to reach and motivate the owners. Until present, NIPF owners are supported and motivated by government subsidies. This paper aims to evaluate the use of subsidies by private forest owners in Flanders within the last decade.

Keywords: financial instruments, forest policy, private forestry, Belgium, Flanders

Political and Forest Situation in Belgium

Through institutional reforms Belgium has evolved in a federal state, divided in three regions: the northern part, Flanders, Wallonia in the south, and the smaller central region of the capital Brussels. The country has about 10 million inhabitants, with a population density of 440 inhabitants/km² in Flanders, and 200 inhabitants/km² in Wallonia. The forest situation is totally different in both regions. In Wallonia the forest index reaches 30% with less than 45% of the forest area privately owned. The average forest area per owner is 3 ha, and more than half of the properties are less than 1 ha. In Flanders the forest index is about 9%, three-quarters of the forest area is owned by private forest owners. More than 90% of the privately owned areas are less than 10 ha, and 70% less than 1 ha. Forestry in federal Belgium is devolved upon each of the regions since 1980, and taxes, legislation, financing systems, etc.

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differ between regions since forest policy is a regional competence. We will further focus on the situation in Flanders.

Forestry Legislation and Aims of Forest Policy

Woodlands in Flanders should meet the requirements of two important legislative tools: the Forest Act and The Act on Nature Conservation and Natural Environment. The first legislative instrument on forestry in Belgium dates from 1854. Since 1990 a new Forest Act came into force in Flanders, it was revised in 1999. The aim of this revised Forest Act of 1999 is to regulate the preservation, the protection, the management and the restoration of forests and their natural environment together with the creation of new forests. It is applied to public forests as well as private forests, which differs from the old Forest Act (1854), which focussed on public forests. Since more than 70% of the forest area in Flanders is owned by private forest owners it is important to involve this large group of owners in the realisation of the aims of the Act: protection, restoration and creation of forests.

The Act on Nature Conservation and Natural Environment (1997) is the second important legislative instrument considering the Flemish forests. The Act stresses the ecological function of forests. One of the aims is to establish a Flemish Ecological Network (VEN): an area of 100 000 ha covering several types of biotopes i.e. heather, meadows and forests. Within the VEN different values will be addressed to different areas. The different values will correspond with different levels of protection, guidelines and restrictions. The area pointed out within the Flemish Ecological Network will be linked to the habitat areas marked within the European Natura 2000 program. Also privately owned land will be included. The question is posed of how owners should be compensated, when their forest will be located in a protected area. Besides the financial problems, it is expected that it will be hard to reach and convince the private forest owners to change management practices.

Financial Incentives Concerning Private Forest Owners in Flanders

In Belgium public forests have been subsidised since 1847, whereas the first subsidies for private forests in Flanders were established in 1989. From that time NIPF owners could get subsidies for reforestation. In 1991 the number of subsidised measures for private forest owners was extended with the functioning of the Forest Act of 1990.

The subsidies that became in regulation in 1991 were:

- Subsidies for afforestation and reforestation. The subsidies for reforestation include plantation of trees as well as natural regeneration. The sums differ from 500 to 2500 euro/ ha, depending on the tree species used.
- Subsidies for opening the forest for the public. When opening the forest to the public, maximum 50 euro/ha can be obtained for forests where no hunting is allowed and a maximum amount of 25 euro/ha when a hunting permit is given.
- Subsidies for forest grouping. A forest grouping is a voluntary cooperation between several at least two private forest owners with a total forest area of at least 5 ha. First of all subsidies can be received when a forest grouping is realised, and secondly when specific forest management treatments are realised within a forest grouping. The basic subsidy is around 50 euro/ha, and the subsidies for the management ranges from 125 to 200 euro/ha.

Next to these subsidies in the framework of the Forest Act, also the former EU-regulation 2080/92 on afforestation of agricultural land is adopted in Flanders.

Today the Forest Service is working on a new subsidy regulation. Some of these subsidies are dated. Subsidy regulations and their efficiency have to be assessed to give advice for the new regulation. In the next section, an overview is given of the use of subsidies directed to private forest owners.

Overview of the Use of Subsidies in Flanders

The subsidy regulations for private forest owners have existed for ten years now. An evaluation of the past ten years was made (Figure 1).



Figure 1. The amount of cases for the several subsidies in Flanders over the last decade.

Overall, around 300 owners apply for subsidies each year. With more than 80 000 NIPF owners it is concluded that less than 0.5% of the forest owners use the subsidies.

Subsidies for reforestation are most frequently applied for. Yearly 200–250 owners used the subsidy for reforestation, with little differences from year to year. Also subsidies for afforestation are relatively frequently used. Within the subsidy for afforestation, as little as 44 owners used the subsidies for natural regeneration. Subsidies for forest grouping score very low, and even more remarkable are the results for the subsidy for opening the forest to the public. Only six cases are reported over the past ten years.

Although several subsidies exist for private forest owners, only a small group uses them, and some subsidies are not used at all. To develop a more effective subsidy policy in the future, and involve more NIPF owners in the government forest policy the failure of the present subsidy system needs to be explained. A part of the explanation was found in the knowledge of the existence of subsidies.

Results from a research project that included a personal interview with private forest owners (N = 405) showed that 64% of the owners knew about the existence of subsidies. Some 21% thought that no subsidies were available, and 15% did not know if there were subsidies or not. It was concluded that one out of three owners do not know about the existence of forest management subsidies. An effective subsidy policy should start with informing the private forest owners concerning the existence of the various subsidies for their forest property.

The attitudes of the owners are also responsible for the low uptake of subsidies. Some owners do not want interference from the government; others do not want direct financial help, but prefer advice or support.

From personal interviews with private forest owners, evidence was found that especially financially motivated owners use subsidies, and that owners possessing their forest for nature and/or recreation purposes would prefer help and advice from government instead of direct financial help. An effective subsidy policy should use other tools besides financial compensation.

Conclusions

Besides an econometric evaluation, attention should be paid to the processes and attitudes explaining the lack of success of the subsidy policy. Qualitative research indicated to be useful in the explanation of the willingness of NIPF to use government subsidies for forest management. It was concluded that an effective subsidy policy should start with informing the private forest owners about the existence of the various subsidies for their forest property, and that other tools besides financial compensation should be used.

Challenges for Scientific Working Schemes in Germany Concerning the Evaluation of Subsidies in Forestry

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Abstract

There are mainly four important challenges for scientific working schemes in Germany concerning the evaluation of subsidies in forestry: (1) the federal principle in Germany means that there are many slightly different subsidy regimes; (2) the quantitative (former GDR) and qualitative structure of forest ownership is just changing quite significantly; (3) there are contradictory arguments concerning subsidies in Germany, and there are disagreements about the efficiency and the economical and political suitability of subsidies as a financial instrument; and (4) there is a significant lack of solid definitions and a lack of subvention-theories, and therefore, the statistics also diverge significantly. Several questions about the current subsidy system in Germany can be put: (1) What is the background of diverging arguments concerning subsidies? (2) Why is there such a deficit or such a contradictory variety of definitions and data about subsidies? (3) Why is there such a lack of knowledge concerning the claim and use of subsidies, the controlling possibilities of subsidies and the efficiency of subsidies? and (4) What is the real/objective function of subsidies in forestry in Germany (apart from arguments for or against financial support)?

Keywords: subsidies, Germany, federal principle, ownership structure, financial instruments

1. Introduction

1.1 Forestry in Germany – a brief overview

Situated in the centre of Europe, Germany offers a tremendous variety of natural geographic regions in a comparatively small area. In 1996, Germany had a population of approximately 81.8 million. At 229 inhabitants/km², it is one of the most densely populated countries in Europe. The distribution of the population is quite uneven. Densely urbanized agglomerations

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stand in contrast to sparsely populated areas. Some 107 390 km² in Germany are covered with forests. The forests in Germany today are vastly different from the natural forests of the past. As a result of 200 years of regulated forestry as well as centuries of human impact, coniferous instead of broadleaf forests are predominant in Germany today. Coniferous forests make up about two-thirds of the total forest area in Germany. The average growing stock in German forests is about 270 solid m³ of standing crop/ha (BMELF undated a). There is an obvious difference between eastern Germany (the former GDR) with about 210 solid m³ of standing crop/ha, and the western part of the country with about 300 solid m³ of standing crop/ha. The average annual increment of the German forests is estimated at 6 m³/ha. The age-class high forest system is the dominating silvicultural system in Germany, applied to 97% of the forests. About 2% of all forests are uneven-aged forest (Plenterwald), while just 1% is managed as coppice or coppice with standards forest. Due to the historic and legal background as well as the goal of harvesting stems of large diameter, rotation periods in Germany are long, reaching between 100 and 140 years in most coniferous forests and up to 200 years or more in oak forests. Much of the timber harvest is still done manually, with chain saws. As a consequence of the major storm calamities of 1990 and the ensuing immense amount of storm-damaged timber, harvesting machines became established in Germany. Today, they play an important role in the small-diameter timber harvest (especially for thinning in pure conifer stands). Due to the current tendency toward selective cuttings, mixed stands and the large target dimensions of trees, harvesting machines are unlikely to reach the overall importance in Germany that they have attained in northern Europe. The overall consumption of timber in 1995 is at about 89.5 million m³ roundwood equivalents. Sawmills are the most important timber users in Germany. Other important stemwood users include the veneer (non-coniferous logs) and plywood industries (coniferous logs). Export is also becoming increasingly important. In regard to industrial wood, particleboard production and wood pulp are the most important users in Germany. Overall, fuelwood does not play an important role, although it attains local importance, especially in rural regions. Measured against the overall gross domestic product of Germany, forestry plays a minor role in the national economy, for example, accounting for only 0.2-0.3% in Baden-Württemberg. The forest industry contains 39 050 individual enterprises, which produced a turnover of about 54.7 billion ECU in 1994. In 1991, the share of the forest industries reaches 1.2% of the German net domestic product. Germany's timber market is traditionally characterized by a net import overhang. In 1995, this overhang amounted to about 20 million m³.

1.2 Financial inputs in forestry

The basic legal standards for German forestry including financial incentives are set by the Federal Act on Conservation of Forests and subsidization of Forestry, enacted in 1975 (called 'Federal Forest Act' or 'Bundeswaldgesetz'). According to §1 of this law, forest functions can be divided into three major complexes: (1) economic (in Germany, this means mainly timber production); (2) protective; and (3) recreational. Because of these functions governmental support is given. However, the reasons why subsidies have been given have changed in the last decades. According to Schmid (1996:135–151), during the period 1945–1965, due to the difficult situation after the second World War and the shortages of timber as building material and fuelwood, the following activities were especially subsidized: the cultivation of fast-growing tree species (e.g. spruce, larch, douglas fir, poplar), the conversion of low-yield forests into age-class high forests, and the afforestation of former unproductive farmland. The government support during this period focused on timber production, especially aiming to improve the yield (e.g. re-afforestation and afforestation, conversion

measures) and the improvement of production conditions (e.g. road construction in forests, land consolidation and owner-co-operation). During the period 1965-1980, the economic difficulties in forestry started to become very severe and the principle of multi-functional forestry became more and more important. Qualitative aspects started to play quite an important role in subsidy policy in forestry (e.g. improvement of wood quality by pruning and tending of stands). During the period 1980-present, subsidies are mainly paid to compensate for declining income-opportunities and seem to be more and more the character of transferpayments. Scientific studies state and illustrate the critical profit situation of the forestry enterprises despite the continuing upward trend in the past years. The reasons for this situation are the continually increasing expenses of the forestry enterprises in relation to stagnating income. Despite the increase in productivity of forest workers - according to Löffler (1992) the number of productive working hours per cubic meter wood harvested was 8 in 1960 and 1.7 in 1990 – the harvesting costs per cubic meter have increased (considering inflation). On the other hand, timber proceeds as the major income of the forestry enterprises have decreased during the past decades, if inflation is considered. Due to this critical profit situation, the financial inputs by the government are becoming increasingly important. Subsidies in forestry also refer to measures concerning ecologically important tasks. In the 1980s, the so-called 'Waldsterben' (forest die-back), a widespread thinning of the treetops, became the first crucial topic in the ongoing discussion of the threat caused to forest ecosystems by anthropogenic atmospheric pollutants (BMELF 1996). Therefore, subsidies are given as part of the joint task 'Improvement of Agricultural Structures and Coastal Protection' (10.3.1998) for the period of 1998-2001 as the so-called 'Maßnahmen aufgrund neuartiger Waldschäden' (compensation for the novel forest diseases). Measures include, for example, the input of lime in forest areas, but there is no direct payment for compensation of forest owners for economic damages. Without doubt, storms constitute by far the leading cause of forest damage. The dramatic winter storms of 1990 and 1999 left many million cubic meters of storm-damaged timber in their wake. The use of subsidies to compensate for catastrophic events is a special topic in the last years.

There are different types of financial instruments in forestry. The following terms are often used in scientific literature: (1) indirect subsidies (e.g. income taxation regulations); (2) forest administration through information, consultancy, technical assistance, management plans; (3) permanent, long-term subsidies (Volz 1989, p. 85 gives as an example the technical management and forest station service in corporation forests; and (4) possible subsidies (e.g. the compensation of deficits of the state forest enterprises).

Concerning the development of financial inputs it can be stated that there has been a significant increase of subsidies in forestry in the last years as shown in Figure 1, although the general official intention for the development of subsidies in Germany is to reduce the volume of financial inputs (Haghani 1999, p. 50).

2. Challenges for Scientific Working Schemes in Germany Concerning the Evaluation of Subsidies in Forestry

2.1 Federalism in Germany

Germany is a parliamentary democracy with a federalistic structure. The legislative body consists of the German parliament, the *Bundestag*, and the *Bundesrat*, an assembly of the regional governments of the German *Bundesländer* ('states'). A cabinet of ministers, headed by the German chancellor forms the executive. The President of the Republic, albeit the



Figure 1. Development of governmental support in forestry as part of the joint task 'Improvement of Agricultural Structures and Coastal Protection' (source: BMELF undated b).

highest public office, has mainly representative functions. The jurisdiction (Federal Court and Constitutional Court) is endowed with a high degree of influence and control over both the legislative body and the government.

When looking at forestry issues in Germany, two levels of government must be considered: (1) the Federal State (with restricted responsibilities, mainly in connection with Agricultural Policy and taxation), which acts through direct subsidies (e.g. silvicultural and infrastructure measures, financial incentives for forest owners' associations) and indirect subsidies (e.g. special taxation rules for farmers and foresters such as lower gasoline taxes, a special social security system and special rules for income taxation); and (2) the 16 Länder/'states', with the main responsibility for forestry, of which three Länder are large cities (Berlin, Hamburg, Bremen) and of which five are located in the former German Democratic Republic (GDR). These five are: Mecklenburg-Western Pomerania – MV; Brandenburg – BB; Saxony-Anhalt – ST; Saxony – SN; and Thuringia – TH. The location of the Länder is shown in Figure 2.

2.2 Forest ownership distribution in Germany

The Federal State owns 3% of forest area (mainly for military purposes); 31% are owned by the Länder; 20% are communal forests; 46% are privately owned. Privately owned forests dominate in *Bavaria, North-Rhine/Westphalia,* and in *Brandenburg*. A high percentage of federal/national forest is found in *Hessen*. Large ratios of communal forests exist in *Baden-Württemberg, Hessen* and *Rhineland-Palatinate*. The present distribution of forest ownership in Germany is shown in Figure 3.

In the former GDR after World War II, different changes in forest ownership took place. Most private forests were expropriated; others were managed by the official forest service.



Figure 2. Germany and its Federal States (Länder).



Figure 3. Forest ownership in Germany (source: BMELF undated b).

About 90% of the forest area in the former GDR was managed by state institutions according to principles of uniform authority. Today, laws determine the restitution and the reprivatization of forests in the 'new' Federal States (Sasse 1996; Brandenburgisches Ministerium für ... 1998). The situation of forest ownership in the former GDR will change quite significantly in the next years due to the re-privatization of forest land. The amount of forest land re-privatization is shown in Figure 4.

A problem concerning subsidization in Germany is that not all of the owners receive the same amount of subsidies. Some subsidies can only be claimed by special groups of forest owners, while others are excluded.



Figure 4. The current state (30 June 2000) of forest land re-privatization in the former GDR.

2.3 Contradictory points of view – arguments for and against subsidies

Supporters of subsidies claim that subsidies are necessary for the following reasons:

- Subsidies help to overcome regional dissimilarity.
- Subsidies help to overcome allocative market failure. This means, the state is able to regulate the optimal inset and use of scarce resources (e.g. means of production and goods, to the production and consumption processes).
- Subsidies help to provide public goods and positive external effects. The positive external effects build a strong argument for subsidies in forestry (Thoroe 1994:121–131). Public goods are goods with a non-rival consumption, and therefore, contrary to private goods where strong rivalry of the individual consumers and competitive use is assumed (Samuelson 1954, p. 387–389; Samuelson 1955, p. 350–356). The public good is available for many consumers. The lack of possibilities to barter with public goods results in a lack of economic incentive to produce these goods.
- Subsidies help to overcome negative external effects. An external effect cannot be avoided if there is no market mechanism that functions as a co-ordinator and is able to mediate between different interests of actors. There is a divergence between marginal social net products and marginal private net products. This divergence reflects the fact that there are negative and positive external effects that is not internalized by the price-mechanism. As a result there is a discrepancy between individual and national economic costs and benefits.
- Subsidies make it possible to offer merit goods. This means that subsidies aim to correct individual needs. This can be necessary because of wrong information or lack of knowledge of the consumers, because of the possibility to make arrangements through redistribution (e.g. taxes), and because of merit wants as a combination of private and public qualities of goods (Head 1966, p. 1–6; Musgrave 1984, p. 88–90; Musgrave 1969, p. 14–16).
- Subsidies help to reduce market power. Monopolies as indicators for existing market power in a social market economy have a tendency to intensify and reinforce. An existing monopoly means for the consumers, that they have to pay a higher price. There are several possibilities to reduce this effect via subsidies (Robinson 1941, p. 168–170).
- Subsidies work against market failure concerning the stability of economy. Ups and downs in the economic development of a country lead to social problems. The political aim to
realise more stability and to enforce a national economic balance can make use of subsidies.

• Subsidies help to overcome distributive market failure. The real distribution is often not satisfying and often there seems to be a need for correction. For example, redistribution is made if disadvantaged or disenfranchised groups do not automatically get a fair share in a system of pure 'competitive, efficient and productive' distribution.

The opponents of subsidies claim that this financial instrument influences the market economy negatively:

- The co-ordination-function of the prices no longer works because of the manipulation of the prices of goods and the prices of factors. The manipulated allocation mechanism leads to a misdirection of supply and demand, and therefore, a manipulation of the real indicators of shortages.
- The mechanism of selection and sanction in the competition is also manipulated. Nonsubsidized enterprises with comparable productivity and structure of costs have higher marginal costs ('Grenzkosten'). Subsidies lead to distortion of competition. Often a necessary change of structures is delayed because of subsidies and the actual problems are ignored and not solved. Sometimes this also leads to permanent subsidies instead of trying to reduce the volume of subsidies (the so-called 'expansive Eigendynamik', Fuest 1985, p. 24).
- Subsidies lead to negative effects/repercussions for the recipients of subsidies. For example entrepreneurs may not be as prepared to take risks, because subsidies are available and risk taking is not as important for maximizing profits.
- There is the possibility that the recipient of subsidies would have carried out an economic activity anyway and without being supported; the so-called 'free-rider' effects (Zimmermann 1985, p. 94).
- Subsidies lead to an increasing activity of the administrative machinery and an increase of bureaucracy.

With particular regard to forestry, the opponents of subsidies mention the following points:

- The achievements of the state in forestry in the form of state owned forest enterprises is often criticized, especially the mixing of governmental services (protection and recreational functions) with the production of timber in the state forest. The consequence is often a compensation of deficiency with tax revenues. Therefore, because the state owned forests do not have to calculate as strictly as other enterprises, a distortion of competition is the consequence.
- Private forest owners are particularly afraid of an increasing dependency on subsidies and consequently fear a reduction of their rights.
- Subsidies for forestry are not necessarily required in order to improve the efficiency of the market allocation mechanism. The same goal can be reached by a reduction of market distortions in competing branches and, as far as forest policy itself is concerned, by a shift from administrative and legal instruments to arrangements by contracts in the sense of Coase (for comparison see Thoroe 1994:121-131 and Coase 1960: 1–44). Coase approves such private contracts instead of giving subsidies to enterprises because of the internalization of external effects as, for example, favoured by Pigou (1920).

