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GENEVA TIMBER AND FOREST DISCUSSION PAPER 41

Outlook for the Development of European Forest Resources

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Outlook for the Development of European Forest Resources

A study prepared for the European Forest Sector Outlook Study (EFSOS)

by

Mart-Jan Schelhaas, Jo Van Brusselen, Ari Pussinen, Emi Pesonen, Andreas Schuck, Gert-Jan Nabuurs, and Volker Sasse

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Abstract

This *Outlook for the Development of European Forest Resources* provides the methodologies, data, scenarios, and results of the outlook on the European forest resources from 2000 to 2040. The aim of this forest resource study was to analyse the impacts on the European forest resources under the level of fellings needed to fulfil the derived roundwood demand according to two scenarios as provided by the market modelling project within the EFSOS framework. Thus fellings and removals presented in this study cannot be identified with a wood supply forecast in economic terms.

The study includes the forest available for wood supply (FAWS) in geographical Europe, i.e. from Ireland to the Ural mountains and from the northern tip of Lapland to the southern border of Turkey. The model outcomes are based on assumptions about the increase in FAWS as well as unchanged forest management regimes (e.g. rotation period, thinning intensity, afforestation), and growth of stands ratios between felling and removals over the analysed period.

Although removals are assumed to rise significantly, the results as presented sketch large and increasing forest resources in Europe. The growing stock increases under the baseline scenario from 51 billion m^3 o.b. to 63 billion m^3 o.b. in 2040, whereas the net annual increment declines only slightly from the current 1.2 billion m^3 o.b o.b to 1.15 billion m^3 o.b. in 2040. The FAWS area is assumed to decrease from 335 million ha to 329 million ha by the year 2040, in the base scenario. In the alternative scenario the forest area is expected to increase to 343 million ha.

The market model outcomes projected a fast increase in required fellings in the current outlook study. This demand for fellings on FAWS is foreseen to increase from 643 million m^3 o.b. per year in 2000 to 847 million m^3 o.b. per year in 2020 in the baseline scenario (1014 million m^3 o.b. per year in the alternative). This, together with an approach that dynamically simulates age class development, shows that annual availability of roundwood may be hampered after 2020. In the baseline scenario the actual fellings in 2036-2040 were about 2% lower than the required fellings, whereas in the alternative scenario the difference was about 11% per year. In reality market mechanisms will take care of this difference, by adjusting prices, forestry management and especially trade, considering the legal restriction, which assure sustainable forestry management. These adjustments cannot be simulated with the current modelling system.

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PREFACE

The European Forest Sector Outlook Study (EFSOS) issued in late 2004 is based on a huge volume of scientific research: the meeting between policy questions and scientific method is one of the foundations of EFSOS, providing credibility and rigour.

The present Discussion Paper is the last of the scientific papers underlying EFSOS. It addresses the question of the development of the European forest resource (area, growing stock, increment and removals) under the scenarios generated by the econometric models, which have already been published. This complex task was carried out thanks to the European Forest Information Scenario Model (EFISCEN), maintained by our partner, the European Forest Institute. It provides policy makers with valuable information on the resilience and sustainability of the European forest resource, information that is a pre-condition for responsible policy-making. The detailed information in this paper is provided as a service to analysts and experts throughout the sector.

The European forest sector outlook studies are undertaken jointly by the UNECE Timber Committee and the FAO European Forestry Commission. The present study contributes to sustainable integrated economic and social development in the UNECE region. It also provides an input to the global forest sector outlook study activities of FAO.

Marek Belka
Executive Secretary
United Nations Economic Commission for Europe

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ACKNOWLEDGEMENTS

This outlook for the development of European forest resources was prepared in the framework of the European Forest Sector Outlook Studies (EFSOS) under the auspices of the Food and Agriculture Organisation (FAO, Rome) and the United Nations Economic Commission for Europe (UNECE, Geneva).

Dr. Volker Sasse provided valuable input throughout the project and co-ordinated the study with the other parts of the EFSOS with a lot of exemplary discipline and determination.

The work was carried out by an enthusiastic team existing of Engineer Mart-Jan Schelhaas and Dr. Gert-Jan Nabuurs at Alterra (Wageningen) and Engineer Jo Van Brusselen, Ms. Emi Pesonen, Mr. Ari Pussinen, Dr. Gert-Jan Nabuurs and Mr. Andreas Schuck at the European Forest Institute (Joensuu).

It would not have been possible to complete this major task without the preparation of model input data by many of the EFSOS National Correspondents and their staff and colleagues, listed in ANNEX 2: NATIONAL DATA CORRESPONDENTS of this report.

The following people have provided valuable feedback in the validation of the model outcomes: Prof. O.A. Atroshchenko (Belarus), Prof. Ivan Raev (Bulgaria), Mr. Henzlik Vladimir (Czech Republic) Mr. Gérôme Pignard (France), Ms. Ilze Silamikele (Latvia), Mr. Ljupco Nestorovski (Former Yugoslav Republic of Macedonia), Mr. Stein Tomter (Norway), Dr. Roman Michalak (Poland), Mr. António Leite (Portugal), Mr. Nenad Petrovic (Serbia and Montenegro), Prof. Milan Hocevar (Slovenia), Mr. Edgar Kaufmann (Switzerland), Mr. Simon Gillam and Mr. Pat Snowdon (United Kingdom).

Many thanks to all!

LIST OF ACRONYMS

CEEC	Central and Eastern European countries
CIS	Commonwealth of Independent States
ECE	Economic Commission for Europe
EFI	European Forest Institute
EFISCEN	European Forest Information Scenario Model
EFSOS	European Forest Sector Outlook Studies
EFTA	European Free Trade Agency
ETTS	European Timber Trend Studies
EU	European Union
FAO	Food and Agriculture Organization
FAWS	Forest available for wood supply
FNAWS	Forest not available for wood supply
NAI	Net annual increment
NUTS	Nomenclature des Unités Territoriales Statistiques (Classification of Geographic Units for Statistics)
SEDS	Single Entity Data Set
TBFRA	Temperate and Boreal Forest Resource Assessment
TC	UNECE/FAO Timber Committee
UN	United Nations

SYMBOLS AND OTHER ABBREVIATIONS

cu.m.	Cubic metre
ha	Hectare (100 by 100 metres)
Kha	Thousand hectares
m^3	Cubic metre
o.b.	Overbark
u.b.	Underbark
Y	Year

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1 INTRODUCTION AND AIM

Under the auspices of the Food and Agriculture Organization (FAO) and the United Nations Economic Commission for Europe (UNECE), forestry sector analyses have been undertaken since 1952 under the title European Timber Trends Studies (ETTS). Up to now, outlook study reports used to be published at roughly 10-year intervals. The last study (ETTS V) was published in 1996. Taking the increasing importance of social and environmental benefits from forests into consideration, the title of these activities was changed in 1999 to European Forest Sector Outlook Studies (EFSOS).

The objectives of EFSOS are to analyse the development of the forest and forest industry sector, considering the challenges and uncertainties of varying policies, market developments and the influence of exogenous factors. The aim is to assist policy and investment decision-making. The main target groups for EFSOS activities are policy makers, entrepreneurs, the academic community of the forest and forest products sector, and the public. The first and main step in the EFSOS activities is the preparation of a new outlook study in the mode of its successors (so to speak an ETTS VI report).

The EFSOS activities reflect the forest sector development at the national and European level, analysing the countries as far as possible in a consistent way, considering the European developments as a part of the global forest sector.

The geographical scope of the studies reflects the interests of the participating countries and their possibilities of providing data as well as the importance of different countries for the development of timber production and trade in Europe. The EFSOS outlook study covers all European countries, including the European CIS (Russia, (European part only) Ukraine, Republic of Moldova and Belarus). Complementary policy studies may only cover case-study countries. In general the activities are strongly determined by the data, methodology and resources available.

The quantitative methodological approach of EFSOS considers the specific aspects of the long-term development and sustainable management of forest resources on the one hand and the dynamic influence of changes on timber markets and policy frameworks on the other hand. The applied model system consists of a forest resource model, describing the development of forest resources (current report), coupled off-line to a timber market model. The current report provides the methodologies, data, scenarios and results of the outlook on the European forest resources from 2000 to 2040. The methodology used for the analysis of timber markets is described in a separate report (Kangas, Baudin, 2003). The outlook on forest resources as done in ETTS-V (Pajuoja 1995) is improved in the current study by using the European Forest Information Scenario (EFISCEN) model (Pussinen et al. 2001, Nabuurs 2001). The aim of the current study is to analyse the impacts on the European forest resource of two scenarios of derived roundwood demand provided by the market model.

2 METHODS, DATA AND SCENARIOS IN THE FOREST RESOURCE STUDY

2.1 General approach

The general approach of the study is forward projections of the forest resource for 37 European countries under a specific required felling level as provided by the market model. For the market model and scenario assumptions built into the latter model, see Brooks et al. (1994) and Kangas and Baudin (2003). The development of forest resources and actual supply according to the resource model is simulated based on: (i) the current state of the forests, (ii) the growth model, (iii) the assumptions on required felling level, and (iv) one set of management regimes. Further, changes in the policy framework are assumed, which will have an impact on the development of the forest area (Thoroe et al. 2004). Each of these aspects of the resource study is dealt with in the following sections 2.2 to 2.6. The modelling is based mainly on physical assumption, although the management regimes are based on long-term economic experiences. They have been kept stable in the modelling process over the whole forecast period.

2.2 The EFISCEN model

For the forest resources part of the EFSOS study, the European Forest Information Scenario Model (EFISCEN) was used. EFISCEN is an area-based matrix model that is especially suitable for projections on a regional or a country level. The model simulates the development of the forest resources in terms of increment, growing stock, area, tree species and age class distribution in time steps of five years, for periods of usually 50-60 years. A detailed description of the EFISCEN model has been published in Pussinen et al. (2001) and Nabuurs (2001).

The model is a pure forest resource model, not taking into account economic principles, such as price elasticities and supply and demand. As an input, the model needs a required amount of fellings. The model quantifies the degree to which this required level can be met by the resource, given management constraints as defined by the user. In this study, required fellings are derived from Kangas and Baudin (2003). The model gives insight in the future state of the forest resource under the assumptions of a certain scenario and can provide (indirect) indicators for sustainability, biodiversity, and the carbon balance.

Single entity data sets (SEDS)

The input forest inventory data are structured in units, called Single Entity Data Set (SEDS; Table 1), formerly called forest types (Nabuurs 2001). These are defined by country, region, owner, site class and tree species. The data of SEDS contain the following variables by age classes:

- Area (ha);
- Average growing stock (overbark, m^3/ha);
- Net annual increment (overbark, m^3/ha.y).