2.4 The definition and documentation of subsidies

In policy, science and statistics there is no standardized definition of subsidies (Trojanus 1995, p. 3). Because of different concepts there are a variety of data and statistics. The

variety in terms and the interpretation of their meaning is quite enormous (e.g. indirect and direct subsidies, financial aid, tax exemption). For example, in forestry many different kinds of financial instruments play an important role, but there are different opinions how to classify them and it is not always possible to measure all of them.

One reason for the great variety of definitions is the fact that subsidies play an important role in different fields, e.g. in the field of political economy, in the field of jurisprudence and in the field of business management. Furthermore, subsidies are often the focal point of attention in ideological debates in political processes, where the discussion is characterized by tactical rhetoric and deliberately manipulative messages (Andel, 1970, p. 4; Fritzsche et al. 1988:1–3; Kötzle 1980:104–105; Trojanus 1995b:3; Rosenthal 1993:66). The first 'Subventionsbericht' (1967) already mentioned that the definition of subsidies in §12 StWG (a law called 'Gesetz zur Förderung der Stabilität und des Wachstums der Wirtschaft vom 08.06.1967', BGB1. p. 582, that determines in §12 the duty of the government to render accounts for subsidies every two years) is not sufficient and that there is a strong need for a better definition (Albrecht and Thormählen 1985, p. 19). The economic sciences talk in this context about a theoretical deficit (Haghani 1999, p. 4). There is in fact no holistic theory and no uniform scientific definition. Even in the field of jurisprudence there is no uniform term (Haghani 1999, p. 15). The main theoretical deficits are:

- There are almost no theories about controlling systems of subsidies (Kurki 1991, p. 2).
- There are almost no theories about regulation systems for the allocation of subsidies.
- There are almost no theories and methods about the examination of the efficiency of subsidies.

Although there has been an intensive discussion recently about subsidies, there is a lack of research in this field and a lack of publications in the German literature. Furthermore it can be said that the few already published results are mainly not developed any further, that means, there are no continuous studies in research and no evolutionary results. Following Ott (1981, p. 437) it is amazing to notice how few publications there are about the promotion of forestry.

The development of subsidies was first documented in so-called financial reports ('Finanzberichte') from 1959 to 1967 (Documentation of subsidies during the period from 1959–1961, see financial report of 1962; Documentation of subsidies during the period from 1961–1963, see financial report of 1964; Documentation of subsidies during the period from 1963–1965, see financial report of 1966; Documentation of subsidies during the period from 1964–1966, see financial report of 1967). Since 1967 the federal government has been obliged to write a report about subsidies (Subventionsbericht) every two years on the basis of §12 StWG (The first report about subsidies of the 21.12.1967, see BT-Drucksache V/2423, BR-Drucksache 651/67). Since then there has been a permanent chronology of subsidies that have been established by law. But this periodical report does not make it possible to give continuous information about the development of subsidies, because of the permanent variation of definitions and the missing adaptation of the former statistics. The function of the National Accounting, the so-called 'Volkswirtschaftliche Gesamtrechnung (VGR)' (published by the 'Statistisches Bundesamt') is to give a short overview over the economic events of the national economy. The description published by the VGR allows a solid documentation of subsidies over the years, but uses a very restricted definition, so the potential to make statements about the real development and meaning of subsidies are very limited. Definitions and documentation of subsidies are also given by the German economy research institutes (Wirtschaftsforschungsinstitute). Since 1988 the most important five German institutes (Deutsches Institut für Wirtschaftsforschung in Berlin - DIW; Institut für Wirtschaftsforschung in Hamburg - HWWA; Institut für Wirtschaftsforschung in München ifo; Institut für Weltwirtschaft in Kiel - IfW; Rheinisch-Westfälisches Institut für

Wirtschaftsforschung in Essen – RWI) use the same terms concerning subsidies in their published reports. The institutes mainly aim for documenting the sectoral exertion of influence of the state.

The quantitative differences in the statistics of the different reports as an expression for the confusing variety is shown in Figure 5.



Figure 5. Quantitative differences in the captures of different reports (subsidies in general, not only forestry, following Haghani 1999, p. 44).

3. Overview of Challenges for Scientific Working schemes in Germany Concerning the Evaluation of Subsidies in German Forestry

- According to the federal principle in Germany there are many slightly different subsidy regimes. Therefore, it is not so easy to make one overall statement about subsidies. It is rather necessary to differentiate between several kinds of subsidies and to go into detail at a very early stage of research.
- The quantitative structure of forest ownership is just changing quite significantly, and so is the qualitative structure (attitudes, aims, etc.). This make it quite difficult, to cope with the owners as (very important) actors in a subsidization-model. There is also quite a significant change in the attitude of society in Germany in general. There is a tendency that the interest of the population lies more in the protective and recreational functions of forests than in the economic use of timber.
- There are very contradictory discussions and different points of views concerning subsidies in Germany. There are disagreements about the efficiency and the economical and political amicability of subsidies as a financial instrument. Furthermore the discussions often show a strong ideological character.
- There is a significant lack of solid definitions and a lack of subvention-theories. Therefore, the statistics diverge significantly. The data base for empirical (especially time-series) analysis is insufficient in many cases or inappropriate due to some weaknesses of

(forestry) statistics. Some kinds of subsidies or financial instruments are difficult to state more precisely, to standardize or to capture. For example, indirect subsidies are scientifically difficult to cope with.

4. Questions about the Current Subsidy System in Germany

Questions that can be put according to the German conditions are the following:

- What is the background of diverging arguments concerning subsidies? For example, it is often claimed in debates about subsidies that financial incentives are given because of the positive external effects of forests. Relevant protective functions include water protection (filter and retention effects); emission protection against air pollution and noise; climate protection (Global CO₂ reservoir and local climate protection); soil protection, including erosion control; landscape protection; and the protection of biotopes and species (BMELF undated b; Böswald 1998; Enquete-Kommission 1994). The question that can be put concerning this argument is whether the costs of an 'Einheitsforstamt'-administration might be legitimized by the role of public forests for recreation and conservation.
- Why is there such a deficit or such a contradictory variety concerning definitions and data of subsidies, and why is there such a lack of knowledge concerning the claim and use of subsidies (e.g. many regulations have the problem to specify the ecological or social benefit that will be achieved by the use of subsidies), the controlling possibilities of subsidies and the efficiency of subsidies?
- What is the real (objective) function of subsidies in forestry in Germany (apart from arguments for or against financial support)?

References

Albrecht, D. and Thormählen, T. 1985. Subventionen - Politik und Problematik. 160 p.

Andel, N. 1970. Subventionen als Instrument des Finanzwissenschaftlichen Interventionismus. Tübingen.

BMELF. 1996. Waldzustandsbericht. Federal Ministry of Food, Agriculture and Forestry, Bonn.

- BMELF undated a. Nationaler Waldbericht. Bundesministeriums für Ernährung, Landwirtschaft und Forsten (BMELF), Bonn.
- BMELF undated b. Forest Report by the Federal Government. Bundesministeriums für Ernährung, Landwirtschaft und Forsten (BMELF), Bonn.
- BMF. 1983. 9. Subventionsbericht des BMF vom 06.09.1983. Drucksache 10/352. Bundesministerium der Finanzen (BMF), Bonn.
- BMF. 1995. 15. Subventionsbericht des BMF vom 01.09.1995. Drucksache 13/2230. Bundesministerium der Finanzen (BMF) Bonn.
- Böswald, K. 1998. Present and Future Options of Forests and Forestry for CO₂-Mitigation in Germany. Proceedings: Carbon Mitigation Potentials of Forests and Wood Industry. Workshop, Munich Freising, June, 19–21. Berlin.

Brandenburgisches Ministerium für Ernährung, Landwirtschaft und Forsten (ed.) 1998. Verantwortung für den Wald – Die Geschichte der Forstwirtschaft in der Sowjetischen Besatzungszone und der DDR. Potsdam.

Coase, R.H. 1960. The Problem of Social Cost. In: Journal of Law and Economics, Nr. 3:1–44. Enquete-Kommission 'Schutz der Erdmatmospähe' des deutschen Bundestages (ed.) 1994. Schutz der grünen

Érde – Klimaschutz durch umweltgerechte Landwirtschaft und Erhalt der Wälder. Bonn.
Fritzsche, B., Hummel, M. et al. 1988. Subventionen – Probleme der Abgrenzung und Erfassung. In: ifo Studien zur Strukturforschung Nr. 11, München, 1988.

Fuest, W. 1985. Subventionen – Problematik und Begrenzungsmöglichkeiten. In: Beiträge zur Wirtschafts- und Sozialpolitik. Institut der Wirtschaft, Heft 132.

Haghani, S. 1999. Subventionseffizienz staatlicher Finanzpolitik. Wiesbaden, DUV, Dt. Univ.-Verl., 1999. Head, J.G. 1966. On merit goods. In: Finanzarchiv, N.F., Band 25, Tübingen, pp. 1–29.

Institut für Forstpolitik Freiburg 2001. Teil I, Sommersemester 2001. Unveröffentlichtes Vorlesungsskript. 68 p.

- Kötzle, A. 1980. Die Eignung von Subventionen für die Umweltpolitik. In: Volkswirtschaftliche Schriften, Nr. 296, Berlin, 1980.
- Kurki, M. 1991. Untersuchungen zur Förderung der Forstwirtschaft in Baden-Württemberg. In: Mitteilungen der Forstlichen Versuchs- und Forschungsanstalt Baden-Württemberg, Heft Nr. 155, Abt. Betriebswirtschaft. 1991. Löffler, H. 1992. Arbeitswissenschaft. Weihenstephan, 1992.

Musgrave, R.A. 1969. The theorie of public finance. Dtsch.: Finanztheorie. 2., erg. u. verb. Aufl. Tübingen, Mohr, 1969. 537 p.

Musgrave, R.A. 1984. Public finance in theory and practice. New York, McGraw-Hill, 1984. 824 p.

Ott, W. 1981. Gedanken zur Förderung der Forstwirtschaft. In: FHW, p. 437 and following.

Pigou, A.C. 1920. Economics of Welfare. London, 1920.

Robinson, E.A.G. 1941. Monopoly. Cambridge, Mass., pp. 168-170.

Rosenthal, F. 1993. Die nationale Luft- und Raumfahrtindustrie. München, 1993.

Samuelson, P. 1954. The pure theory of public expenditure. In: Review of Economics and Statistics. Band 36: 387–389.

Samuelson, P. 1955. Diagrammatic exposition of collected scientific papers. In: Review of Economics and Statistics. Band 37:350–356.

- Sasse, V. 1996. Transition in Forestry Recordings in the new German Federal States. In: Schmithüsen (Ed.) Forstwiss Beiträge der Professur Forstpolitik und Forstökonomie 17, Experiences with Public Forest Ownership and Joint Management Systems, Proceedings of the IUFRO Forestry Conference Pushkino, Moscow Region, Russia, June 1994, pp. 192–200.
- Schmid, S. 1996. Die strukturelle und waldbauliche Entwicklung des Privatwaldes in Baden-Württemberg nach 1945. Dissertation an der Albert-Ludwigs-Universität Freiburg. 251 p.

Thoroe, C. 1994. Forstliche Förderung und Marktwirtschaft. In: Private Forstwirtschaft – Chancen und Herausforderungen für die mittel- und osteuropäischen Länder. Tagungsbeiträge der IUFRO-Gruppe 'Small-Scale Forestry'. Krakau, 29.8.-2.9.1994. Freiburg: Forstl. Versuchs- und Forschungsanstalt Baden-Württemberg, 1995, pp. 121–131. Mitteilungen der FVA, Heft Nr. 186. Erscheinungsdatum: 1995. Datenbank: BFH-LIT.

Trojanus, K. 1995. Subventionen als Instrument der Strukturpolitik in Ostdeutschland. In: ifo Schnelldienst, Nr. 29/95, München, pp. 1–3.

Volz, K.-R. 1989. Die Förderung der Forstwirtschaft – Konzepte und Perspektiven. In: Forstw. Cbl. 108:83–95, 1989. Zimmermann, H. 1985. Subventionsberichterstattung und Erfolgskontrolle. In: Finanzarchiv, pp. 86 and following, Jg. 1985.

Nature and Structure of Financial Means Supporting the Forestry Sector in the Czech Republic – Instruments of the Czech State Forest Policy

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Abstract

The set of instruments applied to rational use of forest resources in the Czech Republic is relatively extensive. There are ethical, normative, economic, and institutional tools (of positive and negative nature) used in the field of forest resources management. The economic tools include charges for deforestation, sanction payments (penalties), tax allowances, subsidies, appropriations, gifts, soft loans and guarantees. Financial means come to forestry from five ministries and from two EU programmes. In total, it represents 18 sources distinguished into 50 titles. Some financial means are obligatory by the Forest Act. Services supporting forestry and provided free of charge by the state, irrespective of type of forest ownership, are mainly the airborne fire control, the large-scale measures for forest protection, and consultancy. Non-obligatory financial subsidies by the Ministry of Agriculture cover partially the costs of: regeneration of forests damaged by air pollution; reforestation and tending of forest stands; grouping of small-sized forest owners; environment and nature-friendly technologies; providing non-market forest goods and services; torrent control; support of endangered species of wild animals; and elaboration of forest management plans.

Keywords: Forest policy instruments, public financing, forestry sector, Czech Republic

1. Introduction

Forests and forestry form substantial part of the rural area and rural economics in the Czech Republic (CR). Forests are a significant part of rural areas in the CR. The processing of forest products, mostly in small mills, provides a significant amount of employment. Forestry is not

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experiencing the same degree of losses as that experienced by the declining agriculture. On the contrary – forestry can be considered as a developing and profitable economic activity. Forestry and timber processing industry contributes significantly to finance, infrastructure and employment in rural areas, increases socio-economic stability, and contributes to the development of rural areas. Apart from the economic aspects, forestry and forests provide society with a set of important non-market goods and services. Some of them – like recreation services – can be transformed, to a certain extent, into the economically profitable activities.

The set of instruments applied to the environmental management – and therefore, to protection and rational use of forest resources – is rather extensive in the CR (more extensive than in the EU countries). Application of these instruments has a long history in the CR and the tools have been implemented permanently. There are ethical, normative, economic, and institutional tools (of positive and negative nature) used in the field of forest resources management. Legislative measures (where the forest owner is restricted especially by the legislation: Forest Act, Nature Conservation Act and Waters Act), and the economic measures are amongst the most important tools.

The economic tools include: so-called charges for withdrawal of forest land (deforestation fees); sanction payments (penalties) in cases where management practices are against law; tax allowances (mainly land, income and road taxes); subsidies; appropriations; gifts; soft loans; and guarantees.

2. Financial Support

Financial means for forestry are available from the following five ministries: Ministry of Agriculture; Ministry of Environment; Ministry of Regional Development (ensuring rural development policy); Ministry of Industry and Trade; and Ministry of Defence. Financial means are also available from two EU programmes. Altogether there are 18 sources (distinguished into 50 titles), out of which the most important are:

- Financial Contributions for Forests Management by the Ministry of Agriculture;
- Nature Environment Management Programme by the Ministry of Environment;
- Promoting and Guarantee Farmers' and Forestry Fund by the Ministry of Agriculture.

Out of the 50 financial support items, there are:

- 18 cases of economic support of forest owners and tenants (related above all to the health status of forests, and to ecological and environmental state and stability of forest stands);
- 16 cases of assistance to forest conservation and development of non-market forest goods and services;
- 16 cases simultaneously combining the support of both the groups.

Financial means originating from the state budget come to the forestry sector from various sources. The most important financial support for the forestry sector, is provided by the Ministry of Agriculture. Subsidies from the Ministry of Agriculture belong to the group of basic economic tools supporting application of forestry policy into the forestry practice. Sustainable production of timber and its broader use and consumption, gradual enhancement of ecological stability of forest ecosystems, and the provision of non-market forest goods and services are ranked amongst basic goals of forestry policy.

Financial means flowing to the forestry support especially forestry activities aimed at enhancement of ecological stability of forests, environmentally-friendly forestry measures, and broader provision of non-market goods and services. Subsidies by the Ministry of Agriculture support mainly forest owners and forest tenants.

Other parts of the forestry sector, especially forest companies and other enterprises offering and providing forest operations on contractual bases, are not financially supported by the Ministry of Agriculture. The forestry sector consists of a set of miscellaneous bodies, primarily of private and municipal forest owners, of different establishments managing and administering state forests, and of enterprises providing silvicultural and logging operations in forests, based on contracts. Such companies can obtain a certain amount of subsidies for entrepreneurs, e.g. from the Ministry of Industry and Trade, from the Promoting and Guarantee Farmers' and Forestry Fund, and from several other establishments.

The Forest Act obliges the State to compensate forest owners and tenants for certain activities (Table 1). These include:

- costs of planting of soil improving and forest stands stabilizing tree species (mostly broadleaved species; reforestation using broadleaved species is much more expensive than using coniferous species such as Norway spruce and Scots pine);
- costs of activities carried out by licensed forest professionals (including their wages and salaries) serving as managers and advisors for owners of small-scale forests;
- costs of forest management guidelines (concise forest management plans) elaborated for small forest owners;
- costs of soil reclamation (improvement by liming and by other measures) and torrent control.

Activities	19 millior	999 1 CZK*
	Approved	Disbursed
1. Reforestation by soil improving and stabilizing tree species	12	11
2. Forest management guidelines (plans for small-scale forest owners)	40	38
3. Soil reclamation and torrent control	178	159
4. Licensed forest professionals	99	99
Total	329	307

Table 1. State financial obligations subject to the Forest Act.

*1 Czech Crown (CZK) = 0.03 Euro

Apart from this, the State (Ministry of Agriculture) supports forestry by some services related to forest protection and provided free of charge, irrespective of type of forest ownership. Such services consist mainly of airborne fire control, the large-scale measures for forest protection, and consultancy (Table 2).

Table 2. Services provided by the State for forest management.

Type of service	1999 million CZK
Airborne fire control service	30
Large-scale measure for forest protection	14
Consultancy	8
Other services	4
Total	56

Purpose of subsidy	Ownership category	1999 million CZK
Regeneration of forests damaged by air pollution	State	4
	Communal	18
	Private	12
	Total	34
Reforestation, establishment of stands and their tending	State	16
	Communal	57
	Private	114
	Total	187
Grouping of the small-size forest owners	Private	3
	Total	3
Environment and nature friendly technologies	State	2
	Communal	4
	Private	10
	Total	16
Non-market forest services	State	79
	Communal	16
	Private	105
	Total	200
Torrent control	State	45
	Communal	0
	Private	0
	Total	45
Support of endangered species of wild animals	State	1
	Communal	0
	Private	2
	Total	3
Elaboration of forest management plans	State	46
	Communal	12
	Private	14
	Total	72
Other subsidies	State	2
	Communal	0
	Private	3
	Total	5
Total subsidies	State	195
	Communal	107
	Private	263
	Total	565

Table 3. State subsidies to the forest management by the purpose and ownership categories.

Non-obligatory financial subsidies (Table 3) by the Ministry of Agriculture partially cover costs of:

- regeneration of forests damaged by air pollution;
- reforestation and tending of forest stands in protective forests, forests of special purpose and forests on unfavourable sites;
- grouping of small-scale forest owners;

- environment and nature friendly technologies (mainly timber skidding in forest stands);
- non-market forest goods and services (including adjustments of forest roads networks);
- torrent control;
- support of endangered species of wild animals (e.g. black cock, mountain cock, partridge, etc.);
- elaboration of forest management plans (considered as important not only for forest owners themselves, but also for the state administration).

Subsidies for regeneration of forests damaged by air pollution are as follows:

- First reforestation:
 - Soil improving and stabilizing tree species;
 - Other species;
- Replanting:
 - Soil improving and stabilizing tree species;
 - Other species;
- Protection of young growth;
- Weed control of plantations;
- Game control of plantations;
- Pine weevil control of plantations;
- Mice control of plantations;
- Establishment of game-proof fences;
- Fertilization and liming (calcification) of forest stands:
 - Aerial;
 - Terrestrial.

Subsidies for reforestation, establishment and tending of stands in protective forests, in forests of special purpose (forests important for environment) and in forests on poor sites are as follows:

- First reforestation:
 - Soil-improving and stabilizing species;
 - Other species;
- Replanting:
 - Soil-improving and stabilizing species;
 - Other species;
- Establishment of forest stands;
 - Soil-improving and stabilizing species;
 - Other species;
- Stands reconstruction;
- Tending of forest stands up to 40 years;
- Cleanings;
- Intermediate planned fellings.

Subsidies for environment and nature friendly technologies are as follows:

- Skyline skidding;
- Horse skidding;
- Special mechanized skidding;
- Chipping of logging slash before forest regeneration.

Subsidies for promotion of non-market forest services consist of the following items:

- Forest reclamation and torrent control;
- Construction and repairs of retention reservoirs;

- Construction and repairs of forest roads;
- Enhancement of recreation services of forests;
- Measures in the zones of hygienic protection of water resources.

The Ministry of Agriculture provides also subsidies for afforestation of agricultural lands. In 1999, 493 ha of agricultural lands were afforested and the subsidies amounted to 25.2 million CZK. Of the total, 15.7 million CZK of the subsidies were paid to private owners reached (afforested 324 ha of agricultural land), 9.0 million CZK were paid to municipal owners (afforested 161 ha of agricultural land) and 0.5 million CZK were paid to other owners (afforested 8 ha of agricultural land).

In total, the Ministry of Agriculture supported financially the forestry sector with 928 million CZK in 1999, which was 371 CZK/ha of forest land (the GDP in the forestry sector reached 11.3 billion CZK, i.e. 0.7% of total GDP). But there were great differences in applications for and obtaining the financial support amongst different types of forest owners. The largest establishment administering state forests, the State Enterprise 'Forests of the Czech Republic' (embracing the area of 55% of total forest land in the CR) did not apply for some items of state subsidies, having covered the enhanced costs of forest activities from its own market incomes. The average profit of forest owners before taxes and without financial support was 444 CZK/ha and profit of forest companies performing forest operations reached on average 881 CZK/ha in the CR in 1999.

Apart from the above-mentioned subsidies, other bodies participated in public financing of forestry activities or activities related to forestry. Subsidies by the 'Agrocomplex' for the structural change of agricultural production by afforestation amounted to 46 million CZK in 1999. Aid covering interest on loans in forestry from the Supporting Guarantee Agricultural and Forestry Fund Ltd. amounted to 19 million CZK in 1999. Subsidies for management of forests owned by the military amounted to 58 million CZK. Subsidies for environment-friendly forest management in forests of national parks and protected landscape areas from the State Environmental Fund of the Ministry of Environment amounted to 21 million CZK in 1999.

3. Conclusions

From the environmental point of view, forests are considered a very important part of the countryside, landscape and rural development. The set of instruments ensuring interests of state forestry policy, environmental policy and rural development policy is rather extensive. Financial support comes from several sources and funds that are independent of each other. The co-ordination of financial support from different funds is very weak. This is caused by the fact that some state authorities administer rural areas without adequate co-ordination and co-operation. For example, in the CR, the Ministry of Regional Development is responsible for the regional policy and the countryside development, and it has funds to support this. The Ministry of Agriculture is responsible for agriculture, forests and water resources (having its own funds). The Ministry of Environment is responsible for rural areas and forest parts of landscape (especially in national parks and in protected landscape areas). Each Ministry has its own funds and there is little coordination.

The most important financial support for forestry comes from the Ministry of Agriculture. The financing is aimed mostly at silvicultural and forest protection operations assuring the environmentally desirable state of forests. At present, the adjustment of instruments of the Czech forest policy is under discussion. The system of taxation needs to be changed and based on an environmental approach. Also, the system of financial support of forestry should be adjusted, simplified and better co-ordinated.

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References

Ministry of Agriculture. 2000. Report on the state of forests and forestry in the Czech Republic by December 31, 1999. Ministry of Agriculture, Prague, 139 p.

Ministry of Agriculture. 2000. Obligatory rules for financing contributions for forests management in 2001 and audit method for the utilization thereof (according to Section 5 of the Act No.289/1995 Coll., on Forests and to Modify and Amend Certain Laws (Forest Act)). Ministry of Agriculture, Prague.

Sisak, L. 1998. Structure and basic tasks of main subjects creating forestry sector in the Czech Republic.

Symposium on institutional aspects of managerial economics and accounting in forestry, Roma – Ostia, Italy, pp. 237–248.

Financial Instruments in Polish Forest Policy

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Abstract

Unlike the other countries in transition in the region, Poland has not arrived yet at politically acceptable decision on the appropriate form of reprivatisation. This is partly because of the relatively large scale of such a restitution process involved. In the country with predominant state ownership of forest resources, while pursuing forest policy goals, the government relies to a high extent on the performance of the state forest service – the State Forests. Still, substantial part of the country's forest cover, that is some 16%, remains in the private ownership. At the same time most private forest owners face unfavourable economic situation, mostly because of high fragmentation of forest practices, is of high importance, especially in the present period of the country's economic transition. However, due to the state budget limits, resources available for direct financial support for private forest owners are scarce. It is thus regulated by the forest law that private forest owners may receive free of charge specific forms of assistance, such as technical advice or combating forest pests provided at the expense of the State Forests.

Keywords: public intervention, public support, financial instruments, economic incentives, Poland

1. Introduction

This paper is intended to review present institutional settings regarding purposes and sources of forest policy financial instruments in Poland, both in private and state forestry, as well as to provide with some evidence on actual costs of measures applied. The overview of the scale and priorities of public financial support in forestry is based on documents analysis and then on facts referring to public expenditure on the State Forests and private forestry.

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Major part of the state budget financial means is directed to the State Forests for assignments indicated in the Act on Forests. These resources, however, are usually not sufficient to cover all assumed expenditure, so that the State Forests have to apply for external founding. Similarly, private forestry apart from state budget means receive financial assistance and incentives also from other public sources. Among them there are specific forms of assistance, such as advisory services, provided for private forest owners at the expense of the State Forests.

2. Forest Ownership in Poland

Agricultural reforms of 1944 and 1945 resulted in nationalisation of all individual private forest estates larger than 25 ha. Since then no major changes have happened and public forests remain the biggest ownership category. The current structure of forest ownership in Poland is given in Table 1.

Table 1. I blobt alea by ownership categoly in 1777	Table	1.	Forest	area	by	ownership	category i	n 1999
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Category	Fore	st area	
	['000 ha]	%	
PUBLIC	7331	82.8	
State Treasury	7252	81.9	
State Forests	6936	78.4	
National Parks	182	2.0	
Other public	134	1.5	
Local authorities	79	0.9	
PRIVATE	1519	17.2	
Natural persons	1424	16.1	
Other private	95	1.1	
Total	8850	100.0	

Source: Central Statistical Office 2000

As of the year 2000, ten years from the beginning of the transition in Poland, reprivatization process has not started yet, nor there exists a wide political agreement on the specific procedure of such process. Most recent approach towards this complex issue has been laid out in the latest parliamentary bill on reprivatization. However, in March 2000 President vetoed the bill and then the parliament was unable to reject President's veto. Regarding restitution of nationalised forest estates, the bill did not predict physical return of forests to their former owners. Instead, the former owners were offered financial compensation at the rate of 50% of the value of nationalised estate.

Within public forests two types of ownership are distinguished, i.e. forests owned by the State Treasury and those owned by the local administrational units (communal forests). However, the share of the latter category in the public forests' area merely accounts for 1% of the total forest area in Poland. Majority of public forests owned by the State Treasury, excluding forests within National Parks, as well as forests that are controlled by other ministers, regional administration and the State Treasury Agricultural Ownership Agency, is

managed by the State Forests National Forest Holding (the State Forests). As a state organisational unit, having no legislative authority and representing the State Treasury where the management of assets is concerned, the State Forests are under supervision of the Minister of Environment. While the management of the State Treasury's forests is the primary duty of the State Forests, at the same time this organisation does not hold a state forest authority power. Regarding financial settings, the Act on Forests of 1991 (with the later amendments) regulates that the State Forests shall act on self-financing basis, covering costs of its activity from its own income. In 1999 employment in the State Forests was of 34 386 persons (Central Statistical Office 2000).

Private forests cover some 1.5 million ha, that is 17% of total forest area in Poland. These are almost entirely owned by individual owners. The share of forests owned by communities (where land is property of the whole or part of a village community), as well as collective farms and co-operatives accounts for 5% of total private forest area. It should be noted that private forestry face unfavourable situation due to high fragmentation of forest holdings. In 1996, nearly 80% of all private forests was managed in connection with agriculture farms, so called farm forestry. There are some 900 000 owners of the small-scale (farm) forest holdings. The average size of a single (farm) forest holding is of 1.3 ha, where it can often be made up of several separated plots (Central Statistical Office 1997).

Although private forests owned by natural persons constitute some 16% of total forest area they account only for 11% in terms of the total country's growing stock. The respective figures are shown in Table 2. According to available statistics, provided by the Central Statistical Office, private forests are considerably less stocked when compared to the forests managed by the State Forests. In 1999, the growing stock averaged out at 119 m³/ha in private forests and at 209 m³/ha in the State Forests. The mean age of forest stands within private forests was lower than in those managed by the State Forests, being of 40 and 57 years respectively. There is also significant difference between these two ownership categories regarding timber increment volume, which in figures of 1995 was of 3.1 m³/ha in private forests and of 5.2 m³/ha in the State Forests. When looking at cutting volumes, as much as 94% of the total country's timber cut falls within the State Forests, while it is only 5% within individual private forest owners, and 1% in the other ownership categories.

		Growing				
Category	Area (ha)	stock (m ³)	Increment ^c (m ³)	Fellings (m ³)		
State Forests	6.94	1448	35.3	24.4		
Private individuals	1.42	188ª	4.4	1.2		
Country total	8.85	1693 ^b		26.0		

Table 2. Ownership of forest resources (figures in million of units).

Source: Central Statistical Office 2000, ^a Figure for individual private and public communal forests, ^b Calculated figure after Report on the state of forests in Poland 1999, the State Forests' Information Centre, Warszawa 2000, ^c Estimated figure in m³overbark as of 1995.

Despite relatively large proportion of forest resources in Poland, forestry production is of rather low significance within the national economy. In 1999, the contribution of forestry production to the Gross Domestic Product (GDP) was of 0.4%, while the share of agriculture and hunting in GDP was of 3%. Employment provided by the forestry sector in figures of 1999 was of 44 371 persons, where the majority, i.e. 34 386 or 77.5%, was employed at the State Forests.

3. Institutional Framework for Financial Instruments

3.1 Forest policy goals

The policy aims related to sustainable forest management can be derived from the text of the Act on Forests, as well as they are stated in the National Policy on Forests, the document adopted by the Council of Ministries in 1997.

According to the Act on Forests, sustainable forest management shall be carried out with particular account of the following aims:

- conservation of forests and their favourable impact on climate, air, water, soil, living conditions for humans and their health, as well as on the ecological balance;
- protection of forests, especially those that are fragments of the country's natural heritage, or those that are especially valuable with regard to:
 - conservation of nature variety;
 - preservation of the genetic resources of the forest;
 - valuable features of the landscape;
 - research needs;
- protection of soils and of areas especially exposed to pollution or injury, or of special social importance;
- protection of surface and underground water, retention of river basin, and in particular on watershed areas as well as on areas supplying water to underground reservoirs;
- production of wood and non-timber products based on the principle of rational forest management.

Moreover, the Act on Forests stipulates that the forest management shall be performed in accordance with the following principles:

- general protection of forests;
- sustainable maintenance of forests;
- continuity and balanced use of all functions of the forest;
- expanding of forest resources.

As it is stated in the National Policy on Forests of 1997, the overriding objective of forest policy is to designate the complex of actions shaping relations between society and forests. This shall be done with the aim of preserving the conditions for the permanent maintenance of the multifunctional forests, their multi-faceted utility and protection, and their role in the shaping of natural environment, in line with the present and future expectations of society.

Among the specific goals listed by the National Policy on Forests there are the following ones:

- safeguarding of the permanent multifunctional character of forests, inter alia by increasing the country's forest resources as well as by improving their condition and ensuring their protection;
- transformation of forest management and use from the previous dominance of the wood production function into an environmentally and economically balanced model of sustainable and multi-functional forest economy, that corresponds with criteria formulated for Europe by the Helsinki Process and takes into account the specific features of Polish forestry;
- enhancing ecological, economic and social functions of forests.

These goals are then supplemented with the activities that shall be implemented for their successful achievement. Although the National Policy on Forests is a rather comprehensive and detailed document that prescribes forest policy course until the year 2050, it is less

precise when it comes to the use of financial instruments. In fact this document does not determine any specific financial instruments to be used for the implementation of the listed forest policy goals.

3.2 Legal frames

Legal basis for public support measures in forestry, including financial incentives, is provided by the Act on Forests of 1991. According to this Act the State Forests shall be given allocations from the state budget for assignments indicated by the government administration, and in particular for the following activities:

- purchase of forests, as well as purchase of lands suitable for afforestation, regeneration of these lands, and purchase of other lands where preservation of its nature quality is considered;
- implementation of the National Program for Expanding of Forest Cover, as well as silvicultural tending and forest protection measures of young forest stands established as a result of the Program's implementation;
- management and protection of forests in cases of the threats to their sustainability, arising as a result of the impact of industrial gases and dust, or natural disaster caused by biotic and abiotic agents;
- elaborating of periodic national inventories of forests, updating information about the state of forest resources as well as keeping a database on the forest resources and forest condition;
- preparing of plans for the protection of nature reserves managed by the State Forests; implementation of this plans and protection of flora and fauna species;
- educating society on forest aspects, especially through creation and management of Forest Promotional Areas and/or designing paths for nature walks.

In accordance with the Act on Forests, private land owners may receive subsidies from the state budget, which will cover in part or in full, expenses on afforestation of lands designated in the local spatial management plan. Since 1997 afforestation has been also financed from the Forest Fund's resources.

Private forest owners may receive financial support from the state budget in the following instances:

- in cases in which it is not possible to determine those responsible for forest damage, arising as a result of the impact of industrial gases and dust, forest fires or a natural disaster caused by biotic and abiotic agents, and if this damage threatens the sustainability of forests the costs of management and protection connected with the restructuring of tree stands are covered from the state budget;
- preparation of the simplified forest management plan (or forest inventory record for forests smaller than 10 ha) which is to be made at the expense of the state budget.

Furthermore, the Act on Forests stipulates that the State Forests shall be responsible for the assistance for forest management in private forests through:

- covering of the costs of control and protection measures in the forests threatened by the occurrence of harmful organisms;
- technical advice in forest management;
- in specially-justified cases, providing (free of charge) seedlings of forest trees and shrubs for the regeneration of forest cover (forest cultures) – in agreement with the forest management plan.

All forests are taxed by the forest tax, with the exception of those not linked with the forest management, those around recreation centres, buildings and recreation grounds, as well as those excluded by administrative decisions from forest management for purposes other than forest ones. The Forest tax it is an income tax assessed on the basis of site quality and species composition (potential income). The forest tax from one conversion hectare is money equivalent to 0.2 m³ of timber, calculated according to the average selling price of timber. For protective forests, forests constituting part of nature reserves, national parks and forests which are uncovered by any forest management plan, the forest tax per 1 hectare is a money equivalent to 30 kg of wheat. Such a lower (by approximately 50%) taxation applied for these forest categories constitutes tax concession. In addition forests with tree stands up to 40 years old and those listed by the register of antiquities are exempt from the forest tax.

3.3 National Program for Expanding of Forest Cover

Afforestation of abandoned and marginal agricultural lands as well as other suitable lands has been policy goal pursued in Poland since 1918. Afforestation efforts in the period of 1947–1995 resulted in the substantial increase of forest cover, i.e. by 1.2 million ha. Total area of marginal agricultural lands amounts currently to 3.3 million ha, at which 1.5 million ha is estimated to be suitable for afforestation. In 1995, the government adopted the National Program for Expanding of Forest Cover (NPEFC), which is targeted at afforestation of 700 000 ha of marginal agricultural lands, both private and state, till the year 2020. If the Program was successfully implemented the country's forest cover should expand by 2%, to reach in 2020 some 30% of total country's area. Afforestation of the further 800 000 ha is foreseen in the period of 2020–2050.

However, effective implementation of the Program is threatened by the fact that unlike it was originally expected it has not become a governmental program. It is because of the state budget's constraints that it was not acceptable for the government to fully finance Program implementation. Therefore, financing of NPEFC has been based on several sources such as National and Regional Funds for Environmental Protection and Water Management, the Forest Fund, foreign institutions such as World Bank, European Investment Bank, PHARE etc.

4. Public Expenditure on Forest Management

4.1 The State Forests

During the decade of 1990, allocation of funds from the state budget to the State Forests, for assignments listed in the Act of Forests, has never been sufficient to cover costs of implementation of all the specific tasks. In the transition period there are many competing and of basic importance tasks, such as economy restructuring or health care system's reform, which gain priority over some forest policy targets. In the end there is less funds available for comprehensive implementation of forest policy goals.

Majority of state budget's funds allocated to the State Forests has been directed towards implementation of the National Program for Expanding of Forest Cover. The second activity that was gaining priority over the other tasks undertaken in a public interest, was the conversion of tree stands in cases of threats to their sustainability, in most cases arising as a result of the impact of industrial gases and dust. Management and protection of these stands was mostly carried out in the period of 1994-1996. Finally some funds from the state budget

were allocated for nature protection and purchase of forests and lands suitable for afforestation. In order to implement the other tasks listed in the Act of Forests, the General Directorate of the State Forests has been applying for missing financial means to the National Fund for Environmental Protection and Water Management. Total amount of funds allocated from the state budget to the State Forests in the respective years is shown in Table 3.

Table 3. State budget allocations to State Forests (figures in million of PLN – Polish national currency).

	Year							
	1992	1993	1994	1995	1996	1997	1998	1999
Allocation [M PLN]	7.6	8.2	44.4	76.8	79.7	26	54.6	50.8
Source: the State Forests 2000								

4.2 Private forestry

Nearly all public funds allocated to private forestry are being spent on elaboration of forest management plans (or forest inventory records for forest holdings less than 10 ha) and afforestation of marginal agricultural lands (these solely are costs of seedlings provided free of charge to land owners). The respective figures for the year 2000 are given in Table 4. In fact private forest and land owners do not receive any cash grants or low interest loans. The existing support is just assistance in kind. Supply of free plants, rarely soil preparation, is offered as an incentive to activate and draw private investment into afforestation policy.

Table 4.	Public e	xpenditure on	private	forestry	in	2000
Table 4.	I UDIIC C.	xpenuiture on	1 private	101CSU y	111	2000

Financial source	Subject area	Allocations [million PLN]
State budget	Management plan Afforestation	1.5 1.4
RFEPWM ^a	Management plan Afforestation	0.2 4.8
Forest Fund	Afforestation	5.5
Total		13.4

Source: Central Statistical Office 2000, Ministry of Environment 2000, the State Forests 2000, * Regional Fund for Environmental Protection and Water Management

There exists little evidence, if any, of financing tree stands' conversion or regeneration in cases of forest damage arising as a result of industrial gases and dust's impact, forest fires or a natural disaster. Even though, such activities may be financed via public funds, as it is stated

in the Forest Act. Thus measures aimed at assisting private forest owners in overcoming financial difficulties resulting from a given catastrophe seem to be rather poorly implemented.

Regarding further type of direct aid to forest owners, i.e. compensation paid for some compulsory services to be provided for the society, it must be realised that currently there are no legal basis for such compensation.

Private forest owners are furthermore entitled (by the Forest Act) to receive support from the State Forests. Such support shall take form of control and protection measures against occurrence of harmful organisms (costs to be covered by the State Forests), technical advice in forest management as well as free of charge provision (in specially-justified cases) of forest trees seedlings and shrubs for regeneration of forest stands. The actual costs of all those activities are known not so well and thus will still have to be extracted and/or estimated.

In addition, since 1997 certain part of financial resources of the Forest Fund is to be spent on afforestation of private marginal agricultural lands. Financial means spent on this activity have been growing since then. In the year 2000, for instance, there allocated from the Forest Fund some 5 million PLN for afforestation on private lands, what constituted the sum three times bigger than subsidies allocated for afforestation from the state budget.