The matrix model

The state of the forest is depicted as an area distribution over a volume-age matrix (Figure 1). The matrix holds up to 60 age classes, each of 5-year width. The width of the volume classes can be defined separately for all SEDS, depending on the maximum attainable volume for that SEDS. The area per SEDS is divided over the age classes according to the input data. Per age class the area is distributed over the volume classes in a way that the average growing stock in that age class is equal to the input data. A separate matrix is set up for each SEDS of the inventory data.

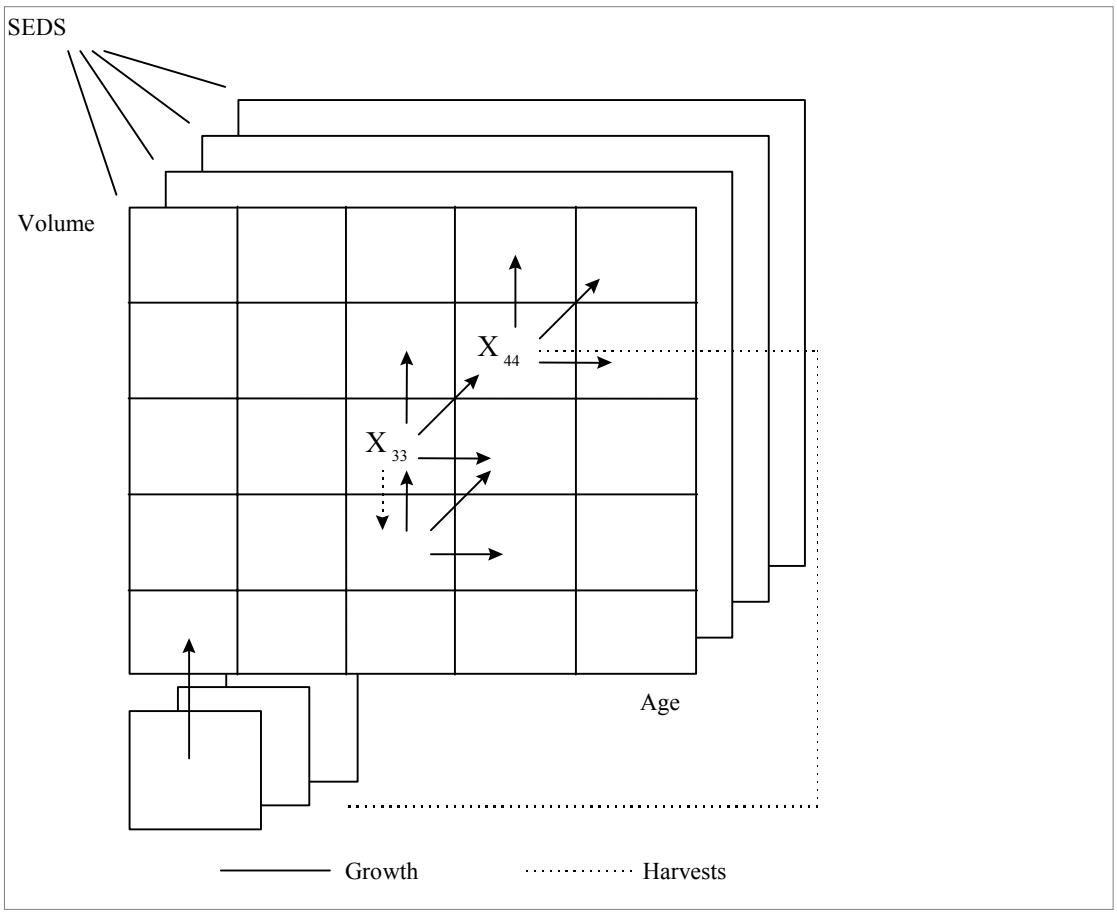

Figure 1. The area matrix approach (Nilsson et al. 1992)

Increment

The simulation of net annual increment in the model is based on age-dependent growth functions that are calibrated on the inventory data. In case no inventory based increment data is provided, yield tables are used instead. In the matrices, growth is represented as a probability of the area to move to a higher volume class. Ageing of the forest is simulated by movement of the area to higher age classes. The same growth functions are used throughout the projections, so no changes in growth are assumed, due to e.g. climate change or nitrogen deposition. Further it was assumed that natural mortality change would not occur in significant amounts.

Regeneration, afforestation, deforestation

Establishment of regeneration is simulated as the movement of area from the bare-forest-land class to the first volume and age class. The amount of area that is regenerated is expressed as a percentage of the area in the bare-forest-land class that will enter the matrix. This percentage expresses the intensity and success of regeneration and can be varied per country and tree species. Furthermore, it is possible to change tree species after clear-cutting. This latter option was not used in the current study.

It is also possible to take into account afforestation and deforestation. The user can add or remove area per tree species in each time step of the simulation. The new forest area is added to or removed from the bare-forest-land class of each SEDS of that tree species.

Forest management

Forest management is controlled at two levels in the model. First, a basic management in the form of thinning and final felling regimes is incorporated for each SEDS. These regimes are constant through time, so there is no dynamic owner behaviour, reacting on market conditions.

The thinning regimes are incorporated as the range of age classes at which a thinning can be carried out. Thinning is simulated by preventing area in a matrix cell from moving to a higher volume class; i.e. the maximum thinned volume for a cell equals maximum theoretical increment per hectare of that cell, multiplied with the actual area in the cell. Thinned forest area receives a 'thinning status' and cannot be thinned while having that status. These thinned areas receive a slightly increased chance to grow to the next higher volume class in the next time step; a small growth boost (Pussinen et al., 2001). After receiving this growth boost the cell loses its thinning status.

Final felling regimes per SEDS are incorporated as a probability that a final felling can in principle be carried out, depending on the actual age and volume class (Figure 2). The maximum amount of volume that can be harvested through final felling in a cell is defined by the probability that a final felling can be carried out, multiplied with the actual area in the cell and the actual standing volume in the cell. By aggregating the maximum thinning and felling volumes per cell over all SEDS, or a selection of SEDS (for example for conifers and broadleaves separately), an absolute maximum possible felling level is derived per time step.

Figure 2 shows an example of a management regime for one SEDS. For all SEDS such a management regime is defined (adapted by climatic region in Europe), based on yield tables and/or information provided by the country correspondents.

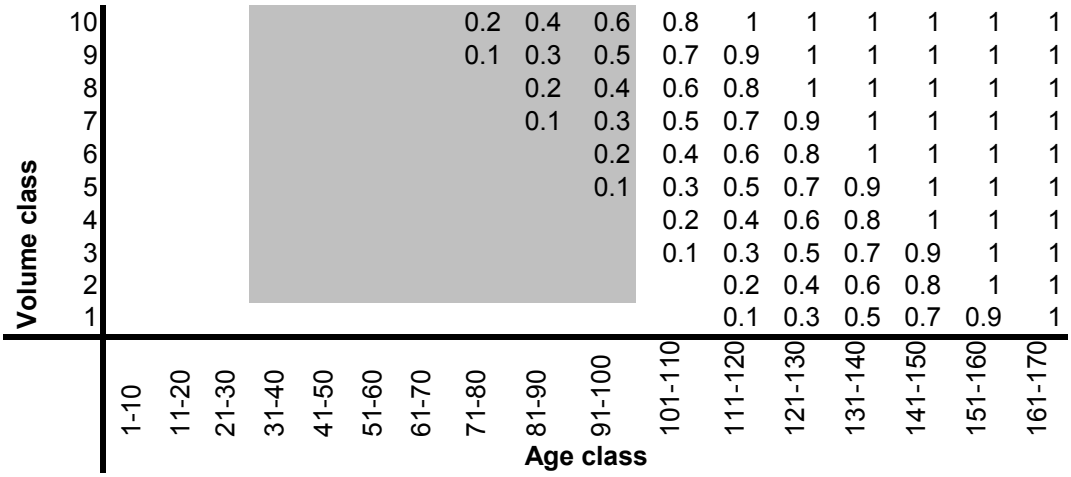

Figure 2. Example of a management regime for one SEDS.
The grey shaded area indicates the range where thinnings can be carried out, the numbers indicate the chance of a final felling in that particular cell.

Second, for each time step the required total volume of harvest (in this case coming from the market model, see also: 2.5 Linkages between the market model and EFISCEN) is specified for the whole country, divided over conifers, broadleaves and coppice. The required felling level is then compared to the maximum level as defined above by the management regimes and the actual state of the forest. If the maximum level is not exceeded, fellings are carried out in the cells, relative to their contribution to the maximum felling level. If the required felling level exceeds the maximum possible level, fellings are carried out at the maximum and the actual fellings will be lower than the required level.

2.3 Inventory data

The EFISCEN model uses as input results from national forest inventories. In 1996 a European wide dataset of national forest inventory results was gathered, excluding the former USSR (Schelhaas 1999). In some cases an older dataset gathered by Nilsson et al. (1992) had to be used at that time. For the current study, a full update enquiry was sent in September/October 2001 to the TBFRA national correspondents. National correspondents were asked to supply new results, if available, and in concordance with the definitions of the latest forest resource assessment, the TBFRA 2000 (UNECE/FAO 2000). A special enquiry was elaborated in co-operation with the UNECE and sent to national correspondents in order to compile the data in the required structure (see Annexes).

A new dataset was received from 21 countries, for 11 countries the dataset of the 1996 enquiry was used (Figure 3). For Republic of Moldova, Serbia and Montenegro the TBFRA totals were used and disaggregated (UNECE/FAO 2000). For the European part of Russian Federationthe data as presented in Pisarenko et al. (2001) were used and disaggregated. For the latter this was based on detailed data that were available for the Leningrad and Arkhangelsk region. For Bosnia and Herzegovina and Greece no dataset was available, and a simple balance approach was executed, based on TBFRA data. The latter method is a simple forward calculation with increment, fellings and mortality.

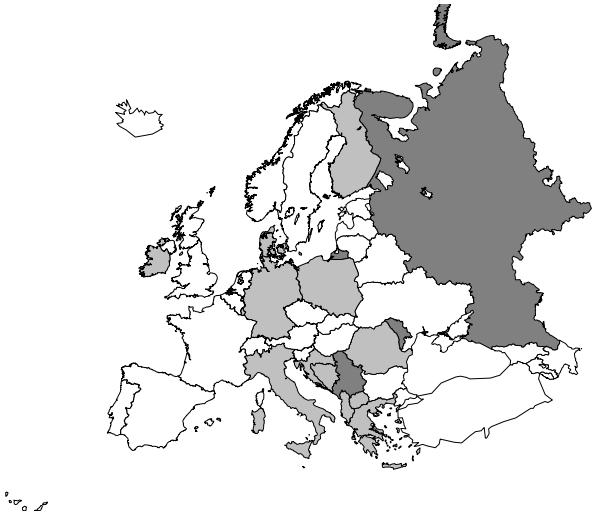

Figure 3. Data update results.
White: new 2002 data; light grey: 1996 data; dark grey: disaggregation based on TBFRA (2000), or in case of the European part of Russia: disaggregation of data in Pisarenko et al. (2001).