5. Conclusion

As it appears from the initial analysis, private forest owners receive relatively modest both assistance and incentives for forest management activities. There are no financial incentives provided for various silvicultural measures (thinning, drainage etc.), forest roads' construction, haulage and handling of timber etc. Similarly, there is no compensation paid as a contribution to expenditure incurred in connection with the opening of forests for recreation, or nature conservation and protection measures. One reason for such situation would be that private forestry plays currently rather minor role concerning both economic (timber production) and environmental functions.

Accordingly, these are the State Forests that presently are supposed to secure supply of the majority of forest goods and services in Poland, including those served in the public interest. Insufficient financing of the latter services, from the state budget, tends to burden their provision at the expense of the State Forests. At the same time the State Forests are obliged to provide private forestry with some specific support measures. In these circumstances, both the State Forests and private forestry sector seek to supplement financial assistance and incentives from sources additional to the state budget funds.

References

Central Statistical Office 2000. Forestry. Warsaw. 290 p.

General Directorate of the State Forests 1997. Las w liczbach. Warsaw. 162 p.

Ministry of Environmental Protection, Natural Resources and Forestry 1997. National Policy on Forests. Warsaw. 35 p.

State Forests' Information Centre 2000. Report on the state of forests in Poland 1999. Warsaw. 40 p.

State Forests' Information Centre 2000. The State Forests National Forest Holding. Report on activities for 1999. Warsaw. 40 p.

Central Statistical Office 1997. Forestry. Warsaw. 265 p.

(Post)-Transitional Financing of Forestry – The Case of Slovenia

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Abstract

Before the process of transition took place at the end of the 1980s, Slovenian forestry was not financed from state budget, but exclusively from timber sales income from state and privately owned forests and other contributions of forest sector industry. Changes in forestry peaked in 1993, when organization of forestry and system of funding changed significantly. New public forest service was established, which is now financed entirely from state budget. New forest policy tools like co-financing of silvicultural and protection measures in private forests were also introduced and had replaced old system which covered full costs of silvicultural measures. The greatest share of the state budget for forestry is allocated for the activities of forest administration, primarily forest management planning, obligatory marking of trees for feeling and extension. One of the consequences of the changes in organization and funding is lower realization of silvicultural activities. Co-financed are those activities, which are defined in forest management plans and forest owners are required to implement them. Consequently, it is difficult to assess the influence of financial tools on forest owners' willingness to implement silvicultural measures. In addition, co-financing of forest measures also has the character of a regional policy and developmental measure in demographically endangered areas. Although forest legislation entails a kind of public tender for forest investment not one has taken place so far. Public funds for silvicultural and forest protection measures are increasing slightly.

Keywords: forest policy, financing, Slovenia

Introduction

The paper aims to portray the system of forest-related policy measures, which also include financial instruments. The system of measures was designed in the period between 1992 and

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1993. The transition process had a strong influence on new forest legislation shaping and on formation of system of forest policy tools mix. Slovenia is a relatively young state and therefore some facts, that are necessary to comprehend various processes and their outcomes are not known well enough. This is why in the beginning, a brief portrayal of the social, historical and economic 'context' of transition in case of Slovenia will be made. This context is an important country – specific element. Key characteristics of Slovenian forests and forestry, as well as key processes in forestry during the last decades, which influenced the formatting of financing instruments in forestry, will be outlined.

Slovenia – historical, social, cultural, economic and political background

- Basic facts. Area 20 273 km². Population 1.9 million. Currency Slovenian Tolar (SIT). GDP US\$10 078 per capita (1999). Capital Ljubljana (population 300 000). Borders to Italy, Austria, Hungary, Croatia.
- History. Slovenia was part of the Hapsburg Empire from the 14th century until 1918, when it became part of first Yugoslavia. Following communist revolution during the Second World War, the Yugoslav kingdom was transformed into the Socialist Federal Republic of Yugoslavia, with a single-party political system and a state-run economy. In the 1980s, a process of political, economic and cultural democratization in Slovenia began. Slovenian political and economic elite resisted Belgrade's attempts to centralize political and economic power, and gained wide public support. Growing tensions resulted in disintegration of Yugoslavia and proclamation of Slovenia as independent state. Slovenia was internationally recognized in 1992 and is now a member of the UN, a full member of the Central European Free Trade Agreement, a participant in NATO's Partnership for Peace, a founding member of WTO and an associate member of the EU.
- Ethnic composition. The vast majority of the population are Slovenes (88% 1991 census). Italians and Hungarians are considered indigenous minorities with rights protected under the Constitution. Other ethnic groups mostly second generation economic immigrants are Croats, Serbs, Muslims, Yugoslavs, Macedonians, Montenegrins and Albanians.
- Macroeconomic developments. Slovenia is one of the few countries in transition to have exceeded the level of economic development recorded before the breakdown of the former socialist system. It has gradually brought its economy closer to the level of EU member states. Slovenia attained 68% of the average GDP per capita of EU member state at purchasing power in 1998 (ECU 13 700). Between 1990 and 1999 inflation decreased from 117.7% to below 10%, the average annual inflation rate in 2000 was 8.9%.
- Privatization process. The process of ownership restructuring of Slovenia's corporate sector was officially concluded in November 1998 when the Law on the Conclusion of Privatization was passed. The second phase, privatization of institutions owned by the state, has been delayed. Institutional reforms have been accelerated in Slovenia by the negotiations for full membership in the EU.
- Political forces and situation. Slovenia has had between 6–8 parliamentary parties (depending on the result of each one of the four parliamentary elections). Political parties in Slovenia cover wide political spectrum (left-right, conservative-liberal). Ever since the beginning in 1990, political parties in Slovenia have been divided into two major political blocks: the so-called block of 'continuity' (includes reformed parties from socialist times) and a block of 'spring' parties (new political parties, formed just before or during the transition). Except for the first democratic elections, parties of 'continuity' always gained

victory. During the rest of the 1990s, Slovenia was governed by various coalitions, dominated by parties of 'continuity', with the strongest, Liberal democratic party in a leading role.

Slovenian Forests in brief

Forestry in Slovenia has a long tradition of sustainable forest management. Especially typical is close-to-nature management, for which introduction and development the previous political and economic system, due to a number of reasons (e.g. close regulation of private property), offered favourable conditions. Slovenian Law on Forest (1993) defines close-to-nature management as a way of treating forest ecosystems which is based on tending forests and ensuring their preservation, increased variety of autochthonous plant and animal species and establishing a biological balance. Clear-cutting is prohibited.

Key quantitative indicators of the situation in Slovenian forests during 1990–1998

- Increase of forest area (forest area increased 4% and totalled 1 111 000 ha in 1998, which is 55% of the whole Slovenian surface). Forest area increased primarily on account of agricultural areas
- 12% increase of growing stock. Growing stock was 207 m³/ha in 1990 and was still increasing in the next years, what resulted in total 231 millions m³ figure in 1998. Increment grew from 5.3 millions m³/year to 6,1 millions m³/year.
- The harvesting decreased and did not reach allowable cut set by forest management plans. Official statistical data for the period of preparation of Forest Development Programme indicate 70% to 77% realization of annual allowable cut, the figure regarded by some as underestimation. However, the highest estimates do not exceed 90% of annual allowable cut.
- This is one of the reasons why the share of forestry in GDP decreased from 1.3% in 1980 to 0.7% in 1990 and kept falling to 0.4% in 1995. The cut down in timber consumption was also the consequence of restructuring of wood processing industry which lost important market with the disintegration of Yugoslavia.

Because of all these factors the relative economic importance of forestry sector is decreasing. Some unfavourable trends in forests are reflected primarily in the following list:

- large share of forest removals was a result of natural causes (wind, ice), which resulted in unfavourable harvesting structure and low economic results;
- endangered process of natural regeneration caused by wildlife;
- forests damages due to air pollution;
- non-accomplished silviculture works especially in privately owned forests.

Forest policy process and forest policy tools mix

In the pre-transitional (socialist self-management) political system, the majority of decisions of political character were typically brought at the sector level - i.e. forestry. Because of changes in political system, the attitudes towards political aspects of forest management have also gradually transformed.

The issues which attracted attention of forest policy stakeholders in the beginning of the 1990s were primarily connected to changes in forestry system (the preparation of a new Law

on forests, organizational restructuring of forestry enterprises and public forestry service), some aspects of property rights and utilization of state owned forests. All these issues also called for political parties to take part in the decision making process, where different parties advocated different interests. Financing of forestry and especially private forestry was never an important forest policy issue.

Among the key characteristics of Slovenian forestry is intensive forest silviculture. In the years immediately before the transition, silvicultural measures were realized on 11 000 to 15 000 ha (Figure 1). During the period of forestry system reorganization (1990–1993) the measures were reduced to a quarter of their previous extent. In the last years their extent is slowly increasing again, but it is unlikely it will ever reach the previous level. It could be speculated that system changes enabled forest owners to consider economic aspects of silviculture.



Figure 1. Realization of silvicultural measures and basic characteristic of forestry system.

Relative political autonomy of the forestry sector within the previous political system was primarily the consequence of its autonomous (internal) financing sources – the share of timber sold. Financing of forestry sector was based on its own resources (timber sellers contributed a percentage of their retail price) and solidarity. Irrespective of this, the shift to state budget financing was relatively smooth, but only as far as financing of public forestry service activity was concerned.

The major factors which influenced the formation of the new system of forest policy tools mix and also financial instruments (1992–1993) are the following:

- absence of salient natural issues in the forest field (e.g. large range forest decline);
- weak democratic traditions (forest policy as forest experts' field exclusion of stakeholders in participation and lack of negotiations);
- · value bias of forestry professionals and science;

- lack of research data and experiences (arbitrary assignments of financial support by forest experts);
- politically unaware and unorganized forest owners;
- international processes in environment and forestry field;
- forest policy of some Central European countries as example.

Obligations and restrictions are still the most important forest policy tools. They are closely related to forest management planning, which is mandatory in Slovenia for all forests. Forest management planning costs are financed entirely from the state budget and may as such be regarded as forestry financing tool. The state also finances obligatory marking of trees for feeling which is carried out by Public forest service (forest authority).



Figure 2. Forest policy tools mix of forest policy in Slovenia

The key document, which defines the financing of forestry is Law on Forests. Based on it, Slovenia passed a National Forest Development Programme that defines financing of Forestry in a more precise way.

Forest owners are responsible for the execution of all the measures required in their forests. In state forests it is the duty of the state, via the Slovenian Fund of Agricultural Land and Forests, to ensure that all the forest work is carried out. The state finances the forest service from the budget and also provides – because of the generally beneficial role of forests – compensations for reduced yields from protective forests and forests with a special purpose, and financial aid for private forests. Co-financing was introduced to increase the political acceptability of obligation.

The state finances primarily those measures, which prevent or mitigate the disturbances in the functioning of the forest and forest measures in protective forests and torrent watersheds. It co-finances silvicultural and protection measures and measures for the maintenance of wildlife habitats, production of seeds in a nursery and investments in forest tree nurseries, restoration of

forests if the party responsible for the damage is unknown, reforestation of forests after fires and restoration of forests damaged by natural disturbances, thinning of pole stands and conversion in private forests, as well as construction and maintenance of forest roads. The state finances forestry activities on the basis of silvicultural plans and other operational projects or plans within the framework of the investment programme for forests, drawn up by the Slovenian Forest Service for the current year. For the financing of these activities the following criteria, or the percent of costs borne by the state, are taken into consideration:

- Functions of the forest: if ecological and/or social functions considerably affect forest management, the financing is increased by 10%, if they determine the kind of forest management, it is increased by 20%.
- Size of private forest property: owners of wood production forests of size under 100 ha are entitled to 100%, owners who own between 100 and 500 ha of forests to 75% and those who own more than 500 ha of forests are entitled to 50% financing of silvicultural and protection measures.
- Socio-economic status of forest owners: forest owners to whom farming and forestry are the main sources of income (farmers) and owners who unite to form association of forest owners are given priority for obtaining funds in public tender. In demographically endangered areas the owners are entitled to 30% higher partial budget funding).
- Unfavourable natural conditions for agricultural and forest production: under difficult natural conditions, the financing can be increased by 30%.

The types of measures include:

- forest regeneration: artificial regeneration total cost of plants paid, natural regeneration – 30% of the cost paid;
- forest tending: 20–40% or according to the terms of public tender for the tending of pole stands;
- forest protection: from fires up to 70%; from game material costs plus 30% of other costs; from diseases and phytophagous insects 30% or material costs plus 20%;
- maintenance of wildlife habitats: 30–70%;
- · conversion of degraded forests: according to the terms of public tender;
- afforestation after fires, and restoration of damaged forests: plants plus 20% of the cost;
- maintenance of forest roads: 35% of the maintenance cost;
- investments (forest roads, tree nurseries): according to the terms of public tender.

Forest owners are entitled to compensation for lower timber yield if the forest was classified as a protection forest or special purpose forest and property rights were limited. Although forest legislation entails a kind of public tender for forest investment not one has taken place so far. Part of financial instruments are also tax concessions and tax exemptions for forest owners: tax exemption for cadastral income from protective forests, tax relief for reduced yields due to natural disturbances, plant diseases and pests or any other exceptional conditions, and tax incentives for forest management.

State budget spending for forestry

On the basis of the above criteria and planned measures stated in forest management plans for the 1991–2000 period, SIT 4380 million was required annually for the implementation of forest measures outlined in the Forest Development Programme. That is, according to the estimated budget for the year 1995, 0.87% of the budget, or 0.204% of GDP. This percentage

is about a fifth of the value of the annual felling. Spending for individual groups of forestry measures is shown in Table 1.

State ensures approximately 70% of funds, planned by forest management plans. Ensured are mainly funds for public forest service activities. Financing of other areas is uneven. However, funds for silviculture and forest road maintenance are increasing, even though amounts per ha are low (Figure 3). The state covers approximately one third of the forest road maintenance costs – nevertheless, the basic funds for forest road maintenance are provided by the owners through a unified payment (tax) of 6,9% of cadastral income.

		Y	ear		
	1995	1996	1997	1998*	Percentage by NFP** required funds in 1998
Co-financing of restoration in private forests	52	35	41	104	51
Co-financing of afforestation after fires and/or restoration of damaged forests	23	47	100	211	515
Co-financing of tending measures in private forests	118	109	74	216	54
Co-financing of tending measures in wildlife habitats in private forests	9	9	7	11	62
Financing of preventive protection of forests	135	224	136	180	88
Co-financing of tree nursery and seed production	4	4	3	8	128
Co-financing of the Slovenian Fund for Agricultural Land and Forests for purchasing protective forests and forests with a special purpose	0	30	29	19	16
Co-financing of maintenance of forest roads	154	254	253	284	47
Co-financing of protection measures in private forests and of compensations for damage caused by protected animal species	9	12	16	34	550
Co-financing of developmental research	60	57	72	72	53
Financing of the forest service	1955	2161	2581	2558	83
Other	0	2	6	10	24
Total	2519	2944	3321	3707	76

Table 1. Spending of public funds for forestry in million SIT.

* 100 SIT/ DEM ** National forest programme



Figure 3. Budget funds for silviculture and forest road maintenance in the period 1992-1997 (in euro/ ha of forest).

Conclusions

The system of forest policy mix in general was not an object of systematic and periodic evaluation. The main reasons are the following: it is a relatively new programme; there is a lack of interest on the part of forest administration and research community; the level of conflicts and problems is low; there is a lack of awareness of forest owners; and there is an absence of organized stakeholders in the forest policy field. Forest authorities estimate this system enables gradual attainment of forest policy goals. Co-financed are those activities, which are defined in forest management plans and forest owners are required to implement them. Consequently, it is difficult to assess the influence of financial tools on forest owners' willingness to implement silvicultural measures. We may expect that increasing Slovenian association with EU will speed up evaluation of forest policy tools mix, primarily in areas connected with competitiveness.

References

Boncina, A. and Winkler, I. 1999. Slovenia – country reports. In: Pelkonen, P. et al. (eds.). Forestry in Changing societies in Europe – Study book. Part II. SILVA Network. Pp. 357–375.

Merlo, M. and Paveri, M. 1997. Formation and implementation of forest policies: a focus on the policy tools mix. In: Proceeding of the XI world congress (CD – ROM). FAO, Rome.

Sinko, M. 1998. Mountain forests and mountainous rural areas in Slovenian forest policy. In: Glück, P. and Weber, M. (eds.). Mountain forestry in Europe – Evaluation of silvicultural and policy means. Universität für Bodenkultur, Vienna. Pp. 229–238.

Program razvoja gozdov (National forest programme). 1997. MKGP (Ministry of agriculture, forestry and food), Ljubljana, SI. 58 p.

Ministry of Agriculture, Forestry and Food. 1998. Stanje v gozdarstvu l. 1998. MKGP, Ljubljana, Slovenia. http://www.gov.si/mkgp/mkgp.htm

Allocation of Public Funds in Estonian Forestry

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Abstract

This paper describes the background and current structure of the public financing of forestry in Estonia. The changes in the financing of forestry related activities started even earlier than the political reforms at the beginning of 1990s. The forest policy formulation process was and still is substantially influenced by the restitution of ownership. More than 50 000 forest owners need administrative support and extension services to manage their forests in a way, which is relevant to common interests of the society. These supporting activities are financed from the state budget and through the different public funds. The dominating opinion in Estonia is that forestry has to be profitable. Estonian forest owners do not get direct systematic financial support.

Keywords: forest policy, Estonia, ownership, financing

Introduction

The specific features of forest policy and policy tools in different countries are determined by traditions of forestry, ownership matters, stakeholders' interests, politics etc. Forest policy tool can be divided into normative, informative and economical. The term 'financial incentives' is also used instead of economic tools. This paper describes the background and current structure of the public financing of forestry in Estonia.

Background information

Some facts have to be presented in order to give an overview about the dominating trends and ideologies influencing the Estonian Forest Policy within the last decade.

Andreas Ottitsch, Ilpo Tikkanen and Pere Riera (eds.) Financial Instruments of Forest Policy EFI Proceedings No. 42, 2002 According to the statistical forest inventory, carried out by the Forest Survey Centre in year 2000, the area of forest land is 2249 million ha, the volume of growing stock is 411 million m3 and the increment is 11.6 million m3 per year (Centre of Forest ...2000). Distribution of forests by ownership is presented in the Figure 1.



Figure 1. Forest ownership in Estonia (30.10.2000).

The forest policy formulation was and still is substantially influenced by the restitution of ownership. More than 50000 forest owners need administrative support and extension services to manage their forests in a way relevant to common interests of the society.

The legislation and regulations, especially the Forest Act, are considered very important in the Estonian forest policy. In the transition period, first act concerning forestry took effect in 1993 and its main task was to favour the establishment and development of the private forest ownership.

The replacing of the Forest Act, became topical on the second half of 1990s due to the fact that the importance and share of the privately owned forests have been increasing since 1993. The amount of juridical problems connected with the management of privately owned forests has increased too. It became important to follow the environmental principles dominating in Europe (protection of bio-diversity, sustainable development etc.) New (current) act approved by the Parliament in December, 1998, directs the balanced development of forest as living environment and management object.

The main goals of the Estonian forest policy were defined in 1997 as follows (EFDP1997):

- sustainability of forestry
- efficiency of forestry

Are the financing and use of financial tools relevant to these goals? Does the quantity of financing reflect the priorities of the forest policy? This paper tries to find the answers to these questions.

It could be stated that the financial instruments are used to promote the first policy goal – sustainability. In Estonian case the efficiency has been achieved mainly by the restructuring of forestry, relevant institutions and their tasks.

The Changes in the Financing of Forestry

The changes in the financing of forestry related activities started even earlier than the political reforms at the beginning of 1990s. First signs of market economy appeared within the system of command economy. Before the transition period forestry was financed from the state budget, but at the end of 1990 the Forestry Fund was established. The fund was intended to finance silvicultural and recreational activities and non-wood production of state forest enterprises. The funds were based on the forest revenues (Kotkas 1991).

Public Financing of Forestry in 2001

The dominating opinion in Estonia is that forestry has to be profitable. Thus, it is important that public expenses are covered by forest revenues. The reliable statistical data concerning taxes gained from timber sales and other forestry related revenues is missing. But some indices are fixed and evaluated. State Forest Centre (SFMC) transfers 150 million kroons (9.6 million EURO) to the state budget as an owner's income (dividends). According to the Forest Act, SFMC has to transfer 4% of the final felling revenues to the Environmental Fund. Timber sales from privately owned forests are taxed by income tax of 26%. Data concerning revenues from income tax are missing, but according to the amount of sold timber, it has to be bigger than the state owners' income (150 million kroons). The sum of direct and indirect taxes which are based on timber, should be approximately 1.1 billion kroons. The figure was obtained by the econometric analysis (Kaimre, 2001), using data from the years 1994-1999.

The Ministry of Environment is responsible for the forestry issues in Estonia. According to their plans the Table 1 has been drawn up.

Activity	Funds (mill EEK)	Share %	
Governance	24.2	45.6	
Assessment of forest resources	13.5	25.4	
Protection of forest ecosystems	5.9	11.1	
Private forestry	2.5	4.7	
Optimisation of land use	2	3.8	
Hunting	2	3.8	
Forestry events, PR	1.2	2.2	
Applied research	1.0	1.9	
Forestry Development Plan	0.8	1.5	
Total	53.1	100	

Table 1. Distribution of funds between activities.

Source: Ministry of Environment 2001

The total amount of sums presented in the table does not show the priority of this field for the ministry. For making up the Forestry Development Plan 1.5% of total finances is used, but in the priority-list of Ministry it has been ranking at the top. According to the Forest Act, the

Forestry Development Plan determines the priorities of public financing, and it has to be worked out in every decade.

Activities are financed by the Centre of Environmental Investments (21 million EEK) and from the state budget (32.1 million EEK). During the past years remarkable support has been got from the foreign countries to carry out forest projects.

The biggest part of the finances is planned for the administration. But on the other hand the funds for central administration have been dropped from 2.9 million kroons in 1998 to 1.2 million in 2001. Concern about the institutional capacity has been declared by analysts since 1998 (Sootla et al. 1998).

The direct support system of forestry has not been worked out because the Estonian forestry has been profitable. There are such fields of activities in the society needing public financing more than forestry. Forest owners have been supported by short term projects concerning aforestation of agricultural lands.

The main indirect financial support to forest owners is the preparing of management plans. Theoretically it is possible to get advisory service at the County environmental departments, practically the advising service is weak because the shortage of resources. The advisors collect the information about activities and supervise the relevance of activities according to the management plan.

It would be interesting to investigate the positive/negative influence of the management plans to the economic and environmental result of forest management. Management Plans are not obligatory for private forest owners. In the situation where number of forest officers has decreased, the plan is still needed for the confirmation and organising of practical management. But which tool is more cost-efficient: direct advising or the management plan? The demand for such an analysis does exist from the policy-making level.

Concluding remarks

In the context of implementation of financial instruments in Estonian economic policy, forestry is considered equal with the other branches of economy, without exceptions in taxation etc. It is a task of forestry specialists and representatives of forest owners to explain the special features of forestry to the public.

Forest owners get indirect support through the advisory and extension services. Direct systematic financial support based on certain rules is not implemented in Estonia. Implementation of financial instruments depends essentially on availability of public funds, political will, opinion of specialists. The skills and ability of forestry specialists also influence policy process. The changes, taken place in the society and also in the forestry in 1990s have been drastic therefore the public expenses in forestry in different years are not comparable. Funds for the governance have been diminished since 1998.

In addition to the qualitative analysis, which has been mainly used by the formulation of the Estonian forest policy, the quantitative analysis is a challenge for researchers and for administrators.

References

Centre of Forest Protection and Silviculture. 2000. Yearbook Forest 2000. Tartu, Estonia. 141 p. EFDP. 1997. Estonian Forest Policy. Tallinn, Estonia. 12p.

Kotkas, E., 1991. Reorganising the financing of forestry (in Estonian). Eesti Mets 1:3–5. Estonian Forestry Development Plan. 2001. Tartu, Estonia. http://www.metsad.ee/aruanded/mets_arengukava_2.1.pdf

Ministry of Environment 2001. http://www.envir.ee/Aastaplaan%202001mets%20viimane.doc Sootla, G., Varblane, A. and Puustjärvi, E. 1998. Assessment of Forest Sector's Strategy in 1995–1998 (in Estonian). 53 p. http://www.riik.ee/riigikantselei
European Union's Co-Finance for Forestry and Prospective Changes by the Eastern Enlargement

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Abstract

The descriptive study provides an overview on the use of European Union's (EU) co-finance for forestry. The potential impacts of Agenda 2000 program on development of forestry and EU's financial support for forestry are discussed. Eastern enlargement, and forestry thereupon in EU are also analysed, as well as the potential need for available EU financial support for forestry. The estimated total sum of EU support for forestry (EAGGF) during 1994–1999 is over 2.5 billion Euros. Estimating the use of forestry related EU co-finance in the future is yet difficult but, in general, the study concludes that both the eastern enlargement and Agenda 2000 may increase this sum even substantially. Since the impacts of EU co-finance for forestry have not been comprehensively analysed, and there is a lack of availability of information in this respect, the study suggests that the impacts of EU's co-finance for forestry should be carefully analysed on EU-level.

Keywords: forestry, European Union, Agenda 2000, eastern enlargement, public support for forestry

1. Introduction

This article is based on two studies targeting to provide an overview of the regulations allowing European Union (EU) co-finance for forestry measures, especially relating afforestation, and the use of EU funds based on these regulations during 1990s (Toivonen et al. 1999), and the impacts of eastern enlargement of the EU's forestry and the EU's financial support for forestry (Toivonen and Mäki 1999). In particular, EU's financial support

Andreas Ottitsch, Ilpo Tikkanen and Pere Riera (eds.) Financial Instruments of Forest Policy EFI Proceedings No. 42, 2002 (EAGGF, European Agricultural Guidance and Guarantee Fund) for forestry in the EUmember countries during 1994–1999 are estimated, and their allocation between EU-member countries is described. Special interest is given in afforestation programs. Furthermore, the potential impacts of Agenda 2000 program on development of forestry and EU's forestry subsidies are discussed.

The study is purely descriptive and no evaluation of the supported measures or their impacts is made. The motivation of the study was to learn about EU's forestry support system, and to estimate the future development prospects regarding this support.

The data consists of the development programs of EU's structural funds in the EU-member countries, various statistics, interviews of experts and a mail survey (unstructured questions) to the ministries of forestry of the EU-member states and the ten candidate countries during 1998 and 1999. Some additional data collection was made in 2001 for this article. Experts both in the EU-Commission and in the member states and the candidate countries provided information for the use of the authors without limiting their efforts, which is gratefully acknowledged.

2. EU's Co-Finance for Forestry in the Member Countries During 1994–1999

Total EU co-finance for forestry during 1994–1999

This study resulted with the estimate of 2.5–3 billion euros as the total sum of EU's cofinance for forestry measures (from EAGGF) in the 15 member countries during 1994–1999. The sum is small if comparing with the total support from the EAGGF for agriculture and rural development, which have been about 40 billion ecus (euros) per year during the late 1990s. Thus the finance of forestry measures has been about one per cent if compared with the total finance of the agricultural sector in the EU. On the other hand, forestry measures have been also financed from other EU-funds but the EAGGF.

Afforestation

About half of the approximate sum of 2.5 billion ecus was allocated to farmland afforestation programs (Regulation 2080/92). If the existing programs are realised and no significant new programs were accepted, the total farmland area afforested with EU co-finance is about 900 000 hectares in the 15 member states (Table 1). This increases EU's forest area (presently about 113 million ha, forest land, EUROSTAT 2000, see also Table 5) by less than 1%. Farmland area is decreased also by less than 1%.

By 1996, about 500 000 hectares had been afforested (programs 1993–1997), of which about half in Spain (Table 1). The next largest afforestation programs were carried out in Ireland, UK, Portugal and Italy. The largest sums, after Spain, were allocated to Italy and Ireland. More detailed description of the EU-supported afforestation programs and their results are presented in Toivonen et al. (1999), and in Lawson (1996, 1997) or by European Commission (1998).

In the connection of the data collection of this study, the EU-member countries and the candidate countries were asked about their future afforestation plans in the fall 1998/spring 1999. Most countries did not (yet then) have any concrete program for the future (especially regarding the Agenda 2000 period), however. Anyhow, the 15 member countries have expressed having quite significant long-term aims regarding afforestation. For instance, in the

	EU co-finance		Accepted in the EU co-finance	Additional plans, other finance	Realized by 30.4.1996
	million Euro	(% of total)	ha	ha	ha
Austria	23.2	2%	4 600	-	331
Belgium	8.7	1%	6 300	6 200	-
Denmark	10.3	1%	7 400	2 100	3 703
Finland	18.8	1.5%	38 500	-	177
France	27.4	2%	48 000	47 360	28 900
Germany	91.7	7%	57 750	14 250	18 611
Greece	43.5	3.5%	15 000	-	6 234
Ireland	145.0	11%	105 000	15 000	60 477
Italy	300.0	24%	80 000	90 000	32 301
Luxembourg	0.3	-	400	100	-
Netherlands	10.2	1%	9 200	-	6 499
Portugal	96.0	7%	94 000	34 000	50 035
Spain	430.0	34%	305 750	244 250	238 112
Sweden	0.6	-	?		
UK	61.6	5%	100 000	-	61 597
Total	1 267.2		871 900	453 260	506 978
				EU+other 1 325 160	

Table 1. Regulation 2080/92-based afforestation programs for the years 1993–1999 and realized afforestation during 1993–1996.

Source: European Commission 1998.

connection of the Kyoto process in 1997, the EU-member countries informed that they have forestation plans totally of over five million hectares for the period 1990–2010. Of this area, over a million hectares are assumed to be forested during 1990–1999.

Other forestry development activities co-financed by the EU

Another half of forestry subsidies from EAGGF (approximately about 1.3 million euro) was targeted to various forestry development measures: Forest tree nurseries, enhancement of cooperation and education of forest owners, activities to improve and increase efficiency of private forestry including investments in technology and other infrastructure, marketing and processing of wood and forest products, prevent and repair the impacts of natural disasters, especially forest fires, improve and maintain forest biodiversity, prevent soil erosion by planting trees, recreation possibilities related with forests etc.

A specific support program was created in early 1990s to enhance further processing and marketing of forestry products (Reg. 867/90), following a similar program in agriculture (Reg. 866/90). The regulation allowed supporting these measures horizontally, i.e., within the whole EU area, similarly as the regulation 2080/92 allowed. However, within the regions 1- and 6-, these measures were included in the overall regional program and therefore the

Table 2. Program for processing and marketing of forest products (Reg. 867/90), co-finance from EU funds, million Euro. Funds allocated for Objective 1- and 6- areas are not included.

	Forest products (Reg. 867/90) million Euro	Reg. 866/90 and Reg. 867/90 Summed million Euro
Austria	-	63
Belgium	1.0	30
Denmark	0.3	27
Finland	-	44
France	17.5	261
Germany	-	221
Italy	8.2	190
Luxembourg	-	2
Netherlands	-	40
Spain	4.1	122
Sweden	1.5	23
UK	-	51
EU 15 total *	32.1	1 068

* Portugal, Ireland and Greece were totally included in Objective 1-area, thus the statistics include no information on these countries, and thus the 'EUtotal' is an underestimate.

measures, or the funds used, are not reported specifically. The only available information is outside these regions where a separate program for using this support is required. Therefore the information in Table 2 provides an underestimate of the total sum used for developing forestry related measures under this program.

In general, a large share of the forestry measures co-financed from the EU-funds were included in the Objective 1- and Objective 5b-Area programs. These are large frame programmes, and include several kinds of measures targeted to enhance the regional development on these areas. Forestry is only one sector among these, and therefore it is difficult to be exactly separated from the programs. For this reason, clearly less detailed information is available about the allocation and results of these forestry activities co-financed by the EU, as compared with programs based on the regulation 2080/92. Thus it is impossible to exactly estimate the total EU-support for forestry or its allocation.

However, the information available about the accepted programs in the country specific Objective 5b- (and 1-, and 6-) area programmes indicate that Spain received the largest share of the total EU-finance targeted to the development of forestry from the EAGGF during 1994–1999 (Table 3). Germany, Italy, Ireland and France received the next largest shares¹. But since the available information was not complete regarding all the countries and the actually realised programs might be different than planned, this conclusion must be treated with caution.

However, it seems clear even based on the available information that the EU co-finance for forestry was allocated very differently between member countries. Furthermore, the member countries have supported forestry measures quite differently with the EU-finance; some countries have allocated the EU-finance almost only on afforestation and other farm forestry activities, whereas some have allocated most of the EU-finance on the other type of forestry measures (see Table 3).

¹ The conclusion is based on documents of the planned programs. Information is not available about the realisation of the programmes, or whether the realisation has considerably differed from these plans.

Table 3. Estimation of the allocation of the EU's EAGG-funds on forestry measures in the member countries during 1994–1999, based on the development programs. It should be noted that regarding some countries, the information provided is partly an estimation and/or incomplete or totally missing. e=estimation, I=information incomplete or unspecific/some or all information is missing.

	EU co-finance, Reg. 2080/92; % of the country's total EU-finance for forestry	Estimation of other forestry measures; % of the country's total EU-finance for forestry	Estimation of EU's total co-finance for forestry million Euro	Estimation of country's share of the EU total co-finance for forestry 1994–1999, %
Belgium	46	54	19	<1
Netherlands	100	(I)	<i>(e)</i> 10	<1
Spain	42	<i>(e)</i> 58	(e) 1030	40
Ireland	71	29	204	8
UK	96	4	65	2-3
Italy	97	<i>(I)</i> 3	(e) 308	12
Austria	93	7	25	1
Greece	28	72	154	6
Portugal	82	18	117	5
France	13	(e) 87	(e) 212	8
Sweden	3	97	23	1
Germany	28	72	323	13
Denmark	95	5	11	<1
Finland	49	51	39	1–2
Total	50%	50%	2 538	100%

* Data on the EU's co-finance based on the regulation 2080/92 is according to the official report. EU's co-finance for other forestry measures is based on the information collected from the country specific objective area –programmes, and other information collected by and received from the European Commission. Regarding some countries, the authors have made an estimation of the sum, from some countries part of the information was not available, and in some cases, the available information may have included some double reporting. Therefore particularly the information on single countries may not be totally accurate in the table, and should be treated with caution. However, the European Commission has also estimated the total sum of EU-funds allocated for forestry during 1994–1999, and concluded about the same total sum as this study.

Besides the EAGGF, also the Cohesion Fund, ERDF (European Rural Development Fund) and ESF (European Social Fund) have been sources for co-finance to some forestry and related development activities. For example, support from Cohesion Fund has been targeted to forest fire prevention programs in the southern EU-member states. However, this study did not cover an overview of these funds targeted to forestry.

3. Agenda 2000 and EU's Co-finance for Forestry

Agenda 2000 enlargened the grounds to grant EU-support for forestry. Municipalities became potential beneficiaries of forestry subsidies, and afforestation/other forestation measures may be accepted within the supported activities more widely than before. The objective of maintaining or improving forest environment is more clearly a reason for supporting forestry activities by the EU. For example according to the new regulation, costs of measures to maintain sustainable forestry in environmentally sensitive or threatened area, may be covered totally by the EU.

Overall, widening the possibilities that forestry measures can be supported from EU-funds may increase the interest towards forestry subsidies within the EU-member countries. For instance, in some countries municipalities own a significant proportion of the forest land, and these may be interested to benefit the new options. On the other hand, EU-finance for forestry is included in the overall rural development frame programs in the member countries, and forestry is not necessarily prioritised in these programs. Therefore it is difficult to estimate how the use of EU-funds for forestry may develop within the present EU-member countries in practice during 2000–2006.

4. Eastern Enlargement and Prospective Impact on EU's Financial Support for Forestry

When estimating the impact of the eastern enlargement on the EU's forestry related co-finance, the changes in the forest land area, private and municipal ownership, and afforestation are of interest, at least. Environmental/ecological condition of forests, and the need for overall development in forestry also matter, but these are more difficult to be estimated.

Overall, the eastern enlargement brings some major changes on the European unions's forest sector. (For more detailed information, see Toivonen and Mäki, 1999). Based on information available on the ten EU candidate countries (Estonia, Lithuania, Latvia, Poland, Hungary, Czech Republic, Slovak Republic, Slovenia, Romania, Bulgaria, also named as Central Eastern European Countries, CEEC), the eastern enlargement is estimated to add the number of private forest holdings by 3–4 million. This would increase the present number of EU's private forest holdings (7.3 million) by 48%, and the total number would climb up to 10–11 million. The number of private owners would grow from 12 million to at least on the level of 15–16 million (30% growth), respectively.

The area of forest and other wooded land would increase by 34 million hectares, e.g., 25% from the EU(15) level of about 136 million hectares (see Table 5). A little less than a third of forest land is estimated to be privatised when the on-going privatisation process is finalised. Thus the public ownership will dominate forest ownership also in the future in the CEEC.

When the CEEC become EU-members, then the proportion of private forests somewhat decreases and that of public forests increases in the union (currently private forests cover 60–65% of the EU forests). Municipalities are a major owner group of forests in some of the member countries (e.g. Romania).

The official afforestation plans in the CEEC, until 2050, are somewhat less than two million hectares. These plans concentrate almost completely on Poland and Hungary. A large share of the candidate countries' forests suffer from pollution caused damages, air pollution being the main cause of symptoms such as defoliation.

Any estimations of the forestry related EU co-finance in the CEEC is yet difficult. But as an example, the estimated number of private forest owners, share of forest land to be privatised and the afforestation plans, indicate that the EU finance for forestry in the ten CEEC could be from twenty to thirty percentages of the EU's forestry related support in the 15 member countries. In practice, this is quite probably an overestimation at least during Agenda 2000 period of 2000–2006 due to several factors. These factors include such as the generally lower price level in the candidate countries, and the scarce national funds for developing forestry. The recently accepted SAPARD-programmes allocate EU co-finance for rural development in the ten CEEC totally about 3.5 billion euros for the period of 2000–2006. Of this sum, about 5% (168 million euro) is allocated on forestry (Table 4).

Similarly with the EU member countries, the CEEC seem to allocate EU co-finance on forestry very differently. Some countries do not allocate anything for forestry. The southernmost candidate countries seem to emphasise forestry most strongly: Of the total 168

Country	Area	Population	Forest land	Proportion of the CEEC	Forest ownership				SAPARD programmes 2001–2006
	million ha	million persons	million ha	Total Forest area.%	Public	Private + shared ownership + under restitution	Number of private holdings	EU-Finance for forestry million Euro (Allocated in the programmes.)	Country share of total SAPARD support for forestry. %
Estonia	4.5	1.4	2.162	6.5%	43.4	56.6	100 000	1.00	1%
Latvia	6.5	2.4	2.884	8.6%	56.0	44.0	153 000	4.57	3%
Lithuania	6.5	3.7	1.978	5.9%	50.0	50.0	152 000	7.69	5%
Poland	31.3	38.7	8.942	26.8%	82.8	17.2	1 400 000	6.17	4%
Hungary	9.3	10.1	1.811	5.4%	55.0	45.0	290 000	0.00	0%
Czech R.	7.9	10.3	2.630	7.9%	76.2	23.8	137 000	0.00	0%
Slovak R.	4.9	5.4	2.016	6.0%	51.6	48.4	300 000	9.67	6%
Slovenia	2.0	2.0	1.099	3.3%	30.0	70.0	300 000	0.00	0%
Romania	23.8	22.5	6.301	18.9%	95.0	5.0	300 000	108.34	64%
Bulgaria	11.1	8.3	3.590	10.7%	97.3	2.7	480 000	30.00	18%
CEEC 10	108	105	33	100%	30–97%	3–70%	3.1–3.6 million	168	100%

Table 4. Forests, estimated forest ownership structure, and the SAPARD-support for forestry in the ten CEECs. (The numbers of private holdings are rough estimates, either now or after finalisation of restitution).

Sources: Toivonen and Mäki 1999; EU Commission 2001; Eurostat 2000.