The full database reflects on average the state of the forests of 1994 and covers 329 million ha of forests, distinguished by 5479 SEDS. For each of these 5479 SEDS the area, growing stock, and increment was received for usually 12 age classes.

Table 1 gives an overview of the metadata gathered from the inventory data for all countries, for which data was available. These forest inventory data were prepared for each SEDS as shown for one example country and SEDS in Box 1.

Table 1 Metadata of forest inventory for 37 European countries. For countries printed in bold, new data were received in the 2001/2002 update.

		(UNECE/FAO 2000)	Initialisation inventory data for current study with the EFISCEN model						
No	Country	FAWS (1000 ha)	No of SEDS	Year of forest inventory	Number of administrative regions	Number of owner classes	Number of site classes (i.e. growth classes)	Number of tree species	Area covered ** (1000 ha)
1	Albania	902	16	1991	1	1	1	16	898
2	Austria	3,352	192	1992-96	8	3	1	8	2,978
3	**Belarus**	5,965	300	2001	6	5	1	10	6,567
4	**Belgium**	639	44	1997-199	2	2	1	11	725
5	Bosnia and Herzegovina	2,276	8	80's	1	2	1	4	733
6	**Bulgaria**	3,123	270	2000	9	2	1	15	3,295
7	Croatia	1,690	8	1980's	1	2	1	4	1,443
8	**Czech Republic**	2,559	140	1983-1993	14	1	1	10	2,493
9	Denmark	440	35	1990	1	1	5	7	442
10	**Estonia**	1932	12	1999-2001	1	2	1	6	2074
11	Finland	20,675	64	1986-1994	2	1	8	4	19,752
12	**France**	14,470	660	1994	22	3	1	10	13,729
13	Germany	10,142	117	1986-1990/1993	13	1	1	9	9,979
14	Greece	3,094	1	1992	1	1	1	1	3,252
15	**Hungary**	1,702	18	2000	1	1	3	6	1,860
16	Ireland	580	35	1992-1993	1	1	5	7	329
17	Italy	6,013	18	1985	1	1	1	18	3832
18	**Latvia**	2,413	140	2000	1	2	7	10	2,804
19	**Lithuania**	1,686	506	2000	1	2	23	11	1,960
20	Luxembourg	85	6	1989	1	1	1	6	71
21	Macedonia; the former Yugoslav Republic of	745	8	?	1	2	1	4	653
22	Moldova, Republic of	210	1	?	1	1	1	1	206
23	**Netherlands**	314	13	1995-1999	1	1	1	13	307
24	**Norway**	6,609	357	1996-2000	17	1	7	3	6,644
25	Poland	8,300	170	1993	17	1	1	10	6,019
26	**Portugal**	1,897	7	1997-1998	1	1	1	7	2,133
27	Romania	5,617	36	80's	1	1	6	6	6,211
28	Russian Federation(Eur part)	174,000 *	112	90's	56	1	1	2	173,000
29	Serbia and Montenegro	2,378	40	1991	2	2	1	10	2,894
30	**Slovakia**	1,706	16	1994	1	2	1	8	1,909
31	**Slovenia**	1,035	6	2000	1	2	1	3	1,152
32	**Spain**	10,479	850	1986-1995	50	1	1	17	13,905
33	**Sweden**	21,236	180	1996-2000	6	2	3	5	20,967
34	**Switzerland**	1,060	100	1994	5	2	2	5	1,140
35	**Turkey**	8,635	891	2001	27	3	1	11	8,024
36	**Ukraine**	5,999	36	1995	1	2	1	18	3,969
37	**United Kingdom**	2,108	84	1995-2000	4	3	1	7	2,202
	TOTAL	305,816	5479						329,376

* Source: Pisarenko et al. (2001): Forest land under all ownership classes

** If this area differs from the area as given for each country in the country result sheets, then a scaling was carried out to cover the FAWS according to UNECE/FAO (2000)

Box 1 Preparation of inventory data for the input to the EFISCEN model

The forest inventory data were provided by an institution in a country, which conducts the inventory of forests in that particular country. The inventory data were provided for 2 regions (e.g. North and South), 1 owner class (there was no need to distinguish different owner classes, such as private, state and companies, as there are no major differences in forest structure between owner classes), 4 tree species and 8 site classes (fertility classes).

Number of Matrices: 2*1*4*8 = 64 SEDS

The data of one SEDS for a particular species, site class and region is presented below. The input to the EFISCEN consists of 64 such tables.

REGION		xy	
OWNER CLASS		xy	
SITECLASS		xy	
SPECIES		xy	
AGECLASS (y)	AREA (ha)	GROWING STOCK VOLUME (m^3/ha)	NET ANNUAL INCREMENT, (m^3/ha.y)
0-19	667718	14	1.63
20-39	410370	89	6.88
40-59	194522	158	7.33
60-79	258085	183	6.21
80-99	100000	200	5.32
100-119	167714	199	4.35
120-139	63182	180	3.34
140-159	20814	181	2.76
>160	9015	226	2.55

The data that countries reported as a whole often covered an area in between the categories "forest land" and "forest land available for wood supply (FAWS)" as defined in the TBFRA 2000 report (Figure 4). EFISCEN is especially suitable for simulating managed forest, therefore we took the FAWS as starting point for the simulations. To achieve conformity, the data were scaled according to the ratio of reported area to TBFRA 2000 FAWS. By using this scaling method, it was assumed that the data that were received were representative for the total area of FAWS. In most cases the difference between the data received and the FAWS was small, so that the assumption made was not too crude. However, for some countries, like Poland and Ireland, data were only available for the state forests, representing only part of the total FAWS. In these cases the assumption of representation clearly does not hold. This is therefore reflected by differences in total growing stock and increment after scaling, as compared to those in the TBFRA 2000 data. Although the assumption is not valid in these cases, this approach was still applied, as there was no other acceptable alternative available. Due to this scaling approach, some variables or ratios other than FAWS might differ from those in the TBFRA 2000, such as the ratio between conifers and broadleaves.

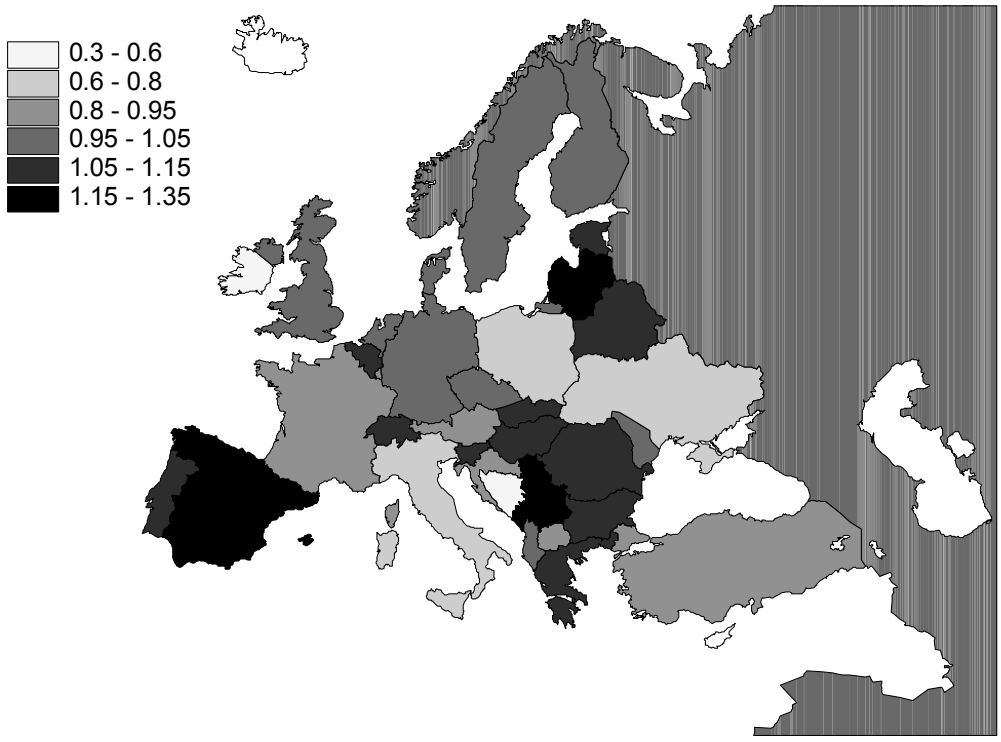

Figure 4. Ratio between the forest area that is included in the new database underlying the present study and 'Forest available for wood supply' according to UNECE (2000).
Ireland, and Poland score is rather low because only data for the state owned forests were received. Ukraine score is rather low because data by age classes could not be derived for all state owned forests.

In the case of Spain, the inventory data were not grouped according to age classes, but according to diameter classes. In earlier projections, a separate model was used, based on transition times between diameter classes (Schelhaas, 1997). However, the outcomes of this modelling approach were not satisfying. Therefore, for the EFSOS simulations the diameter data over age classes were re-distributed using yield tables for Spain. The approach was the following: Per tree species, relevant yield tables were chosen. From these yield tables, diameters, total volume per hectare and stem number are given at regular age intervals. By linear interpolation, ages, volume per hectare and stem number were determined for each diameter class, as given in the Spanish national inventory. By combining volume and stem number, an average tree volume per diameter class was obtained, for different site classes. These average stem volumes were then compared to the actual stem volume as given by the inventory. By visual interpretation, a distribution over site classes was sought in a way that the actual tree volume matched the average volume for that distribution. For all diameter classes the number of trees could then be distributed to site classes. From the average volume and increment per tree for that diameter class, the total volume and increment was calculated. From the yield table the density per hectare is known, which was used to derive the total area for the combination of that specific age and site class. The resulting data was then grouped according to regular age classes. Finally, the total resulting area was scaled to match with the area for that tree species according to the inventory.

In Spain and Portugal, part of the FAWS consist of fast growing plantations of Eucalyptus species. Due to their fast growth and very short rotations (5-10 years), EFISCEN is not able to simulate their growth dynamics very well, because of the time step of 5 years. In order to include these forests, EFISCEN was adapted to simulate them using one-year time steps. However, this will have serious implications for the accuracy, since accuracy is among others related to the amount of simulation steps.

2.4 Linkages between the market model and EFISCEN

The same methodology for projecting of demand, supply and trade as developed in ETTS V by Brooks et al. (1994) was applied in the current EFSOS study (Kangas and Baudin, 2003). This provided outlooks of consumption, trade and consumption per commodity until 2020. The market model converted national domestic production per commodity to the equivalent of required roundwood removals (underbark). This conversion takes into account roundwood trade, recovered paper and processing losses (residues), within the industry, and recycling. The baseline projection of the market model resulted in an absolute total required removal underbark of 688 million m^3/y in 2016 – 2020. Because projections with the EFISCEN model were made until 2040, the trends in required roundwood demand were extrapolated linearly from the period 2016-2020 up to 2040.