	Area, mill. ha	Agricu land n (%	ıltural nill.ha)	Forest 1990 r (%	(FAO) nill. ha 6)	Other v area, r (%	wooded nill. ha 6)	Privately owned forests (%)	Roundwood fellings 1995, mill. m ³
Netherlands	3,4	2,0	(59)	0,3	(9)	-		52	1
Belgium	3,0	1,4	(47)	0,6	(20)	-		56	4
Spain	49,9	25,0	(50)	8,4	(17)	17,2	(34)	57+4	15
Ireland	6,9	4,4	(64)	0,4	(6)	0,0		25	2
UK	24,1	15,9	(66)	2,2	(9)	0,2		60	8
Italy	29,4	17,3	(59)	6,8	(23)	1,8	(6)	60	10
Austria	8,3	3,5	(42)	3,9	(47)	-		80	14
Greece	12,9	5,7	(44)	2,5	(19)	3,5	(27)	23	2
Luxembourg	0,3	0,1	(33)	0,1	(33)	-		55	
Portugal	9,2	4,0	(43)	2,8	(30)	0,3	(3)	84+7	9
France	55,0	30,2	(55)	13,1	(24)	1,0	(2)	74	46
Sweden	41,2	3,4	(8)	24,4	(59)	3,6	(9)	50+38	60
Germany	34,9	17,3	(50)	10,5	(30)	0,2	46	39	
Finland	30,5	2,6	(8)	20,1	(67)	3,3	(11)	62+9	50
Denmark	4,3	2,7	(62)	0,5	(9)	-		73	2
EU total	312	136	(43)	97	(31)	31	(10)	65	265

Table 5. Land use, private ownership of forests and roundwood fellings in the EU (1990, 1995).

Sources: FAO website, Forestry Statistics Finland 1997 (Metsätilastollinen vuosikirja 1997), European Commission 1996, Kuusela 1994.

million euros, Romania's and Bulgaria's programmes together make up over 80%. It is yet difficult to estimate how much this will be of all the EU finance for forestry during the seven year period of 2000–2006. However, the sum of 168 million euro is only about 6–7% of the 2.5 billion used by the present member countries during the six year period of 1994–1999 (some afforestation programmes started, however, already on 1993).

5. Conclusions

EU has co-financed several kinds of forestry measures in the member countries during the program period of 1994–1999 from the European Agricultural Guidance and Guarantee Fund (EAGGF), which is the source of the co-finance for agriculture within the EU. The estimated total sum targeted to forestry from the EAGGF is between 2.5–3 million euros. Of this sum, about half was directed to afforestation and other forestry measures on farm forests. These programs included approximately 900 000 hectares of farm land afforestation. This afforestation decreases the agricultural area within the EU by less than one per cent. Probably the reduction of agricultural production is even smaller, since the less productive areas have been afforested. On the other hand, the increase of the forest area, is about one per cent. Information on other forest measures co-financed by the EU does not allow very specific conclusions on the results or impacts, but the total sum is estimated to be approximately 1.3 billion euros.

The eastern enlargement will, no doubt, increase the need of EU-funds to support forestry within the union. Yet it is still early to estimate how much this increase will be. Based on the forest area or the estimated number of private forest holdings in the CEEC, the increase could be as high as 25–35%. But during the period 2000–2006 this increase may be around 5–7%, presuming that the member countries will allocate about as much EU's co-finance for forestry on this period as they did on the previous program period of 1994–1999. However, also the 15 member countries may allocate more EU support on forestry in the future due to widened possibilities through the Agenda 2000 program.

Overall, information on the use of the EU's forestry related co-finance is presently difficult to obtain, and it is incompletely available. Fresh and well-covering statistics or other kind of follow-up information about EU's co-finance on forestry, including the reached results, would be useful for forest policy makers in the member countries. This information would be helpful also in developing forestry related measures on the EU-level. In particular, this information would be valuable for policy makers in the CEEC, since the structures and legislation for private forestry are currently under development.

Evaluation of the impacts of the EU-supported forestry measures, both on country and EU level, would be useful in the future, e.g., when developing EU support systems relating to forestry. In particular, evaluation of the impacts on competition on roundwood and other forest products markets, agriculture, environment, and the regional/rural economy would be valuable.

References

European Commission. 1996. The Agricultural Situation in The European Union. Report.

European Commission. 1998. Report to Parliament and the Council on the application of Regulation (EEC) No 2080/92 instituting a Community aid scheme for forestry measures in agriculture. http://europa.eu.int/comm/ agriculture/fore/2080_en.pdf

European Commission. DG VI/Agriculture. http://europa.eu.int/comm/agriculture/index_en.htm

European Commission. DG XVI/Regional Policy http://europa.eu.int/comm/regional_policy/index_en.htm

- European Commission (DG VI/Agriculture). 5b-DOCUP's with measures including "Forestry" or related in their wording. 14.9.1998. (Unpublished statistical report).
- European Commission. 2001. EU Enlargement. http:// europa.eu.int/comm/enlargement/index.htm & http:// europa.eu.int/comm/dg6/fact/sapard/index_en.htm.
- FAO. FAOSTAT Database. http://www.fao.org/waicent/faoinfo/forestry/forestry.htm
- Kusela, K. 1994. Forest resources in Europe. EFI Research Report 1. Cambridge University Press, Cambridge, U.K.; New York, New York, USA; and Melbourne, Australia; 154 p.
- Lawson, G.J. 1996. Incentives for forest establishment and management in the European Union (with particular reference to Ireland, Luxembourg, Portugal and Spain). UK Institute for Chartered Foresters.
- Lawson, G.J. 1997. Attitudes to grant-aided tree-planting in the European Union. Draft paper distributed at Montpellier 23–26.6.1997, (not published).
- Metsätilastollinen vuosikirja 1997 (Forestry Statistics 1997, Finland). SVT. Maa- ja metsätalous 1997:4. Metsäntutkimuslaitos. The Finnish Forestry Research Institute. 348 p.
- Toivonen, R., Mäki, P. and Enroth, R.-R. 1999. European Union's subsidies for forestry and Agenda 2000. (Euroopan unionin tuki metsätaloudelle ja Agenda 2000-uudistus). Pellervo Economic Research Institute Reports No. 163. (In Finnish with English abstract).
- Toivonen, R. and Mäki, P. 1999. Eastern Enlargement of the European Union and Forestry. (Euroopan unionin itälaajeneminen ja metsätalous). Pellervo Economic Research Institute Working apers No. 20 (Helsinki May 1999). 47 p. (In Finnish with English abstract).

Integration of International Financing Institutions (IFIs) in the financing of National Forest Programs (NFPs) in Countries in Transition (CITs)

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Abstract

Most countries with economies in transition will actively take part in the international development process of national forest programs in the near future. In addition to the development and use of the traditional forest policy objectives and measures including appropriate instruments, there will be an increasing need for inter-sectoral approach and policy development. This will increase the importance of the need to utilize policy measures and instruments developed in the other sectors, such as the environmental and energy policy instruments. This is due to many factors such as the changing valuation of forests, increasing role and number of various stakeholders including NGOs, private sector involvement, values and requirements of investors and their views on subsidies, increasing importance for comprehensive forest sector assessments required for sustainable development etc. Evidently the linkages between the forest sector and other sectors have to be improved, and the same applies to linkages between the development and the use of grants and loans as development instruments, between research and education and practice, as well as between the international initiatives and the donor organizations including IFIs and target countries. The NFP development has to occur in a broader policy context than before and with increasing emphasis on partnerships between various actors in the play.

Keywords: International Financing Institutions (IFIs), National Forest Programs NFPs), inter-sectoral approaches, policies and instruments, private sector involvement

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Introduction

All the main multilateral UN agencies and international financing institutions as well as the major bilateral donor agencies acting in the forest sector development in different parts of the world have been involved with the design of National Forest Program-concept under the auspices of the UN Secretariat for Sustainable Development in New York in recent years. These multilateral agencies include UNDP, UNEP, FAO, ITTO and the World Bank as well as the EU. The aim has been and is to build an institutional framework and guidelines for the forest sector development in all countries dealing directly or indirectly with forests, and their various forms of protection and utilization. This process resulted in October 2000 into establishment of the United Nations Forum on Forests (UNFF). The main functions of all the policy and other development work to be implemented will be promoted through the NFPs. There has been a task force operating during the last year that recommended, for instance, that the coordination unit for NFP implementation would be established within FAO, in its headquarters in Rome. This is already taking place.

The main principles of NFPs include the following:

- 1. National sovereignty and country leadership;
- 2. Consistency with national policies and international commitments;
- 3. Integration with the country's sustainable development strategies;
- 4. Partnership and participation; and
- 5. Holistic and inter-sectoral approaches. (UN-CSD-IPF, 1997, 5th Session)

Appliance of these principles in practice would be a remarkable change in international forest sector and policy development work as not only the Tropical Forest Action Plans but also other externally or donor financed development programs and projects have received criticism from NGOs and the client countries themselves of lacking these principles in the previous efforts. (See e.g. Mayers and Bass 1999; Dalal-Clayton et al. 1998). This paper discusses the needs for such development and the main players and phases of such a process. Forest sector and policy development has to stand on a broader and firmer basis than so far, and the development objectives are likely to change and become more comprehensive in the future. This development process will evidently create demand for developing appropriate policy instruments as well.

Because of the reasons for criticism and in search for new approaches, independent development consultants have recently designed some principles that good policy comprises and how the policy processes should be managed for British and Dutch financing donor agencies.

Characteristics of good policy and managing the policy process

Good policy will owing to Mayers and Bass (1999):

- highlight and reinforce forest interest groups' objectives;
- provide shared vision, but avoid over-complexity;
- clarify how to integrate or choose between different objectives;
- help to determine how costs and benefits should be shared between groups, levels (local to global) and generations;
- provide signals to all those involved on how they will be held accountable;
- define how to deal with change and risk, when information is incomplete and resources limited;
- · increase the capacity to practice effective policy; and

• produce forests that people want, and are prepared to manage and pay for.

Some of the processes that help to achieve good policy include owing to Mayers and Bass (1999) and Finnida guidelines (1998) and their appliance in practice owing to Alhojarvi (2001b) and IFC (2001):

- 1. A forum and participation process: to understand multiple perspectives and needs, to negotiate and create bridges between the needs of wider society and local actors, and to initiate partnerships.
- National definition of, and goals for, sustainable forest management: focusing on the forest goods and services needed by stakeholders, and on broader sustainable development objectives.
- 3. Agreement on ways to set priorities in terms e.g. equity, efficiency and sustainability, as well as timeliness, practicality, public transparency and multiplier effect. This will require methodologies such as forest valuation (all relevant goods and services) and organized debate.
- 4. Engagement with extra-sectoral influences on forests and people: using strategic planning approaches, impact assessment and valuation, but also emphasizing the active use of information and advocacy to influence broader political and market processes.
- 5. Better monitoring and strategic information on forest assets, demand and use: that allows a continuously-improving policy process.
- 6. Devolution of decision-making power to where potential contributions for sustainability is greatest: decisions are best made and implemented at the level where the trade-offs are well-understood and there is capacity to act and monitor.
- 7. Democracy of knowledge and access to resource-conserving technology: openness to information from all sources, and communication of both data and information used in policy-making and on policy impacts, are vital processes for empowering effective forest stewardship.

These processes can and should be taken into consideration also at the project level. One precondition for successful planning and implementation of a development project is that it follows the guidelines and aims at fulfilling the objectives of the most appropriate policies related to it, and particularly not contradicts with them. This means that for instance the forest development project has to be planned and implemented in collaboration not only with the relevant forest policy but also with the relevant rural development, industrial, energy, environmental and agricultural strategies and policies.

Owing to Mayers and Bass (1999) and Landell-Mills and Ford (1999), this is possible and most feasible to be implemented by having an integrated approach in forest development but keeping various sectoral policies and their objectives clearly separate from each other and not mixing them as a dough. In fact this would mean for the policy to become effective and efficient also in practice, that sectoral development approaches would gradually be changed from sectoral policy approaches towards applying more physically geographically bound, regional and local development approaches.

This is among the most acute and common problems nowadays when the implementation of international initiatives such as the appliance of Agenda 21 into the Baltic Sea region and the Northern Dimension should take place. There have been attempts to create cross- and multisectoral projects within these initiatives as the targeted development goals can seldom be reached by sectoral attempts only according to various evaluations carried out in the discussed regions. And the main obstacles for planning and implementing such development efforts are:

1. Lack of experiences in multilateral and bilateral agencies and their personnel of such development efforts.

- 2. Present state of administrations both in the EU and among bilateral agencies that are based on sectoral approaches, ministries and financing, and not on regional or local development approach.
- 3. Belief, tradition and trust among staff in financing organizations on the wisdom of sectoral education and its appliance in development efforts.

There are several strategies that may lead to improved efficiency and effectiveness of development efforts. One of them is to integrate international agencies and financing institutions more closely to the processes as they are used to more macroeconomic development approaches.

Broader scope at IFIs

Most IFIs apply a comprehensive planning mechanism in designing their financing programs with client countries. The format financing programs are usually built in is called the Country Assistance Strategy (CAS). For instance, the World Bank Group applies this approach. The same applies to a large extent with the European and Nordic IFIs as well, though the format and name of the approach may vary. The client country prioritizes various sectors and defines for which purposes and into what scale the loan will be taken. In addition the client countries negotiate with IFIs if and whether also grant based activities and projects can be added and integrated to the sector based development programs. These grant-based activities are usually financed through bilateral or multilateral sources. For instance, in forest sector loans, the development of forest strategy is typically an element, that can be financed through bilateral donors, such as the Finnish and Swedish Ministries for Foreign Affairs, like in the case of Belarus Forest Sector Development Project in the late 1990s.

Another typical example comprise biodiversity (BD) conservation programs or projects either having both the protection and sustainable use of forests components, or just the protection functions, like in the case of forest sector development in the Russian Federation. An appropriate financing source for BD conservation projects is the Global Environment Facility (GEF). GEF is increasing its involvement gradually also in forest utilization side, most usually as an integrated approach balancing protective and sustainable utilization functions of forests. The other development within BD and GEF is to broaden the sectoral ecosystem approach towards the integrated ecosystem approach where, for instance, wetlands can be tackled from the forest, coastal, mountainous and agricultural ecosystem viewpoints and integrating endangered habitats and wildlife especially the immigrating birds into the picture and analyzing the issues at local, regional and global contexts in order to assess the problems in a more comprehensive context and to find long-term sustainable and balanced solutions.

In the future forest sector development can be financed either through the CASs in the IFIs or in the framework of NFPs, or using both schemes linked. It is evident that most of the future forest sector and policy development projects will be designed to the format of NFPs at a nation or sub-nation level (most evidently in Russia, and probably in China), and the IFIs will act there as partners to bilateral and other multilateral organizations.

Partnerships are needed

So far the partnership has been built during the planning phases of the development efforts. Most commonly the identification part of the development project is financed by the target country itself. The pre-feasibility phase in CITs can be most flexibly financed on grant basis by using the sectoral ministries such as the one for environment, for agriculture and forestry, for trade and industry/energy, for interior or regional development affairs, for foreign affairs etc. in donor countries. Unfortunately too often the recommendations and conclusions created at this stage follow the experiences and relationships of the donor country or reflect the old cultural or colonial relationships between the donor and recipient country. A solution in the Baltic Sea region has been to use the joint Nordic multilateral agencies, particularly the Nordic Council of Ministers (NCM) for this purpose. In these projects there are always at least two Nordic countries involved and the approaches have been usually very objective. If CITs seek for bilateral assistance for pre- and feasibility studies, it is usually recommendable to contact the local foreign embassies and through them, the responsible ministries for foreign affairs. These ministries are in most western European countries coordinating the assistance to CITs and the countries in EU accession.

Feasibility studies of the investment type of projects and other planning activities of the development projects are usually upon requests and bilateral agreements financed by the ministries for foreign affairs of donor countries. A common option for this is the ministries of trade and industry or other industrial and trade type of financing organizations. However, in the latter case the likelihood for a compulsory selection of donor originating technical assistance and technologies increases remarkably. This is not a problem if the donor country does have such technical assistance and technologies that is required and found most appropriate.

Nordic financing sources suitable for feasibility studies and planning of activities comprise ministries mentioned above and NCM as well as the Nordic Investment Bank when speaking about investment projects or its subsidiary NEFCO, the Nordic Environment Finance Corporation. The latter one is particularly feasible and most commonly used in environmentally oriented industrial projects, waste water and solid waste treatment projects and sometimes in even nature conservation oriented investment projects. The other subsidiary of NIB called NOPEF (Nordic Project Fund), is specialized in small and medium size enterprises (SMEs) and for instance supporting the creation of joint ventures between the Nordic and companies in CITs. The Nordic financing sources do not carry strict limitations for number of projects in a certain country and do not have country assistance strategies as such. Nevertheless they have links to CASs of other IFIs as they are increasingly used as cofinanciers with the WB institutions and EBRD in large investment projects in CITs, particularly in projects the Nordic companies are actively involved with. One of such project is the current huge wastewater treatment project in St. Petersburg. Usually the investment projects are not financed unless the regulatory framework with appropriate legislation is not simultaneously being developed or in place already. Thus there is always a clear linkage with appropriate, usually environmental, policies in NEFCO and NIB financed projects. NIB and NEFCO use external forest sector expertise in their project preparations and are thus also using external forest related data base in their projects.

European Bank for Reconstruction and Development (EBRD) has recently been rather passive in forest related projects, but it has had a remarkable portfolio on forest related industrial projects since its establishment in 1991. EBRD is almost purely financing forest industrial projects in the sector discussed but it pays increasingly attention to forestry issues. Thus the linkages with policy development also within the EBRD are increasing. EBRD has neither practical limitations for sectors, nor for single countries (except Russia). Yet the budget limitations exist, and may bring about a bottleneck for investment preparations, but usually within one year only. EBRD is most often using external expertise in its forest related project preparations. It is often the most appropriate financing source among IFIs in CITs in Central Asia when company based development efforts are planned for. If structural adjustment is then main focus, the recipient countries tend to use the World Bank system, IBRD for structural changes and International Financing Corporation, IFC, for private forest enterprise investment financing. Sometimes also the instruments of MIGA of the WB with its risk guarantee schemes are being used attached to the WB financed investment projects. EBRD has created also remarkable competence in financing SMEs in CITs. For instance, in Russia it operates through more than 20 region based banks specialized in small businesses.

EIB (European Investment Bank) is the instrument for investments of the EU that can be used in feasibility studies and implementation of the projects. EIB is always preparing projects and making decisions based on the client company, and is not discussing or negotiating with the client countries as such. Thus there are unclear linkages, if any, with policy type of questions in its work and projects. Technical programs, such as TACIS, comprise the other option for investment projects within the EU. Nowadays up to 70% of the project budget can be allocated into investment type of issues, and as the funding is grant based, it is very commonly the cheapest funding source for an applicant. However, increasingly these grant based investments are planned in conjunction and collaboration with IFIs such as the World Bank. The division of work is most likely to resemble the one between the WB and GEF, i.e. forestry related activities will be financed through loans from the WB or other banks, and the grants are allocated to nature preservation, such as BD protection etc. Evidently there will be a linkage between the EU TACIS financed and GEF financed national park development projects, for instance, in the Russian Federation in the future in order to create synergies between the institutions and their similar types of projects and to avoid overlapping of efforts.

Agenda 2000

The countries with economies in transition in eastern Europe that are in the EU accession process are and have been using EU's technical programs mainly within the PHARE program. These programs have focused different partnerships such as community versus community, institution versus enterprises, enterprises versus enterprises etc. The contents have varied to a large extent also within forestry. But as a general trend the projects have increasingly emphasized social and cultural linkages between regions and localities within Europe and regional, including rural, development. The number of technical programs is likely to be diminished and in the future more activities will be financed through the SAPARD program in Eastern Europe. These programs focus rural development in a more comprehensive way and include also forestry components. As the EU has given emphasis on afforestation subsidies, it will continue to have a remarkable role also within the Agenda 2000 process. However, Agenda 2000 allows subsidies to support the efficiency of wood production and the environmental measures related to forests, so it is likely that both the amount and scale of financial instruments for forest sector development will increase within the EU in the future. The main bottleneck and danger within these instruments is that they should not be against the EU's competition policy and distort competition.