For implementation in the EFISCEN model, the national required removals (underbark) were converted to fellings (overbark), based on the ratio between Table 47: Annual fellings overbark and Table 50: Annual removals underbark of TBFRA 2000 (UNECE/FAO, 2000). The conversion factors thus applied, represents the average for conifers and broadleaves. It was assumed that this ratio would stay constant throughout the whole projection period. As shown in Table 2, part of the actual fellings take place outside the FAWS, on forest not available for wood supply, on other wooded land and on trees outside the forest. In many countries the contribution of such fellings to the total is substantial. For those countries where fellings outside FAWS amounted to more than 5% of the total, the required felling level was adapted to the shares as shown in Table 2. In this way it was assumed that the share of fellings outside FAWS would stay the same. The validity of this assumption depends on the reasons of fellings (calamity fellings or structural management) and can differ per country. In order to project the development of those categories, other models are needed. The resulting total fellings required on FAWS were then distributed over fellings of conifers and non-conifers relative to the TBFRA 2000 historic distribution. The distribution of the required fellings over thinnings and final cut was derived from national statistics and information from the national correspondents.

Table 2 Fellings on FNAWS, other wooded land and trees outside the forest.

Country	Total fellings	Fellings on FNAWS	Fellings on other wooded land	Fellings on trees outside the forest	Total fellings other than FAWS	Fellings on FAWS / total fellings (%)
Albania	740	63	0	0	63	91.5
Austria	20041	300	150	70	520	97.4
Belarus	9550	100	0	0	100	99.0
Belgium	4400	0	0		0	100.0
Bosnia and Herzegovina					0	
Bulgaria	4851.8	0	0	0	0	100.0
Croatia	4600	0	0	0	0	100.0
Czech Republic	16355	145	0	10	155	99.1
Denmark	2444	0	250	0	250	89.8
Estonia					0	100.0
Finland	54300	0	0	0	0	100.0
France	60174	0			0	100.0
Germany	48584		0		0	100.0
Greece					0	100.0
Hungary	6449	170	0	400	570	91.2
Ireland	2330	0	0		0	100.0
Italy	10101	0	0	1355	1355	86.6
Latvia	8150	1440	60	80	1580	80.6
Lithuania	5750	330	130	50	510	91.1
Luxembourg		0			0	100.0
Macedonia; the former Yugoslav Republic of	999				0	100.0
Moldova, Republic of	483	0	0	0	0	100.0
Netherlands	2150	123	0	589	712	66.9
Norway	11632	0	0	0	0	100.0
Poland	32212	1085		595	1680	94.8
Portugal	11500	300			300	97.4
Romania					0	100.0
Russian Federation	150200	24700	0	0	24700	83.6
Serbia and Montenegro	3476	372	0	22	394	88.7
Slovakia	7400	300			300	95.9
Slovenia	2300	0	0	0	0	100.0
Spain	15863	1611		3224	4835	69.5
Sweden	67766	395	528	728	1651	97.6
Switzerland	7451	375	0		375	95.0
Turkey	22150	226	0	4544	4770	78.5
Ukraine	11600	2800	0	300	3100	73.3
United Kingdom	9500	0	0	0	0	100.0

Thus a table as given in the example below (Table 3) with total national required fellings (million m^3 o.b./y) is produced from the market model projections and used as a main source of input in the scenarios of resource model.

Table 3 Example: total national felling levels used as input in resource model (million m^3 o.b./year)

	1990	2000	2010	2020	2030	2040
Total felling conifers	30.1	32.7	34.3	35.7	37.1	38.5
Out of which thinning conifers	9.0	9.8	10.3	10.7	11.1	11.5
Total felling broadleaves	28.0	30.5	31.9	33.2	34.5	35.8
Out of which thinning broadleaves	8.4	9.1	9.6	10.0	10.3	10.6

The required felling level from Table 3 above is then combined in EFISCEN with the actual state of the forest and the management regimes to test if this amount of fellings is available. In case the required felling level is too high, EFISCEN will only "harvest" the maximum amount available for harvesting, based on the assumed management regimes and growth of forest stands. The management regimes include a priori setting, which avoid overcuttings, e.g. the rotation periods are predefined and can only vary with a certain probability. Also the thinning intensity is set in a way that clear cut in middle age stands are excluded.

In reality, economics will take care of the rest of the required felling amount. Wood price will increase and lead to additional net imports, but also to optimisation of forest management regimes and new technologies. This could also lead to improvement in the ratio between felling and removals, as the current level of losses would be reduced. However, to simulate such mechanisms would require feedback to the market model and possibly also adaptations in the EFISCEN modelling structure. No such feedback has been applied in this study.

2.5 Scenario assumptions

Within this study, two scenarios were evaluated: (1) baseline scenario and (2) alternative scenario (basically a higher demand scenario, complemented by an increase of FAWS). Both scenarios are evaluated until 2040.

Scenario 1, baseline scenario. The main assumption of the baseline scenario is that currently visible trends will continue until 2040. The required felling level is derived from the baseline projection of the market model (Kangas and Baudin, 2003). Their baseline scenario is based on the same assumption. The required felling levels are tested on their achievability against management regimes that represent forest management in the eighties and nineties. Further, concerning forest area available for wood supply (FAWS), the trends of the nineties are continued as they are, based on historical TBFRA2000 data. However, in some cases the outcomes of this approach were unreliable. Thus in cases where FAWS area changes amounted to more than +/- 10% by 2040 compared to 2000, these were cut off to +/- 10. If national correspondents provided updates for changes in FAWS (Table 5), those were used instead.

For countries of the Commonwealth of Independent States (CIS), i.e. Belarus, Republic of Moldova, the European part of Russia, and the Ukraine, the change was based on secretariat estimates (Table 4). This results in the change rates as shown in Table 5.

There are various reasons behind changes in FAWS. Increases of FAWS, as a few national correspondents have assumed, can be due to afforestation of marginal or abandoned agricultural fields (both active and passive) or investments in accessibility (for example road building). Decreases can originate from deforestation for various purposes, or forests set aside for reasons of protection. It is impossible to separate all these processes, and in addition they can also differ very much from country to country. It is therefore impossible to assess which types of forest are added to, or subtracted from the FAWS, hence an even distribution over all types was applied.

Scenario 2, alternative scenario. The alternative scenario in the current study is based on the "economic integration and liberalisation scenario" of Thoroe et al. (2004). The main assumption of this scenario is an increased use of the forest under a higher GDP development. Thus the alternative scenario modelled in the current study takes new developments in the policy framework into account, mainly inserted here as an additional increase in FAWS area. The total FAWS change is set to increase with 1 percent point higher than the baseline for EU/EFTA countries and by 2 percent point higher than the baseline for CEEC. Updates for changes in FAWS for the alternative scenario (Table 6) were used instead if available from national correspondents. This was the case for Belgium, Bulgaria, Czech Republic, Estonia, France, Norway, Portugal, Slovakia, Slovenia, Spain, Switzerland, Turkey and the United Kingdom (Tables 5 and 6). The FAWS change assumption for Spain is a combination of policy forecasts (increase of the forest area by 700,000 ha by the year 2030) and historical division of the total forest area in FAWS and FNAWS (respectively 77.6% and 22.4%). For CIS, the FAWS changes are shown in Table 4.

Under the alternative scenario the management regimes were kept the same as under the base scenario. It was thus assumed that a higher GDP and higher demand would not lead to increased willingness to supply through e.g. shortened rotation lengths.

Table 4 Annual growth of derived roundwood demand for the base and alternative scenario (removals underbark) 2000 to 2020 as projected by the market model (Kangas and Baudin, 2003)

Country	Annual growth	
	Base scenario	Alternative scenario
Albania	1.1	1.9
Austria	1.4	2.4
Belarus	1.2	1.7
Belgium & Luxembourg	0.7	0.9
Bulgaria	0.1	0.7
Croatia	-0.7	-0.3
Czech Republic	1.3	1.8
Denmark	0.4	0.5
Estonia	0.8	1.1
Finland	0.1	1.3
France	0.6	0.9
Germany	0.7	1.4
Greece	0.6	0.9
Hungary	0.7	1.1
Ireland	1.6	2.3
Italy	0.5	1.4
Latvia	0.1	0.6
Lithuania	1.2	1.9
Macedonia, the Former Yugoslav Republic of	1.7	2.4
Moldova, Republic of	0.7	1.5
Netherlands	-1.1	-0.7
Norway	0.4	0.8
Poland	0.7	1.1
Portugal	0.9	1.8
Romania	1.3	2.2
Russian Federation	4.0	5.4
Slovakia	2.0	2.7
Slovenia	1.9	2.6
Spain	-0.8	-0.4
Sweden	0.5	0.9
Switzerland	1.2	1.5
Turkey	1.4	1.4
UK	1.5	1.9
Ukraine	2.0	3.9
Serbia and Montenegro	0.9	2.0

Table 5 FAWS area change for the base and alternative scenario, by the year 2040 in percentage points of the year-2000 area

Region	FAWS change for the baseline scenario Change in percent from 2000-2040		FAWS change for the alternative scenario: additional growth, change in percent points compared to baseline from 2000-2040	
	Based on extrapolation of TBFRA2000 data		*Additional growth* **	
			Afforestations	*Shifts FAWS - other forests*
EU/EFTA	Average	8*	1	0
CEEC	Average	1.9*	1.5	0.5
CIS	Belarus	3	1.5	1
	Republic of Moldova	2	1.5	1.5
	Ukraine	-4	2	4
	Russian Federation	-6	2	5

(*) This group average is illustrative. The individual country trends have been extrapolated.
(**) This growth has been added to the FAWS change of the base scenario of all countries, except in the case where country correspondents had reported different expectations.

Table 6 Index of FAWS in 2040 in the scenarios. Changes in FAWS are applied gradually over time. Figures in bold are provided by country correspondents.

Country group	Country	Baseline 2040	Alternative 2040
CEEC	Albania	90.00%	92.00%
CEEC	Bosnia and Herzegovina	100.00%	102.00%
CEEC	Bulgaria	**100.00%**	**115.00%**
CEEC	Croatia	104.73%	106.73%
CEEC	Czech Republic	102.03%	**102.00%**
CEEC	Estonia	110.00%	**92.00%**
CEEC	Hungary	106.82%	108.82%
CEEC	Latvia	110.00%	112.00%
CEEC	Lithuania	108.07%	110.07%
CEEC	Poland	**107.74%**	**109.74%**
CEEC	Romania	90.00%	92.00%
CEEC	Serbia and Montenegro	90.47%	92.47%
CEEC	Slovakia	101.76%	**97.00%**
CEEC	Slovenia	108.50%	**107.00%**
CEEC	The Former Yugoslav Republic of Macedonia	100.00%	102.00%
CEEC	Turkey	98.15%	**100.15%**
CIS	Belarus	103.00%	105.00%
CIS	Republic of Moldova	102.00%	105.00%
CIS	Russian Federation	94.00%	101.00%
CIS	Ukraine	96.00%	102.00%
EU/EFTA	Austria	104.18%	105.18%
EU/EFTA	Belgium	91.74%	**100.00%**
EU/EFTA	Denmark	104.63%	105.63%
EU/EFTA	Finland	90.91%	91.91%
EU/EFTA	France	110.00%	**100.53%**
EU/EFTA	Germany	108.28%	109.28%
EU/EFTA	Greece	110.00%	111.00%
EU/EFTA	Ireland	110.00%	111.00%
EU/EFTA	Italy	101.40%	102.40%
EU/EFTA	Luxembourg	100.00%	101.00%
EU/EFTA	Netherlands	110.00%	111.00%
EU/EFTA	Norway	104.84%	**100.00%**
EU/EFTA	Portugal	110.00%	**107.65%**
EU/EFTA	Spain	110.00%	**106.68%**
EU/EFTA	Sweden	98.12%	99.12%
EU/EFTA	Switzerland	110.00%	**107.00%**
EU/EFTA	United Kingdom	**140.00%**	**150.00%**

2.6 Management regimes

The management regimes incorporated in both scenarios represent forest management and owner behaviour (clear cuttings, thinnings, afforestations etc.) represent the average of the eighties and nineties of the last century. The management regimes are based on information from EFSOS national correspondents and local yield tables. The model was run with the same management regime settings through all the forecast periods.

In the Nordic countries the northern parts of the countries have longer rotations by about 20 years for all tree species compared to southern parts. Conifers have average rotations of 80-100 years in the southern parts, and broadleaves 60-80. Thinnings are possible from an age of 20, until 120-140 years for conifers and until about 100 years for broadleaves.

In the sub-Atlantic region fast growing coniferous species have average rotation lengths of about 45-60 years, whereas slower growing coniferous species have average rotation lengths of 100-120 years. Fast growing coniferous species are thinned maybe once or twice only at ages of 20 – 30 years. Valuable hardwood species, such as oak and beech have rotation lengths of 120-140 years. Very fast growing softwoods like poplars have rotations of 20-40 years, with other species usually having rotations of 60-80 years, depending on their growth and according to yield tables. Thinnings are usually possible between 20 years and the average rotation length.

In Mediterranean countries, circumstances differ again. Stands have more often protection goals, and are often managed in regeneration (selective) type of management. Still some rotation cycle needs to be defined in EFISCEN (which is valid for many production type of stands). E.g. for Pinus pinaster a rotation of 45 to 50 years is applied in privately owned forests, while in State owned forests the rotation may be around 80 years. For Pinus halepensis (drier sites) and Pinus sylvestris rotations of 80 and 100 years respectively are used. These are just summarising indications of how rotation lengths may differ. For each species these are assigned by age and volume classes (and sometimes further distinguished by owner class and site class). Some 400 management regimes were defined altogether.

2.7 Structure of model outcomes and country groupings

For the purpose of this study, aggregated country model results will be presented for the pan-European area and for three different regions. In this study Europe and its regions are defined as follows:

- Europe
  Europe covers the countries that are included in one of the three following country groups.

- European Union and European Free Trade Agreement countries (EU/EFTA)
  Austria, Belgium, Denmark, Finland, France, Germany, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, United Kingdom. At present no scenario model is set up for Greece. Secretariat estimates have been included in the country group and in the pan-European totals.

- Central and Eastern European Countries (CEEC)
  Albania, Bulgaria, Croatia, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia, Slovenia, the Former Yugoslav Republic of Macedonia, Turkey, Serbia and Montenegro. The State Union of Serbia and Montenegro was formed upon the adoption

of a new constitution on February 4th, 2003. It comprises the territories of Serbia and Montenegro under the former Federal Republic of Yugoslavia. At present no scenario model is set up for Bosnia and Herzegovina. Secretariat estimates have been included in the country group and in the pan-European totals.

- Commonwealth of Independent States (CIS)
  Belarus, European part of Russian Federation, Ukraine and Republic of Moldova

For some countries the initialisation inventory data represent the year 2000 or 2001. In these cases the calculations started from the period 2001-2005, and this consequently causes absence of output data for the period 1996-2000 for some CEEC and CIS countries. This is why the reports for these country groups contain extrapolated scenario data for the year 2000.

3 RESULTS

3.1 Country group results

3.1.1 Europe

Europe has a FAWS area of 335 million ha. Broadleaved forest occupies an area of 132 million ha and coniferous forest 204 million ha. In the base scenario the FAWS area is expected to decrease to 329 million ha by the year 2040 (broadleaves: 130 million ha and coniferous: 199 million ha). In the alternative scenario the forest area is expected to increase to 343 million ha (broadleaves: 135 million ha and coniferous: 209 million ha).

The age-class distribution is shown in Figure 5. The youngest age-classes (until 60 years) show a considerably lower area in the base scenario by the year 2040 compared to the year 2000. The alternative scenario shows by the year 2040 a much larger area in the first age class (1-20 years) compared to the initial situation. This is caused by the additional afforestations under the alternative scenario and a higher regenerated area due to higher fellings. The age classes for maturing and mature forest (61-120 years) show a higher area by 2040 in both the base and alternative scenario. The area of forest older than 180 years increases slightly.

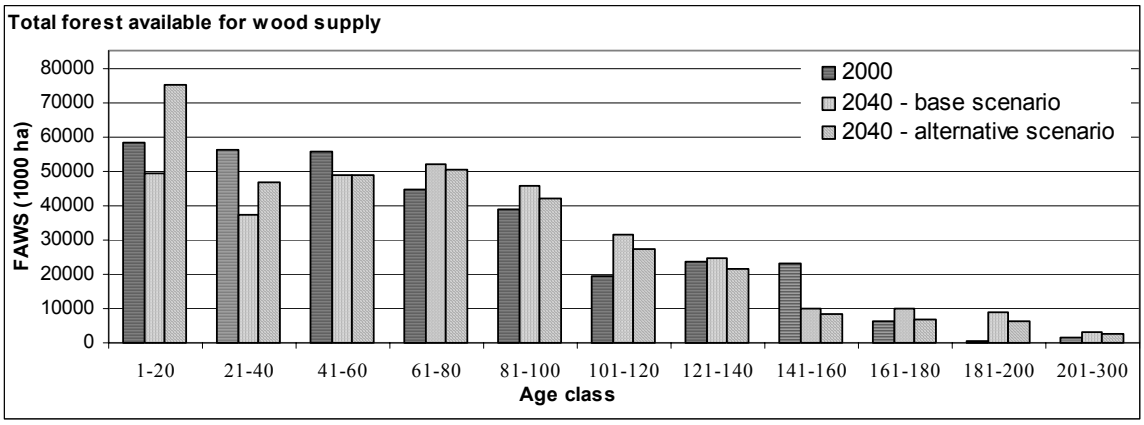

Figure 5. Total FAWS area in Europe
Per age class for the year 2000 (at the start of the simulation) and for the year 2040 in the base and alternative scenario.

The major steering factor in the development of the forest resources comes from the increase in the required felling level over time as projected by the demand model. Under the base scenario, required felling levels on FAWS are expected to increase from 643 million m^3 in 2000 to 847 million m^3 in 2020. There are no significant problems in finding this amount of fellings during the modelling process. The fellings never exceed the increment in the first two forecast decades, while a small shortage appears after 2020 (about 2% in 2040). Nevertheless, the model indicates that total growing stock increases from 51 billion m^3 in the year 2000 (of which broadleaves 39% and conifers 61%) to 63 billion m^3 by the year 2040 (of which broadleaves 44% and conifers 56%). The growing stock increases per area from 152 m^3 per ha in the year 2000 to 191 m^3 per ha in the year 2040.

With regard to the required felling level, the alternative scenario shows a similar development as the baseline scenario. Until 2020, the required felling level is projected to increase to 1014 million m^3. This amount can be met by the model. It should be noted that approaching 2040 fellings would start to exceed increment with a difference between required and actual fellings of about 11%. This would cause the total growing stock to increase to 58 billion m^3 by the year 2030 and to decline to 57 billion m^3 by the year 2040 (of which broadleaves 46% and conifers 54%). Per area,

the growing stock also stops increasing by the year 2030 at a level of 168 m^3 per ha and then decreases to 167 m^3 per ha by the year 2040.

To sum up, in both scenarios, a discrepancy between required felling level and actual fellings can be observed around post-2025. This is a sign that in certain areas of Europe wood may become scarcer, which would affect+- trade and owner behaviour.

3.1.2 The European Union and European Free Trade Agreement countries

The European Union (EU) and European Free Trade Agreement (EFTA) countries represent 31% of the forest area available for wood supply in this study. Under the base scenario, the overall historical increase of the forest area available for wood supply is assumed to continue. In the alternative scenario, the increase takes place at a slightly higher pace. In the base scenario, the area increases from about 103 million ha in the year 2000 to 106 million ha by the year 2040.

Figure 6 illustrates the age-class distribution of the forests available for wood supply in the EU/EFTA region. Compared to the situation in the year 2000, there will generally be more FAWS area in the age classes up to 100 years by the year 2040. The forest area will be lower in the age-classes over 100 years. This shift in age class distribution is caused by higher fellings in both scenarios, which take place according to the model assumptions, mainly in the forests over 100 years old. Due to extra afforestations in the alternative scenario the first age classes contain even more forests than under the baseline scenario.

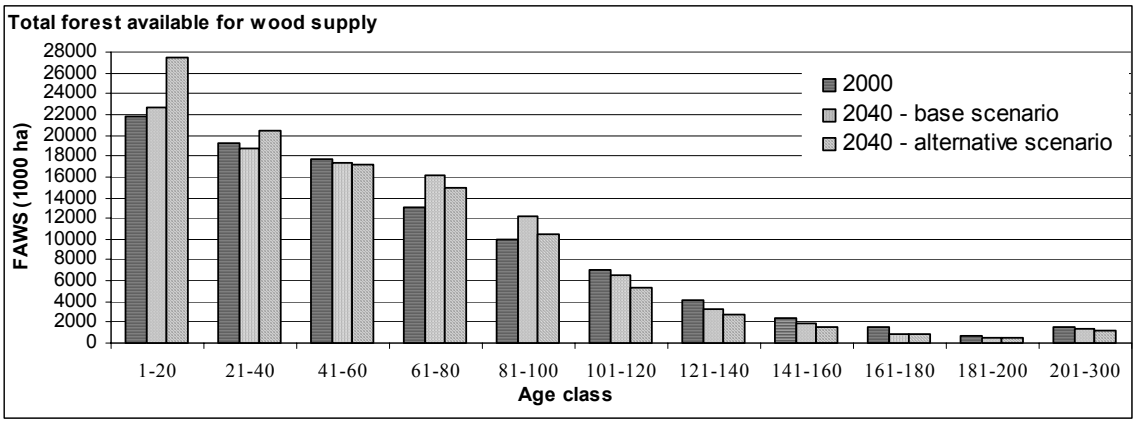

Figure 6. Total FAWS area in EU-EFTA
Per age class for the year 2000 (at the start of the simulation) and for the year 2040 in the base and alternative scenario.