One of the fastest options to integrate the eastern European countries into the EU is to integrate them into the presently successfully running programs and projects such as the LIFE and take them as full partners in well functioning activities. The educational projects also related to forests have been developed usually through separate channels like TEMPUS program and the research through the fifth framework-program of research. The next steps for the whole EU system should be to create synergies between these activities and programs in order to increase the effectiveness of the efforts and to combine structural changes for instance in forestry education with other institutional development measures taken within forestry education and other development measures within forestry. Also more emphasis should be paid into how to create synergy between findings and results of forest research and its appliance into practice. These measures are urgently needed in all the countries with economies in transition both within Agenda 2000 and outside it, in the former Soviet Union countries.

In every case and even the project, the need to use data and info of improved quality for improved project planning will and have to be increased as most IFIs and the EU as such lack to a large extent own data bases and analytical resources as well as forest sector expertise. This can be overcome either by procuring everything case by case from consulting companies (as so far has been the tradition in most agencies), or by establishing partnerships between the agencies and research institutes and universities. The third option is to recruit more professional staff knowledgeable on forest related issues. It is very likely that though all these options will be used increasingly in the short term in the future, creation and use of partnerships with local, regional and international research institutes and universities is likely to increase fastest and to the greatest extent.

Valuation of forests

In addition to the needs related to development objectives and processes discussed above, more emphasis has to be concentrated on assessing the different values of forest and the valuation of forests. Logically this should be the firm basis for long-term sustainability of protecting and using the forests (see e.g. Pearce 1989; Mayers and Bass 1999; Landell-Mills and Ford 1999; UNU 2000). It could become also the most reliable basis for designing policies related to forests, and might change also the content and feasibility of instruments used in the policies.

Landell-Mills and Ford (1999) have carried out a comparative analysis on various forest related policies and policy instruments in approximately 20 countries worldwide in recent years. The main focus has been in the following reforms:

- 1. Private sector participation in forest ownership, utilization and management
- 2. The adoption of market based policy instruments to encourage sustainable forest management (SFM).
- 3. Moves to restructure forestry authorities to increase their exposure to market forces through contracting out, corporatization and privatization.

Only the findings concerning the basis, namely valuation of forests, are discussed in this chapter, the most important other issues in the following chapter.

Landell-Mills and Ford (1999), Mayers and Bass (1999), Pearce (1989), UNU (2000) and many others have pointed out that the valuation of forests have underestimated and often even neglected the valuation of non-wood forest products as goods derived from forests and most of the environmental services, for many reasons. Though NWFPs tend to be collected by rural households for domestic use and their valuation is somewhat difficult as a result of the lack of market forces and prices, the recent forecasts show that international and national markets are growing with faster pace than those of forest products. As NWFP create the most realistic source of earning and livelihood in numerous rural areas within the forest sector, and the potentiality for sustainable utilization is growing fast all over the world, the valuation basis for NWFP should be clarified by intensive research work. As Paal (1998) has pointed out there existed a very solid base for such development work within some product groups in Soviet Union, the importance of this field should be stressed in CITs in the future. The most comprehensive comparative analyses of various uses of forests the author of this text has noticed so far is the forestry Sector Review in Turkey carried out by the World Bank. It shows that rural areas in turkey have on the average more socio-economic potential in developing its NWFPs than the more traditional forest products. The BD potentiality is also huge there, but still in its infancy. According to FAO (2000 and 2001), the situation is very similar in most developing countries all over the world.

Forests provide a wide range of environmental services, including protection of watersheds, wildlife habitat, amenity values and carbon storage. Unlike NWFPs and timber, environmental services are not physically extracted from the forest, and it is more difficult to assess their use and value. This is particularly the case for global services such as carbon sequestration and biodiversity. However, as the privatization of forests proceed, the potentiality of eco-tourism and recreation as alternative forest uses are attracting increasing private sector interest and investments. Also conservation of forests by individuals, communities and firms for bio-prospecting is also beginning to be taken up in some areas and countries like Costa Rica and Papua and New Guinea (Landell-Mills and Ford 1999).

Costa Rica has been pioneering efforts to capture values, especially global values, associated with its forests' environmental services. Eco-tourism which is still in its infancy in Costa Rica, is being developed in the context of biodiversity value of private forests, and thus half of the private forests, currently 250 000 hectares have been set aside from timber extraction as the National Network of Private Reserves. Appropriate infrastructure is being constructed for this purpose and it is partly financed by charging the tourists for access to these forests. The World Bank is also exploring the valuation basis for eco-tourism there. Bio-prospecting has various forms and prospects to be developed. In Costa Rica the National Institute of Biodiversity (NBio) has been developing a national strategy for bio-prospecting since 1989 and mechanism for capturing biodiversity values. It has signed the several contracts with foreign and multinational companies for delivering them plant and insect extracts for drug and chemical manufacturing from the forests. The royalties and other funds received are partly allocated to the national system of conservation areas, especially for national parks, and for further research and development of these issues. The concept will probably be broadened to private forests as well.

Already in 1994 the national program of carbon offsets was established under the Costa Rican office of Joint Implementation (OCIC). The program aims to generate carbon offsets from forest conservation and reforestation activities. OCIC has made several approved agreements on Certified Tradable Offsets (CTOs) with a number of US and Norwegian companies and consortiums so far. There has been also an attempt to broaden trading of CTOs towards the first international emission trading mechanism and sell CTOs on the Chicago Board of Trade with the support of the World Bank. The private sector participation for this type of activity is likely to increase, if these measures to increase finance for carbon storage will turn out to be successful. Watershed protection is tackled by the Foundation for the Conservation of the Central Volcanic Range that has organized hydro-electric companies' payments to local forest owners in that range for forest watershed protection. The aim is to ensure the protection of forests in adjoining hydro-power water catchment areas (Landell-Mills and Ford 1999).

These measures taken in Costa Rica are applications of the economic instruments for environmental protection which were introduced for instance by OECD in 1988 (OECD 1988). One could conclude that also other such instruments could be studied further and used also in the context of forest sector development in the future.

These examples prove that:

1. there is a great need to develop the valuation base of forests towards NWFPs and environmental services;

- 2. these forms of uses of forests have to take fully into account in forest policy design and in developing the appropriate instruments of it;
- 3. the forest policy should be assessed in conjunction with other relevant policies such as the environmental and nature conservation, energy, agricultural and land use ones, industrial and trade ones etc. and they should be developed in a comprehensive manner;
- 4. the public sector can and should assist in creating market mechanisms to exist and become active in the fields they do not operate yet, as all these functions are based on the functioning market mechanism; and
- 5. the present forest policies and instruments should be assessed within these future prospects and potentialities and the findings should be taken into account in forest policy design. Especially the economic instruments developed for the environmental protection might bring about potential instruments for forest policy if applied in an appropriate way. This potentiality emphasizes the need to allocate research and development inputs to both the "new type" of mechanisms, policies and instruments related to them.

These "new" or lately found dimensions of forests have tremendous prospects also in CITs. The Russian Federation and Belarus are already actively developing the issues related to environmental services, but yet they have not been integrated into the current and near future implemented World Bank financed forestry projects (WB 1999 and 2000). However, they are more thoroughly been discussed in the planned GEF activities in Russia, and could be considered as one financing mechanism for protection type of activities, for instance against forest fires or in protection of endangered wildlife. NWFPs are tackled strongly in the pilot forestry project in Russia, financed by the World Bank (1999). So far these issues have not been analyzed in the context of forest policy development, and in relation with other relevant sectoral policies, at least in the WB financed projects.

Evidently these issues have future also in other CITs and the EU accession countries. They have prospects also in the western European countries, and as the forest sector data base are most advanced in some of these countries, this international need to broaden the valuation base of forests, might be developed fastest in these countries.

Private sector involvement

Most likely the private sector will be integrated to a major extent to the NFP process as well. The local private sector will take part in the development process either through the forest ownership or through industrial and trade investments. The precondition for the foreign private sector involvement in CITs for the investments is a thorough assessment of investment climate development in the client country. In most CITs the external private sector actors are needed for several reasons, most common being the lack of funding sources for the local entrepreneurs and the underdeveloped financial markets, and the need to invest into modern, market penetrating manufacturing methods and products. Both external and internal factors have to be tackled in solving the problems hindering or hampering the investments in general, and in particular in the forest sector. Usually the key decision and macro-economic policy makers have to be integrated to this process if success is to be met with. Thus the private sector involvement has direct linkages with the CAS and NFP development activities.

The most problematic factors owing to multinational and large international forest industrial companies in the Russian Federation (WB 1999b) are the following:

1. Macroeconomic reasons and political conflicts:

A. War or civil disturbance

- B. Inability to convert and transfer currency
- C. Expropriation
- D. Seizure of goods, restricted import, sale or export

These factors should be tackled and solved at federal level by the political decision makers and they are common in all the sectors in Russia.

2. Taxation related factors

These factors deal with profit base, deductions, VAT refund system, taxation relationship between companies and private citizens and broadening the taxation basis, import duties, transparency and objectivity of taxation, social costs not related to the employees to be transferred to the relevant bodies from the companies, tax debts of former enterprises to be forgiven for new investors etc. There should be measures to be taken not only at the federal level ,but also at regional and sometimes at local levels as well in order to correct the situation.

3. Tariff and licensing related factors

These issues comprise issuing or canceling of licenses, interference in carriage of goods, problems related to transportation dealing with railway, trucks and infrastructure as well as issues related to energy such as the increase of efficiency and saving of energy, pricing of it as well as the improved use of bio-energy made in forests and as use of waste wood and wood wastes in the mills and liquids from the pulp manufacturing. The last mentioned issues should also involve enterprise- based solutions, the other ones should be solved at federal, regional and local levels by various policy and decision makers.

4. Privatization, financing and company development

These factors deal with privatization and promotion of private enterprises in practice. Protection of ownership and development of financing mechanisms particularly for SMEs are tasks for federal, regional and local level policy and decision makers where as promotion of entrepreneurship, SME development, increased market orientation replacing the traditional production orientation, quality emphasis replacing quantitative approach and support to establishment of industrial and trade associations particularly for the needs of SMEs are among those factors where also the enterprises can and should act as developers and partners.

5. Institutional development

All the investments need reliable data base and info for planning the processes and projects on a reliable and sustainable basis as well as skillful and knowledgeable employees at all levels. The investors will act as clients to the educational and research institutes and thus they have to be updated and upgraded into such shape that their services are worth buying for the development efforts. If the local institutions cannot provide such services, investors will buy these services outside the region or community and the project will have only a limited development impact to the local institutions. The institutional development is on the responsibility of the federation and region, and thus the commitment of the educational and science administration for supporting investment projects is also urgently needed owing to the recent analyses carried out for instance within the World Bank system (World Bank 1999a and IFC 2001).

6. Forestry related factors

There are many forest sector related factors that hinder the forest sector development in Russia according to potential foreign investors. However, many of them are culture dependent, i.e. the approach and traditions in the investors' own country reflect to the importance of these factors. Nevertheless, present contents of the forestry legislation and regulations can be considered among those issues. In addition issues related to forest management planning systems (economic use, NWFP, BD and other protection) including harvesting planning is considered to be among the most important problems in Russian forestry. Other major issues include the prospects and possibilities to develop forest certification and chain-of-custody, local market development, problems in adding value to the products, participation of local people not only in theory but involvement into the production processes, possibilities to launch more comprehensive planning methods for the forest sector development as a whole, lack of forestry and forest industrial strategies at regional level as well as the lack of encouraging experiences of and lessons learnt from modern forestry and forest investment projects acting as pilots etc. are among the issues that should be taken into account when new investments with long-term targets are to be considered (Alhojärvi 2001b).

These factors as mentioned before are culture connected and the issues act as hindrances for or even hamper foreign investments, and vary in different parts of the world. But yet these factors identified by potential investors are very similar than those pointed out by Mayers and Bass (1999) when they analyzed the factors and processes to be developed in relation with good policy. In brief it is a matter of applying principles of development cooperation into investment projects in an appropriate method satisfying also the criteria of successful business. Simple truth, that is not so easy to be implemented.

Investors and subsidies

As one can notice the potential investors are not keen on finding subsidies or financial incentives to support their activities. They are primarily interested in finding a safe and stable environment for their investments. This has been a long lasting tendency, at least in partly publicly financed forest industrial projects. FAO, and ILO and UNIDO, have been the international agencies that have been involved with industrialization in developing regions and countries for the last decades. For instance in the FAO guidelines for planning small and medium size sawmills (1981) the only remarks concerning potential public financial support deal with reforestation, and thus the long-term supply of raw-material for the mills.

The respective guidelines for pulp and paper industries (FAO 1983) deal more about the financial sources and mechanisms, but the main emphasis is how to integrate IFIs in pulp and paper projects in developing countries. In fact in those discussions the social impacts of these projects are emphasized by the FAO and a broader and more comprehensive approach towards pulp and paper products are introduced in that document. For instance, the importance of SMEs, entrepreneurship, employment impacts, lesser known species, other fibres as raw-material, education and training etc. are emphasized and they have been taken into full consideration in the recommendations FAO has given out on the theme. Unfortunately these softer side issues were not taken into consideration in an appropriate grade at that time, which led to unsustainable solutions far too often.

FAO (1983) even discusses the importance to protect local, new mills in developing countries with import duties on pulp and paper products against the dumping effects of international competitors commonly used at that time. In addition to customs duty protection measures, FAO discusses subsidized costs of raw materials, low rates of interest on some loans and other favourable loan conditions as well as the incentives which relate to rates of depreciation, tax and excise duty exemptions as to be used as regulative and financial instruments regarding the establishment of pulp and paper mills in developing countries (FAO 1983).

Linkages with other sectors

As a whole the forest sector development will occur increasingly through other sector programs that have indirect or direct linkages and impacts to NFPs. For instance, forest and wood will be increasingly assessed in the context of energy and environment. Wood wastes will be assessed as a part of problem solving of solid wastes, like in the case of Latvia of the WB development projects, or even as a part of renewable energy development program. In the Latvian case the use of wood waste created by the sawmills was assessed between several options: A. To be dumped in the solid waste landfills (increasing the environmental loads); B. To be converted into pellets and briquettes for fuel; C. To be used as landfill energy cells; D. To be used in sawmills' boilers for heating; E. As local firewood; F. As fuel for district heating; G. for export; and H. As for pulp. The study led to concrete investments mainly in the saw-milling boiler and district heating systems. These investments could be supported at the early, or pilot phase, by the environmental subsidies by the Latvian Ministry for Environmental Protection and Regional Development as these uses diminished the environmental pressures and impacts of the solid waste created by the sawmills(Sawdust...1999).

An example of the latter one is that forests are assessed in the context of carbon sequestration through which new financing instruments can be designed on like in the case of Costa Rica presented above, or that wood-based energy units are planned as objects for replacing investments for oil- or coal-based boilers while introducing new type of heating systems such as district heating (DHS) in CITs. Appropriate loans will be taken for some of these purposes while the grant part of the financing will be allocated to the most sensitive parts of the development process. This process is also taken place in practice within the World Bank and GEF financed energy/environmental projects. The comprehensive valuation of forests can be used also within these contexts and through that work new instruments for financing can be created to speed up these strategic changes.

Linkages between grants and loans, between practice and research and education

Grants and loans will be planned in a more comprehensive and coordinated manner in the future: There will be more combinations of various public financing sources (bilateral and IFIs) and there will be more integrated plans with the private sector participation including also private financing in the future. One reason for this is that conservation and sustainable utilization of forests have to be planned more closely in the future if good policies and sustainable development are to be achieved. In addition sector based development planning will have to move towards regional and local targeted development planning if sustainable development is to be aimed at. One basic element for this type of optimization is that appropriate research and education supporting practically oriented development efforts will be developed simultaneously and that the achievements gained in research and development can be applied into practice. Owing to recent program and project evaluations (see e.g. Mayers and Bass 1999; Evaluation...1997), more emphasis has to be allocated to these functions when practical oriented development efforts are planned. There are attempts already presently that try to integrate forest research and education inside and attached to practical investment projects (IFC 2001).

If the forest research and education are planned in an appropriate way and as integrated in the forest policy and strategy development, they may receive increasingly allocations in the development process of NFPs, and visa versa: They may broaden the financing options for NFP development, especially within the EU financed development activities. There has been development work carried out by EFI and the United Nations University (UNU) in this integrated approach recently and increased challenges and prospects are seen within it. The recent study (Alhojärvi 2001a) shows that in addition to the issue specific research and educational needs, lot of emphasis should be paid to institutional development issues including management related problems such as role of budgetary and externally financed functions, out-contracted functions, networking and division of work between institutes etc. and to the required commitment from the federal and regional administrations for institutional development etc. Also in these respects encouraging pilot cases that can act as models are additionally needed urgently in CITs.

Linkages with international initiatives and between countries

Recent international initiatives are likely to support the processes discussed. The Northern Dimension of the EU, the Barents Region Forest Sector Initiative and the appliance of Agenda 21 in the Baltic Sea region are going to support both the development of NFPs and also multi- and cross-sectoral programs aiming at comprehensive development approaches such as rural development and eco-tourism. In both concepts forests and forestry have to be integrated with and assessed in the context of agriculture, environment, energy, small- and medium-size enterprises (SME), farm-based and other tourism, fisheries and game etc., all the main segments of occupations and professions needed to keep the rural areas in the pace of development in order to diminish the increasing number of socio-economic gaps and potential conflicts between urban and rural areas in Europe and worldwide.

The coordination of NFPs including international financing will take place at nation and sub-nation levels between various partners including also NGOs, and the international financing will evidently be allocated more optimally according to the expertise and funds available from various sources and partners by using the project cycle based planning. This means that bilateral funds are mainly allocated to identification and pre-feasibility phases and elements having strategic or conservational elements, and the planning and feasibility phases and the project implementation will be financed increasingly from IFIs or through the EU SAPARD or TACIS programs in CITs.

One of the most important issues in this process is to safeguard the transfer of lessons learnt in one country or development program to another in an appropriately modified format. That is why it is essential also in the forest policy research and development, and specifically in the development work of financial instruments, to build linkages between western and eastern European countries as well as with the Russian Federation and other countries in the former Soviet Union. Yet the conditions for forest sector development differ largely from each other in Europe and Central Asia, there are definitely a great number of research and practical results and findings that should be introduced and discussed in international for a. EFI can act in a remarkable role in it.

Conclusions

It is evident, that most countries with economies in transition will actively take part in the international development process of national forest programs in the near future. In addition

to the development and use of the traditional forest policy objectives and measures including appropriate instruments, there will be an increasing need for inter-sectoral approach and policy development. This will increase the importance of the need to utilize policy measures and instruments developed in the other sectors, such as the environmental and energy policy instruments. This is due to many factors such as the changing valuation of forests, increasing role and number of various stakeholders including NGOs, private sector involvement, values and requirements of investors and their views on subsidies, increasing importance for comprehensive forest sector assessments required for sustainable development etc. Evidently the linkages between the forest sector and other sectors have to be improved, and the same applies to linkages between the development and use of grants and loans as development instruments, between research and education and practice, as well as between the international initiatives and between the donor organizations including IFIs and target countries. The NFP development has to occur in a broader policy context than before and with increasing emphasis on partnerships between various actors in the play.