The required felling level on FAWS under the baseline scenario is expected by the market model to increase from 353 million m^3 per year in the period 2001-2005 to 400 million m^3 per year in the period 2016-2020. After 2025, there is a small discrepancy between required and actual felling levels, amounting to 2% in the period 2036-2040. Despite the increase in demand, the growing stock continues to increase from 16 to almost 21 billion m^3 o.b. from the year 2000 until the year 2040. The growing stock per area changes in the base scenario up from 157 m^3 per ha in the year 2000 to 194 m^3 per ha in the year 2040. The net annual increment slightly decreases from 5.0 (2000) to 4.7 (2040) m^3 per ha, but the EU/EFTA countries together have the highest net annual increment, which accounts for 43% of the total increment of the pan European area throughout the whole simulation. During the whole 40-year forecast period, fellings never exceed the net annual increment in the baseline. The ratio of fellings over increment rises from 68% in 2000 to 90% by the year 2040.

The demand for fellings in the alternative scenario is higher than in the base scenario and increases to 452 million m^3 on average per year for the period 2016-2020, up to 568 million m^3 in 2036-2040. After 2020 this required amount couldn't be obtained from domestic resource only. The

growing stock per area increases until 2020 to a level of 174 m^3 per ha and remains almost constant afterwards. This constant growing of stock is caused by a ratio of fellings over net annual increment of about 100% after 2020.

3.1.3 Central and Eastern European Countries

The Central and Eastern European Countries (CEEC) currently have an area of about 48 million ha of forest available for wood supply (FAWS), which represents 14% of the total FAWS area considered in this study. It is expected that the FAWS will increase by 1% or 504 thousand ha by the year 2040, in the base scenario. In the alternative scenario, the area increases by 3% or 1.4 million ha by the year 2040. The age-class distribution shows a large increase in the age class 1-20 by the year 2040 (Figure 7.) There will be a very large decrease of the area in the age classes 41-60 according to both scenarios. The mature forest increases in the age-classes of over 80 years.

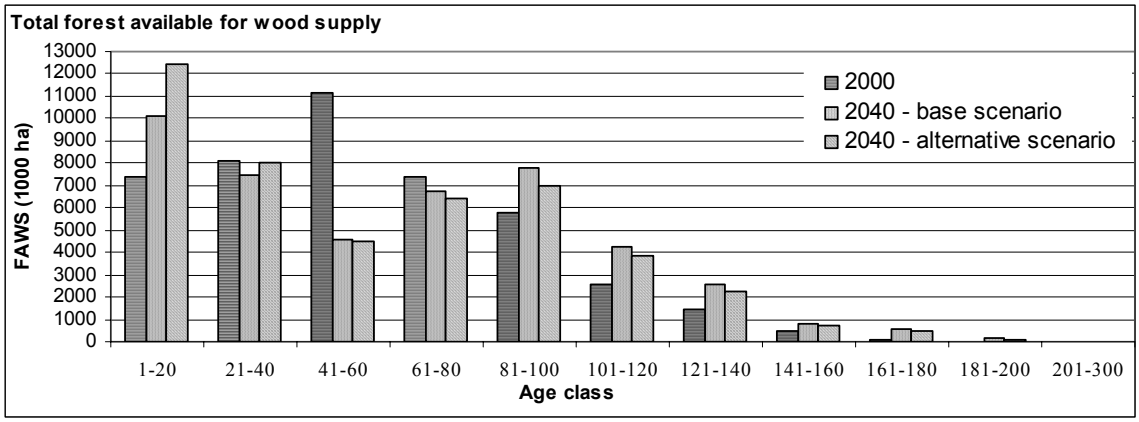

Figure 7. Total FAWS area in CEEC
Per age class for the year 2000 (at the start of the simulation) and for the year 2040 in the base and alternative scenario.

The required felling level in the base scenario is expected to increase from 146 million m^3 on average per year for the period 2001-2005 to 192 million m^3 on average per year for the period 2016-2020. After 2020, the required felling level cannot be met by the forest resource. In 2040 the actual felling level is about 9% lower than requested. The total growing stock rises from about 9.0 billion m^3 in the year 2000 to 10.0 billion m^3 in the year 2040. The average growing stock increases from 190 m^3 per ha in 2000 to a maximum of 209 m^3 per ha in 2040. In the base scenario the ratio of fellings to net annual increment increases from 60% in 2000 to 98% in 2040.

In the alternative scenario the demand is higher than in the base scenario and increases to 218 million m^3 on average per year for the period 2016-2020 and up to 287 million m^3 for the period 2036-2040. Again after 2020 the resource would fail to reach the required amount of fellings, resulting in a ratio of fellings to net annual increment of 107% in 2040. The total growing stock increases to 9.5 billion m^3 in the year 2020 and then decreases to 9.3 billion m^3 by the year 2040. The average growing stock increases to 197 m^3 per ha in 2020 and then drops to 190 m^3 per ha in 2040. This decrease can be attributed to a higher pressure on the forest resources, combined with an increase of 3 % of the FAWS area.

3.1.4 Commonwealth of Independent States

The Commonwealth of Independent States (CIS) represents 55% or 185 million ha of all forest area available for wood supply in this study. The FAWS area of the CIS is expected to decrease by 5% in the base scenario, to 175 million ha by the year 2040. In the alternative scenario, a 2% increase is expected, fetching 188 million ha by the year 2040. The age class distribution shows that the forest resources will continue to grow older (Figure 8.) under both scenarios.

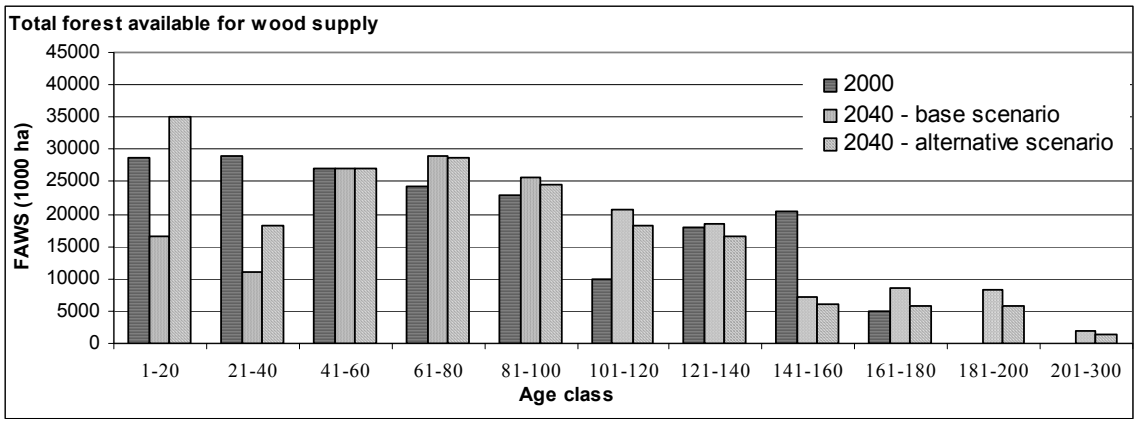

Figure 8. Total FAWS area in CIS
Per age class for the year 2000 (at the start of the simulation) and for the year 2040 in the base and alternative scenario.

Despite the large share of the overall area of FAWS represented by the CIS region, it provides only 23% of the total fellings of Europe at the beginning of the modelling period. However, its share increases gradually to 35% in the base scenario in 2040. In this scenario, the required felling level is expected to increase from 145 million m^3 on average per year for the period 2001-2005 to 255 million m^3 for the period 2016-2020. Extrapolation yields a required felling level of 355 million m^3 on average per year for the period 2036-2040. There are no problems in finding the required felling volumes until 2040. The growing stock increases from 25.9 billion m^3 (140 m^3 per ha) in the year 2000 to 32.4 billion m^3 (185 m^3 per ha) by the year 2040. Under the base scenario, the ratio of fellings over net annual increment increases from 33% in the year 2000 to 82% in the year 2040.

In the alternative scenario, the required felling level is expected to increase to 344 million m^3 on average per year for the period 2016-2020. For 2036-2040 a required felling level of 511 million m^3 is foreseen. After 2035 the resource cannot meet this sharp increase in required felling level anymore, considering the assumptions described above. For the period 2036-2040, the actual felling level is 14 million m^3 lower than requested. On account of the high felling level, the utilisation rate reaches the level of 100% by the year 2035. After that the ratio increases to 105% by the year 2040. Consequently, the growing stock keeps rising until the year 2030 to a level of nearly 29.4 billion m^3 (157 m^3 per ha), and then decreases slightly to 29.3 billion m^3 (156 m^3 per ha) in 2040.

In this study, the total increment in the CIS countries amounts to 37% of the total increment. This share is to increase slightly to 38% in 2040 under the baseline scenario, despite a high increase in fellings. The increase of the net annual increment may be expected after 2040, due to faster growing young coniferous forests.

3.2 Country results

3.2.1 European Union and European Free Trade Agreement countries

Austria currently fells about 82% from its net annual increment. Under the base scenario this slowly develops to 101% in 2040, despite the increase in FAWS of 140 thousand ha by that time. Consequently, the growing stock increases to a maximum of 1069 million m^3 in 2030. In the alternative scenario, a maximum of 1038 million m^3 is reached in 2020, after which the growing stocks decreases. The figure below illustrates the sharp decrease in the volume rich forest area available for wood supply of age class of over 100 years. This is stabilised by an increase in the younger age classes, which however represent lower volumes.

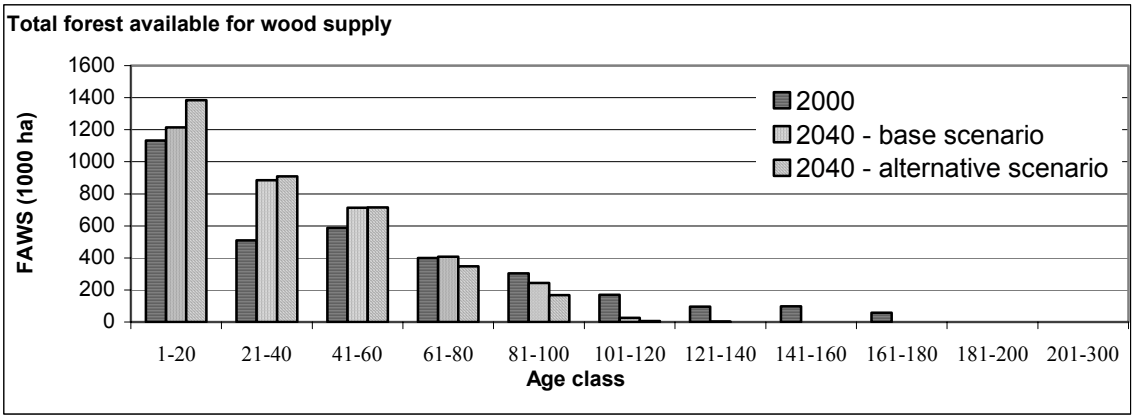

Figure 9. Age class distribution for total FAWS in Austria
For the year 2000 and for the year 2040 in the baseline and alternative scenario.

Belgium and Luxembourg could continue to increase their fellings until the year 2020, to a maximum level of 6.3 million m^3 following the baseline assumptions. However, already before 2010, the fellings would exceed the increment, resulting in a decrease of the growing stock from 153 million m^3 (235 m^3/ha) in 2000 to 103 million m^3 (172 m^3/ha) in 2040. This decrease is proportional to the fall of forest area available for wood supply in the older age classes and increase in the younger age-classes. This is illustrated in the age-class distribution below.

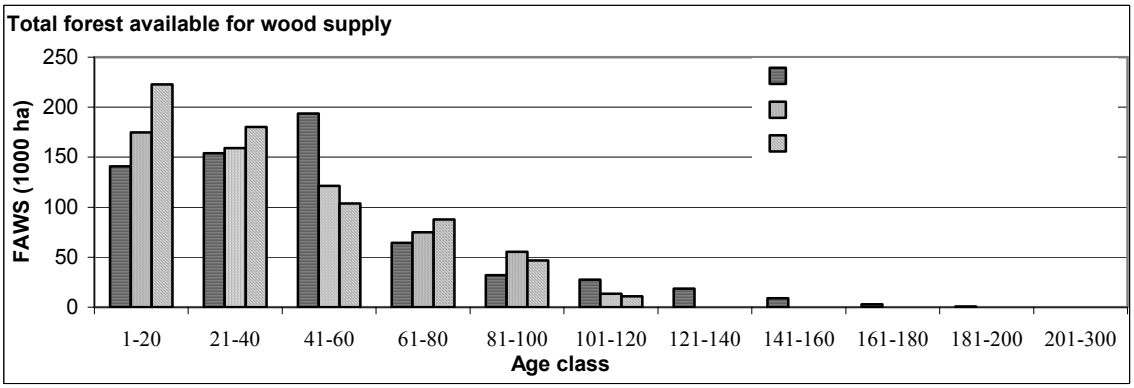

Figure 10. Age class distribution for total FAWS in Belgium and Luxembourg
For the year 2000 and for the year 2040 in the baseline and alternative scenario.

Denmark has an utilisation ratio between 60% and 70% throughout the modelling period, in both, the base and the alternative scenario. Consequently, the growing stock is expected to rise from 175 to over 300 m^3 per ha during the next 40 years. The total growing stock will almost double, from 77 million m^3 o.b. now to 140 million m^3 o.b. in 2040. The age-class distribution (Figure 11.) shows that the area of forests of 21-60 years of age would decrease significantly by the year 2040 (178 thousand ha) compared to the initial situation (244 thousand ha). The area of maturing forest (60-100) is much higher by 2040 than in the initial situation, which explains the fast increase of growing stock. The area of mature forest (over 100 years) decreases slightly.

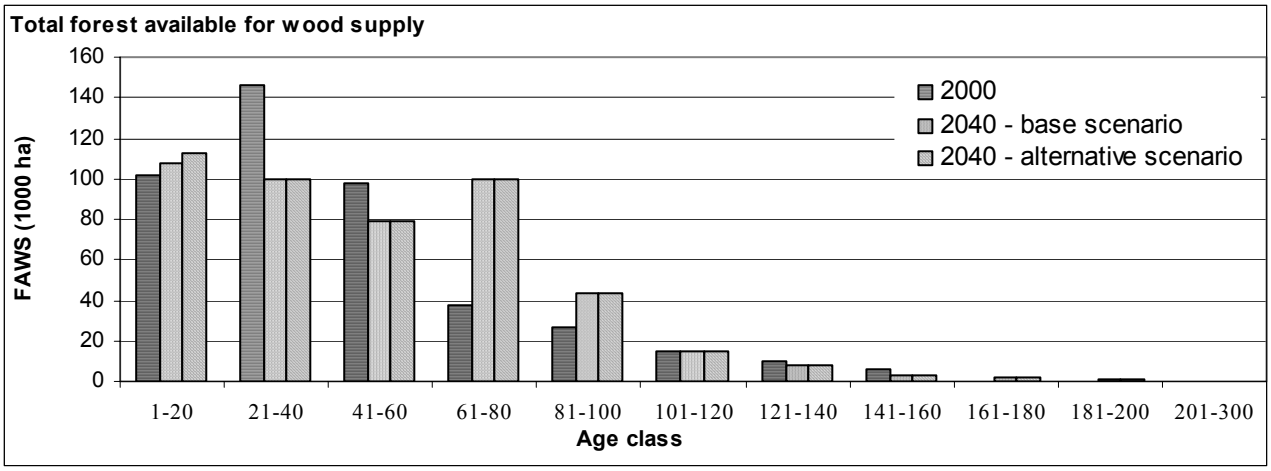

Figure 11. Age class distribution for total FAWS in Denmark
For the year 2000 and for the year 2040 in the baseline and alternative scenario.

Finland currently has a utilisation rate of 89%, which is expected to increase under both scenarios. In the baseline scenario, fellings exceed the net annual increment after 2020 and under alternative scenario, already after 2005, which under baseline scenario would cause the growing stock to increase at first from 2 billion m^3 in 2000 to slightly over 2.1 billion m^3 in 2020, and then to decrease to 2 billion m^3 again. Under the alternative scenario, the growing stock decreases from 2 billion m^3 to 1.3 billion m^3. This decrease corresponds to the decline of the forest of over 60 years old. Given that older forests represent the major part of volume, this explains the sharp decrease in growing stock by 2040, as shown in the age-class distribution figure below.

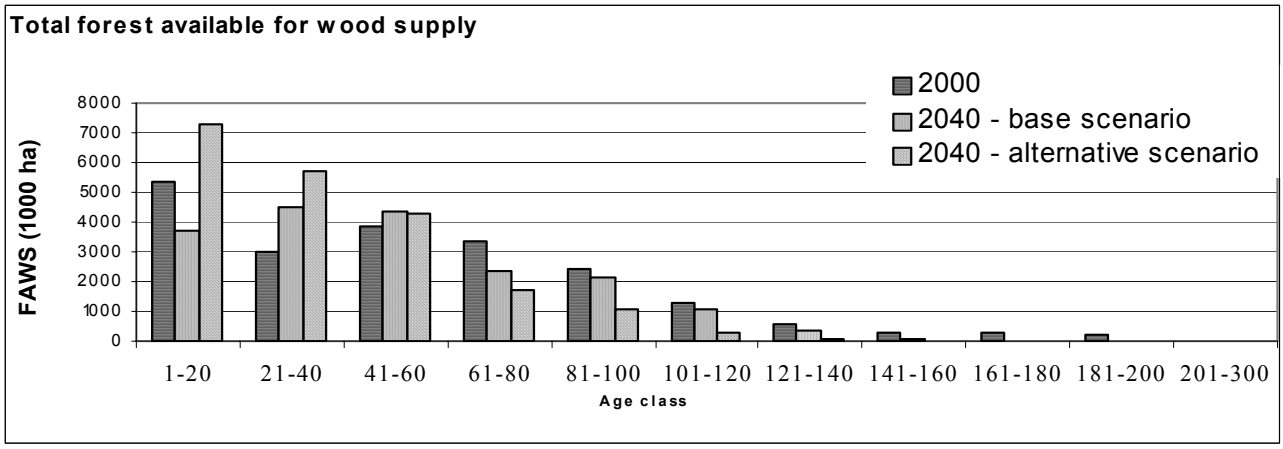

Figure 12. Age class distribution for total FAWS in Finland
For the year 2000 and for the year 2040 according baseline and alternative scenario.

In **France** the fellings are equal to 74% of the increment in 2000. There's a moderate increase of required felling level from 58 million m^3 in 2000 to 71 million m^3 in 2040, which doesn't cause any problem. The growing stock increases from 221 m^3/ha up to 235 m^3/ha in 2040 in the base scenario. The utilisation rate reaches its maximum of 84% in 2040. The alternative scenario is characterised by a more rapid though still moderate increase in the required felling level (81 million m^3 by 2040), with a much smaller increase in the FAWS area compared to the base scenario. The alternative scenario reaches a maximum utilisation rate of 97% in 2040.

Germany has an utilisation rate of 56% of the increment in the year 2000. Under the base scenario, FAWS increases by 8% and the fellings by 30%, that is to 66 million m^3 by the year 2040. The total growing stock goes up by 34%, to 4.1 billion m^3 in 2040. The utilisation rate increases to 84% under the baseline scenario, but under the alternative scenario it increases to over 100% of

NAI after 2030. This could be due to higher fellings (36% higher fellings in the alternative than in baseline scenario for the year 2040) combined with a slightly declining increment.

Ireland's increasingly maturing forest resources will allow an increase of the utilisation rate from 44% in 2000 to 80% in the base scenario or to 100% in the alternative scenario by 2040. The assumed increases in FAWS would be even more moderate than proposed in Ireland's forest policy plans. The fellings increase by 72% to over 4 million m^3 by the year 2040 in the base scenario. By that time the growing stock would have reached an apparent saturation level at 365 m^3 per ha.

Italy currently fells only 34% of its net annual increment on FAWS. The expected increase in required felling level, from 9.5 million m^3 in the year 2000 to 14 million (base scenario) or 20 million m^3 (alternative scenario) by the year 2040, can be observed over the whole period 2000-2040. However, the net annual increment decreases over these 40 years by over 1 m^3 per ha (or by more than 20%). As a result, the utilisation ratio under the alternative scenario raises up to 85% by 2040.

Luxembourg is described together with Belgium under 'Belgium and Luxembourg'.

The Netherlands FAWS area is projected to increase from 314 thousand ha in the year 2000 to 346 thousand ha in the year 2040. By then the growing stock per area would have gained 86% (355 m^3 per ha) compared to the year 2000. The utilisation rate is expected to slowly increase from the current 41% according to both scenarios: the baseline to 52% and the alternative to 56%.