References

- Alhojärvi, Pekka. 2001a. Developing Forest Research and Higher Education in Countries with Economies in Transition in Europe and Central Asia UNU's Role within the National Forestry Programs (NFPs). Consultancy report. Unpublished.
- Alhojärvi, Pekka. 2001b. Development of the Investment Climate in the Russian forest sector. Pre-study report. Unpublished.
- Alhojärvi, Pekka. 2000. Quantitative Analysis about the Biodiversity projects financed by GEF. Consultancy report to GEF Evaluation and Monitoring Unit. Unpublished.
- Dalal-Clayton, B., Bass, S., Robins, N. and Swiderska, K. 1998. Rethinking Sustainable development Strategies: Promotion Strategic Analysis, Debate and Action. Environmental Planning Issues. No 19. IIED, London.
- Evaluation of the educational development projects in the forest sector in Northwest Russia implemented in 1992– 6 and financed by the Government of Finland. 1997. Consultancy report by Silveco Ltd. to the Finnish Ministry of Agriculture and Forestry. Saukkola.
- FAO 2001. State of Forests 2000. Rome.
- FAO 2000. State of Forests 1999. Rome.
- FAO 1983. Establishing pulp and paper mills. A guide for developing countries. FAO Forestry Paper 45. Rome. FAO 1981. Small and medium sawmills in developing countries. A guide for their planning and establishment. FAO Forestry Paper 28. Rome.
- Finnida. 1998. Guidelines for project preparation and planning. Finnish Ministry for Foreign Affairs. Helsinki. IFC 2001. Project Profile of the Forest Sector Development Project in Northwest Russia. International Finance
- Corporation. Unpublished.
- Landell-Mills, N. and Ford, J. 1999. Privatising sustainable forestry. A global review of trends and challenges. IIED. Nottingham.
- Mayers, J and Bass, S. 1999. Policy that works for forests and people. IIED. Nottingham.
- OECD 1988. Economic Instruments for Environmental Protection. Organisation for Economic Co-operation and Development. Paris.
- Paal, Taimi.1998.Utilization and Research of Non-Wood Forest Products in the Former Soviet Union. In Lund, G., Pajari, B. and Korhonen, M. (eds.) Sustainable Development of Non-Wood Goods and Benefits from Boreal and Cold Temperate Forests. EFI Proceedings No. 23. Joensuu.
- Pearce, David. 1989. Economic Incentives and Renewable Natural resource Management. Theoretical Context and Preview of the Issues. In Renewable Natural Resources and Economic Incentives for Improved Management. OECD. Paris.
- Sawdust and wood waste strategy for Latvia. 1999. The World Bank and Ministry of environmental Protection and Regional Development of Latvia. Final Report of the consultants Indufor Oy, VTT Energy and Plancenter ltd. Unpublished.
- United Nations' University. 2000. Valuation of Forests. Pamphlet on the topic.
- Various annual reports, brochures and home-pages of various international financing institutions, the UN organizations and bilateral donors acting in forest sector development.
- World Bank. 2000. Project Appraisal Document on a Proposed Guarantee to the Russian Federation for a Coal and Forestry Sector Guarantee Facility. Unpublished.
- World Bank. 1999a. Project Appraisal Document of the Pilot Forestry Project in the Russian Federation. Unpublished.

World Bank. 1999b. Russia's Forests: Barriers and Incentives to Responsible Investments. Second report of Working Group no.3 to the WB Forestry CEO's Forum. Unpublished.World Bank. 1998. Forestry Sector Review in Turkey. Project Document.

Development of Forest Policy Instruments in Japan

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Abstract

This paper is a discussion of the development of forest policy instruments in Japan, and an examination of the thinning programs used for land conservation of private forests. Two interesting observations drawn from recent experiences in Japan are reported here: (1) the diversification of targets, which were expanded to include those landowners who have lost their motivation for timber production; and (2) the restrictions on target forests imposed by some local governments using prior agreements or contracts for the purpose of land conservation. The Kanagawa case shows efforts to make various types of owners participate in the program, and improve and diversify private forests by means of a program that combines prior agreements and contracts.

Keywords: forest policy, Japan, subsidy, land conservation, target, thinning

1. Introduction

The Japanese government has gradually been shifting the main focus of its forest policy from timber production to land conservation. To conserve forests in Japan, both public and private forests have been designated 'Protection Forests'. Recently, the national government has been promoting forest improvement operations, such as thinning, in Protection Forests. Local governments also started some pioneering forest-improvement programs for land conservation in the late 1990s.

This paper discusses the development of forest policy instruments in Japan, and examines thinning programs for land conservation in private forests. Forest improvement by thinning is the primary issue of current forest policy in Japan, not only for wood production, but also for land conservation. To clarify the characteristics of land conservation programs, we focus on the characteristics of target forests and on the intervention measures used in the programs.

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handbook 2000).

Target forests can be classified using two factors: (1) the importance of the location for land conservation; and (2) the amount of forestry activity, which reflects forest owners' motivations. The selection of target areas influences the effectiveness of the program. Some public intervention has been imposed to improve land conservation in target forests, including the use of restrictions and incentives. The nature of these public intervention measures affects their acceptability to forest owners. Based on our examination, we discuss forest policy financial instruments from the perspective of Japanese experience.

2. Overview of Japanese Forests and Forestry

In Japan, forests cover 25 million hectares, or 67% of the land surface. Most forests are located on steep mountains. About 58% are privately owned, and these holdings are very small. About 46% of private forests are plantations, most of which are even-aged conifer stands. A breakdown of forest ownership is given in Table 1.

Figure 1 shows the area of plantations in non-national forests by age class. Most are 31- to 40-year-old forests, planted in the 1960s, when the demand for wood products was increasing rapidly. Since the late 1960s, forest product imports have been increasing, whereas domestic production has decreased.

	(thous	and ha)	
National Forests	Non-National Forests		
	Public	Private	
7 844	2 730	14 572	

Table 1. Forest ownership in Japan as of March 1995 (source: Forestry Agency. Forestry statistics



Figure 1. Area of non-national planted forests by age class as of March 1999 (source: Forestry Agency internal working paper).

Age of the stands (years)

Thinning Stage

Now, most forest owners receive no income from timber production. According to the data in the provisional report of the Forestry Census, conducted in 2000, only 5% of forestry households holding over 3 hectares sold forest products in that year. Moreover, only 10% of forestry households of over 10 hectares sold forest products. The decline in the income expected from forestry has led to forest owners neglecting forest maintenance operations. This has caused increasingly over-stocked forests with little understory vegetation, which can result in soil erosion and is not good for the health of the forest ecosystem. Thus, forest improvement activities such as thinning have become a central issue in current Japanese forest policy.

3. Current Forest Policy in Japan

The annual forestry expenditure of national and local governments for non-national forests amounts to about 1.5 trillion yen (14 billion €) or 87 000 yen (830 €) per hectare on average. Most of this is spent on projects for which the national government gives grants-in-aid to local governments with a view to encouraging their implementation. Local governments implement these projects after adding their obligatory share of the expenditure. In addition to these grant-aided projects, local governments also implement unsubsidized projects, which have gradually expanded since the late 1980s.

(Billion Yen)	National Government	Local Government Prefectures (47)	Municipalities (3 232)
Total Expenditure	78 470	52 051	51 408
Forestry Expenditure Total Subsidies	Forestry Agency 572 To Prefectures 356	1 043 To Municipalities 134	373
Grant-Aided Projects		587	149
Unsubsidized Projects		219	131
Note: 105 Yen = 1 EUR in J	une 2001		

Table 2. The forestry expenditure (FY 1997).

Source: 1) Budget Bureau, Ministry of Finance. 1997. The settlement (FY1997). 2) Local Government Bureau, Ministry of Home Affairs. 1999. The local public finance yearbook (FY1997).

Most forestry expenditure is spent on erosion control, forest road construction, plantations, and forest improvement, such as thinning. The main financial instruments for forest policy are subsidies.

Forest policy in Japan is now at a turning point. The national interest in forests has changed dramatically in the last few decades. Public opinion polls show this clearly. In a poll conducted in 1980, 55% of those surveyed chose wood production as one of the three most important functions of forests. This proportion had declined to 15% in a 1999 poll. Now, many people choose the functions of disaster prevention and water conservation.

In response to this social interest, the direction of forest policy has gradually been shifting. In the mid-1980s, the national government changed its conventional expansive afforestation policy, and through the 1990s the function of land conservation has been increasingly emphasized. Now, an amendment to the Basic Forestry Law, which sets forth the objectives of forest policy, is under deliberation in the Diet in June 2001. This amendment is a radical reform of conventional policy focused on wood production, with a change to a policy of improving the multi-functionality of forests.

4. Development of Forest Improvement Programs for Land Conservation

4.1 Thinning for land conservation

Both the national and local governments recently implemented several new forest improvement programs. The largest program involves reforestation subsidies. The program includes subsidies for planting, weeding, and thinning. As a rough estimate, the area for thinning included in this program is 60–70% of the total thinning area of private forests. The program has the dual objectives of promoting forestry and land conservation. The government pays extra subsidies for thinning in forests that meet certain policy objectives, for example, operations involving joint forest planning among private landowners or in designated Protection Forests in addition to ordinary subsidies.

The Protection Forests Improvement Program also promotes thinning in Protection Forests. This program used to be implemented in a very limited area, but recently its target has been expanded to include thinning in over-stocked Protection Forests. This program is regarded as an important public intervention for land conservation in the new forest policy. In the current fiscal year, the area for thinning covered by this program is intended to be roughly 10–20% of the total thinning area of private forests.

Thinning programs for land conservation have also been developed at the local level. The total expenditure on reforestation subsidies by prefectural governments for unsubsidized projects is about one-quarter of the amount spent on grant-aided projects.

In the following sections, we examine the thinning programs for land conservation that are included in these three major programs:

- 1. the national government reforestation program covering Protection Forests;
- 2. the Protection Forest Improvement Program; and
- 3. the forest improvement programs of local governments.

4.2 Thinning in Protection Forests with the national reforestation subsidy

Under the Forest Law, the Japanese government has designated Protection Forests for land conservation since 1897. To date, 27% of private forests have been designated as Protection Forests, on which certain restrictions are imposed. The restrictions differ, depending on the reason that the forest is protected. Large-scale clear cutting is prohibited in all Protection Forests, and harvesting must be on a sustainable basis, if it is allowed. In most Protection Forests, the restrictions on forest management are not very tight.

The maximum rate of subsidy in Protection Forests is about 70% of the standard cost of thinning operations. This large subsidy is intended to improve land conservation by

promoting active forest-maintenance operations in Protection Forests. Although these subsidies have been increased, many forest owners have continued to neglect their forest-maintenance operations, which have resulted in an increased need to expand the Protection Forests Improvement Program.

4.3 Thinning under the Protection Forests Improvement Program

Under the Protection Forests Improvement Program, the government sponsors thinning at public expense. The program is an erosion control program that is intended to protect against mountain disasters. The target of this program has recently been expanded to include Protection Forests whose owners have neglected forest maintenance. The program is implemented where it is very important to control erosion in a forest, such as in forests close to residential areas. In forests where this program is implemented, the final cutting age must be increased.

There are two major problems with this method of targeting. First, it is difficult to identify targets based on scientific data. The person in charge may select targets arbitrarily. Second, it may encourage owners of Protection Forests to neglect forest maintenance in the expectation that the government will take care of thinning for them.



Figure 2. Target forests for thinning under grant-aided projects.

4.4 Thinning under forest improvement programs run by local governments

4.4.1 Characteristics of forest improvement programs run by local governments

Thinning programs for land conservation have also been developed at the local level. Generally, these programs are designed to supplement the national reforestation subsidy program by paying extra subsidies for specific forests, or by extending the age range of target forests. The objectives of the programs are more specific, such as water conservation or prevention of woody debris. Some pioneering forest improvement programs base their targets on agreements or contracts with forest owners. For owners who are motivated to manage their forests, some local governments make land conservation agreements in exchange for extra subsidies. For owners who have lost their motivation to produce timber, an opportunity to contract out long-term management or to transfer their property rights to the local government is provided. Some of these programs are transforming monocultural timber plantations into mixed forests by selective cutting and regeneration with non-conifers. These programs are implemented in forests specified by the government, and only if the owners accept the designated restrictions.

4.4.2 The Water-Source Forests Improvement Program in Kanagawa Prefecture

The Water-Source Forests Improvement Program in Kanagawa Prefecture is a program that combines agreements and contracts. Kanagawa Prefecture is adjacent to Tokyo, and partly belongs to the metropolitan area. The price of land there is extremely high. Forests cover 40% of the land surface, and 70% of these forests are privately owned. The tendency of forest owners to neglect forest-maintenance is particularly serious in this prefecture.

Kanagawa Prefecture started the Water-Source Forest Improvement Program as a specialfeature program in 1997, the year after a serious water shortage in the prefecture. The program aims to improve the forest in upstream areas by spending water service revenues. The program is implemented only in forests that are located in the designated water-source



Figure 3. Map of Kanagawa Prefecture. Note: the major rivers are indicated by grey lines.

area, with owners who sign an agreement or contract with the government. The water-source area designated by the prefectural government covers 60 800 hectares, including 40 243 hectares of private forests, which constitute about 60% of private forests in the prefecture. Owners targeted by this program are divided into two groups. The first group consists of owners who are motivated to manage their forests. The program provides an opportunity for them to agree to certain conditions, for example not to clear-cut more than two hectares, in exchange for extra subsidies for thinning. The second group consists of owners who no longer produce timber, who can choose to sign one of four types of contract for long-term public management. The different contracts are aimed at certain forest types, such as mixed forests, multi-story forests, and old forests. Incentives for owners are that the contracts clarify the boundaries of their forests and provide them with some compensation for the long-term transfer of some property rights.

In the water-source area, which covers about 60% of the private forests, the prefectural government provides several options for landowners to be involved in the Water-Source Forests Improvement Program. The government implements this program according to owners' choice from designated options, and as a result of that, the types of private forests expected to be diversified. This differs from the system of government selection, in which forest area is classified beforehand according to the types of forests the government wants to promote.

Public relations play an important role in encouraging different types of landowners to participate in this program. According to a survey completed in December 1997 of forest owners in three municipalities in the water-source area, 75% of owners knew something of this program, and 31% of owners had been informed only by means of pamphlets sent in the mail and/or press releases. It is difficult to have a public officer contact such a large number of owners directly or to address them through forest owners' associations.

The program sought agreements to cover 9% of the water-source area, and to contract for public management of 36% of the water-source area within 20 years. So far, the program has been functioning smoothly.



Figure 4. Target forests under the Water-Source Forests Improvement Program.

This pioneering program has had two remarkable results. First, the combined sub-programs have stimulated a large number of forest owners to become involved in the program and to diversify their forest management. Second, the long-term contracts have made governments more responsible for the consequences of forest operations, prompting them to discuss and improve the program continuously. The specific nature of the program has promoted accountability.

5. Conclusion

Recently, measures to solve the problem of over-stocked forests that forest owners do not take care of have been implemented widely as part of land conservation programs in Japan. This has caused the development of support programs for private forests with two results: (1) the diversification of the targets; and (2) the imposition of restrictions on target forests.

The targets of forest improvement programs have been expanded to include owners who have lost their motivation to produce timber through a program in which the government takes care of thinning at public expense. The expanded target sites are determined by the importance of the location for land conservation and by the inactivity of the forest owners' operations. The governments could design various types of target forests and the way of approach to owners. On the contrary, the targets of conventional forest improvement programs are implemented in the forests whose owners apply for subsidy programs. In the case of the Water-Source Improvement Program in Kanagawa, the government designed several sub-programs to include various types of owners and to improve and diversify private forests by converting them into more desirable ones such as mixed forest.

The restrictions on operations to target forests are also changing. The local governments are designing extra subsidy programs for specific forests. The agreements or contracts implemented by some local governments impose stricter restrictions for land conservation, and include a new type of restricted forest, besides Protection Forest, which is established for a certain period, using agreements and contracts with owners. The legal binding ability of these restrictions is weak, but local governments can tailor the agreements and contracts flexibly to meet their own objectives.

Through recent developments, the role of local governments has become more important in forest policy, which has enabled the development of programs adapted to regional conditions. This has caused the diversification of forest policy instruments. However, the weak financial resources available to local governments still remain an obstacle to the implementation of their own policies.

Programs that focus on land conservation tend to demand higher public expenditure to support both the higher subsidy rates and the expanding governmental involvement, which may require conducting forest surveys or implementing public relations services. The Water-Source Improvement Program in Kanagawa can be implemented using a large budget, because it was one of special feature projects, which have priority in budgeting. In addition, the government has developed a special budgeting system for this program to use a part of water service revenues. However, it is difficult for most local governments to acquire such a large budget, and that is why the programs' efficiency also needs to be improved. This would require the development of the scientific data that would enable finding critical targets and the establishment of incentives for owners and other stakeholders. Comparative research as well as theoretical research could also contribute to these improvements.

References

Ishizaki, R. and Endo, K. 1999. The new forest management in old "Commons" on urban fringe: the case of Odawara district, Kanagawa prefecture: Journal of Forest Economics 45-1: 81–86.

- Ishizaki, R. and Furuido, H. Forestry expenditures by prefectural government: structural changes and their regional variation. Journal of Forest Economics (submitted).
- Prime Minister's Office. 1980. Poll on opinions toward green and trees (Shinrin/ringyo ni kansuru yoron chousa). (In Japanese).
- Prime Minister's Office. 1999. Poll on opinions toward forest and life (Shinrin to seikatsu ni kansuru yoron chousa). (In Japanese).
- Statistics and Information Department, Ministry of Agriculture, Forestry and Fisheries. 2000. The provisional result of 2000 Forestry Census (2000nen sekai nouringyo sensasu kekka gaiyou III). (In Japanese).
Results of Work Group 1 – "Implications on the Interface between Policy and Research"

Work Group Coordinator: Dr. Americo C. Mendes

The discussions within Work Group 1 tried to develop the link between policy processes and research activities based on the issues presented during the conference. Consequently WG1 was constituted from members of the scientific community as well as representatives from the field of policy formulation and implementation.

To sum up the main result of these deliberations was that only a broad analysis can provide the necessary information for the currently ongoing policy processes

- It was stated that the increasing relevance of inter-sectoral issues for forest policy processes requires policy analysis not to focus solely on the field of forest policy but also to take into account cross-sectoral links, including both external influences ON the forest sector as well as the forestry sector's own externalities.
- In addition, the increasingly international nature of relevant policy processes requires also to take the outputs of international agreements and processes into account. The Pan-European Process (Ministerial Conference for he Protection of Forests in Europe) or at a global scale the Kyoto Protocol as well as the deliberations in the context of "Rio +10" in Johannesburg are just a few of the most relevant examples.
- The term financial instruments has to be understood in a rather broad sense in order to be able to account for all the different forms of governmental support in the context of forest policies. On one hand this means the wide area of direct financial support from various national and international (e.g. EU) sources, which appears in the form of direct grants, tax concessions, supported loans and as a rather "new" approach "compensations" to private owners for the provision of services (e.g. recreational access, water quality etc.). On the other hand this also encompasses also all indirect forms of public support such as extension services or support for interest representation organisations.
- Another aspect of internationalisation of policy processes is that experiences from other countries will be increasingly important also for national policy makers. Thus there is a need for comparative studies and analyses.
- This means, however that research into the effects of financial instruments also will have to take into account the wider political and administrative framework as well as social and cultural factors as policy evaluation results cannot be transferred without this background information.
- In the light of scarce public budgets a well developed set of instruments for an evaluation of financial policy instruments is expected to become increasingly important also in the exante evaluation of alternative policy choices.

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Results of Work Group 2 – Implications for Research and Education

Work Group Coordinator - Dr. Andreas Ottitsch

Work Group 2 focused on the state of the art in research and education in the field of forest sciences in relation to the implications of the conference results. The main goal was to identify the need for new and improved developments in this field. To sum up the results, the following main topics were identified:

- New developments from the field of economics have to be transferred to forestry economics more stringently. As the current approaches in the field of evaluation of financial instruments of forest (and environmental) policies show approaches from behavioural research or institutional economics, for example provide indispensable tools for improved analysis.
- This was seen especially important in the context of the development of revised curricula in forestry and related resource management studies where a better level education in economics should be offered at all levels of undergraduate as well as graduate programs.
- Also the need for the development of improved and specially adapted methods in the field of evaluation research was stressed. For the future a closer link of evaluation and policy formulation was seen as necessary also in the European context as the whole process of policy development and formulation is seen as being increasingly shaped by the competition for scarcer public resources. Such an institutionalisation of ex-ante evaluation was also seen as a valuable tool in the context of improving the transparency of political processes and public participation in political decision making processes.
- The presentation of research results form a wide variety of political and cultural contexts during the conference showed the need for comparative research studies as well as the possible boosts which such research could constitute for the further development of theories.
- The discussions during the conference and the work-group session also showed that in the field of financial policy instruments in the context of forest and conservation policies there exists a need for better definitions, as there exists a wide variety of terms which describe different forms of governmental intervention.
- Standardisation was also seen to be desirable regarding the format of data about intervention policies as well as conventions on technical issues for example time-frames to be regarded in the evaluation of program outputs.
- The need for improved education on relevant methods and new developments was not only seen in the context of entry-level students curricula but also for further professional education and training of professionals. In this context the development of special workshops, seminars or summer schools aimed at professionals was seen as a useful too to improve the knowledge level among current decision makers.

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