Norway sees its growing stock increase in the period 2000-2040 from 749 million m^3 to 1091 or 1015 million m^3, respectively in the baseline or alternative scenario. The required felling level derived from the market model has been increased with 778 thousand m^3 in order to include fellings for household consumption. The utilisation rate increases from 47% (2000) to 72% and 89% (2040) respectively. The 24% (or 5.7 million m^3) decrease of the overall net annual increment over the 40-year period can be explained by changes in the age class distribution. At the beginning of the simulation period, the age class distribution is dominated by relatively young and well growing stands. These stands mature during the simulation period causing a lower net annual increment, as shown in Figure 13.

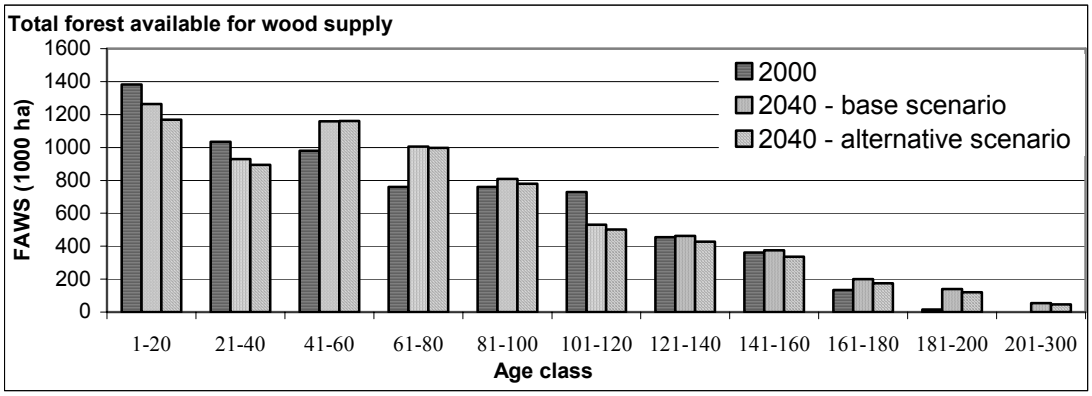

Figure 13. Age class distribution for total FAWS in Norway
For the year 2000 and for the year 2040 according the baseline and alternative scenario.

The country sheet for **Portugal** presents outputs that include results for Eucalypt plantations. It shows utilisation rate of 84% in 2000. In the base scenario, the fellings could increase from 10.9 million m^3 in the year 2000 to 13.7 million m^3 in the year 2040. Meanwhile, the total growing stock would go up from 129 million m^3 in the year 2000 to 139 million m^3 in the year 2010, after which the growing stock would decrease to 120 million m^3 by the year 2040. The Eucalypt plantations have an important effect on the overall balance of Portuguese forest resources. Covering 33% of the Portuguese FAWS area, the increment of the plantations accounts for 64% of the total increment in

the year 2000. Already in the year 2000, 34% of the total growing stock is located in Eucalypt plantations, this share is expected to rise to 42% by the year 2040 according the base scenario, and to 33% according the alternative scenario. The share of fellings is 43% in the base scenario in the year 2000, which goes up to 67% by the year 2040. In the alternative scenario this share increases to 67% for the year 2030, after which the share decreases to 63%.

Spain's growing stock will increase from 731 million m^3 in 2000 to 1175 million m^3 (base scenario) or 1118 million m^3 (alternative scenario) by 2040. The fellings increase from 12.6 million m^3 in 2000 to 18 million m^3 (base scenario) or 20.4 (alternative scenario) in 2040. Combined with a nearly constant net annual increment of about 26 million m^3, the utilisation rate reaches a maximum level of 70% (base scenario) or 79% (alternative scenario).

Sweden is expected to decrease its FAWS area by 400 thousand ha by the year 2040 following the base scenario and by 200 thousand ha by the year 2040 following the alternative scenario. The required felling level of the base scenario can easily be met, even allowing an increase of the total growing stock of 22% by 2040. The utilisation rate, however, reaches close to 100% then. The increased demand in the alternative scenario can only be followed until 2030 after which fellings drop. This drop causes the growing stock to recover again towards 2040.

Switzerland increases its FAWS area by almost 10% to 1166 thousand ha by 2040 in the base scenario. The FAWS area develops under the alternative scenario according to the recommendations of the country correspondent and initially increases until the year 2020, after which it decreases until 2030 to remain stable afterwards. The required felling level has been increased by 22% following the suggestion from the country correspondent to account for differences in calculation methods between the National Forest Inventory and the official statistics. The country will be able to increase its fellings by 34% to 9.6 million m^3, or by 46% to 10.5 million m^3 by the year 2040, in the base and alternative scenario respectively. The growing stock per ha will increase to 419 m^3 per ha by the year 2040 under the base scenario and to 417 m^3 per ha under the alternative scenario.

The United Kingdom is expected to increase its FAWS area in the base scenario by at least 40% by 2040 according to the national correspondent. The alternative scenario shows a FAWS area increase of 50% by 2040. The country is projected to increase its fellings by the year 2040 by 59% in the base scenario or even by 90% in the alternative scenario. The model shows that there are difficulties to meet the required fellings for the period 2005-2015, after which enough resources seem available. The total growing stock as well as the growing stock per hectare continue to rise during the whole period (by 84% and 32% respectively in the base scenario and by 73% and 15% respectively in the alternative scenario).

3.2.2 Central and Eastern European Countries

Albania currently fells 27% of the increment of FAWS in recorded fellings. Even with a decrease in FAWS by 90 thousand ha and an increase of the fellings of 366 thousand m^3 per year by 2040 in the base scenario, it reaches a utilisation rate of only 66%. Under the alternative scenario the utilisation rate increases to 81%.

Bulgaria has seen a substantial decrease of the FAWS area in the 90s, due to the establishment of a system of national parks. No further increase is expected in the area of these parks. Following this expert communication, the historical downward trend from TBFRA 2000 was discontinued in the baseline scenario and was kept at a constant level. Bulgaria currently has a high utilisation rate of 91%. Under the base scenario the fellings are expected to reach 100% of net annual increment already before 2020. This leads to a decrease in growing stock of 6% by 2040. In the alternative scenario, the FAWS area is expected to increase by 15% or 468 thousand ha by the

year 2040. Under the alternative scenario, the utilisation rate stabilises at a level around 110%, leading to a growing stock reduction of more than 8%.

Croatia had a utilisation rate of 77% in 2000. In the base scenario it is projected to increase to 110% by 2040. The growing stock per area reaches a maximum value of 126 m^3 per ha in 2010 and decreases to 118 m^3 per ha until 2040. The alternative scenario has a 15% (3.2 million m^3) higher required felling level by 2040 compared to the base scenario. Despite a higher increase of FAWS compared to the base scenario, the utilisation rate reaches 100% also before 2020. The growing stock decreases from 125 m^3 per ha by 2010 to 109 m^3 per ha in 2040. The growing stock per hectare decreases already earlier in time because of the afforestations.

Czech Republic currently has a rather high utilisation rate of 76%. Due to a high increase in required felling level the fellings start to exceed the increment in 2015 and by 2030 the required felling level cannot be met anymore. Over the projection period, the net annual increment decreases from 9.6 to 8.5 m^3 o.b. per ha. Due to the higher increase in felling levels in the alternative scenario, problems come up already after 2020. The growing stock starts to decline even earlier, when the utilisation rate crosses 100% of NAI in 2010. The non-linear evolution of the forest area available for wood supply is based on the country correspondent's assumptions.

Estonian FAWS area development shows large differences between the scenarios. Whereas TBFRA projected an increase, the correspondent expected a decrease. This has a large impact on total NAI, and consequently also on utilisation rates and growing stock development. Estonia has a utilisation rate of 86% of NAI in the year 2000 and reaches in the base scenario a rate of 100% of NAI by the year 2015. The growing stock decreases by 12% (48 million m^3) and the total net annual increment by 17% (2 million m^3) in the base scenario from 2000 to 2040. Due to a higher felling level under the alternative scenario, the 100% of NAI mark is reached already by the year 2005 and continues to increase until 2040. In the alternative scenario the growing stock decreases by 22% (91 million m^3), and the total net annual increment decreases by 31% (3 million m^3). Towards the end of the simulation period, there is hardly any old forest left. Due to the high felling level, the area of young forests would considerably increase (see Figure 14.).

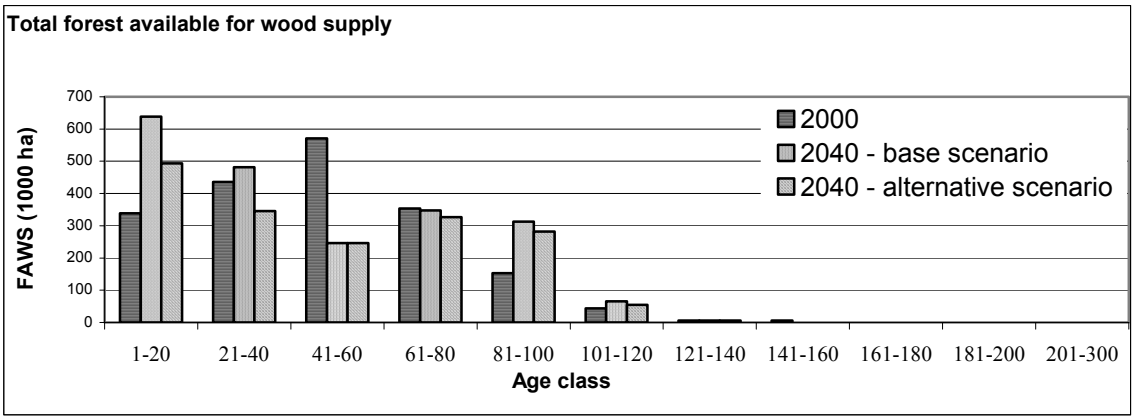

Figure 14. Age class distribution for total FAWS in Estonia
For the year 2000 and for the year 2040 according the baseline and alternative scenario.

Hungary shows an increase in FAWS under the baseline scenario of 116 thousand ha, which consists mainly of broadleaves (86%). The fellings increase from 6 million m^3 in 2000 to 8.5 million m^3 in 2040. There are no problems in reaching these felling levels. The total growing stock increases from 317 million m^3 currently to 385 million in 2040. Due to simultaneous afforestations the average growing stock increases from 186 to 212 m^3 per ha in 2030 and stabilises afterwards. In 2040, the ratio of fellings over net annual increment amounts to 96%. The required felling level in the alternative scenario increases much faster, causing the felling level to exceed the increment level after 2030. Consequently, the total growing stock reaches its maximum in 2030 at 365 million

m^3 and decreases afterwards to 358 million in 2040. Given the afforestations, the average growing stock reaches a maximum in 2020 at 203 m^3 per ha and then decreases to 193 in 2040.

Latvia's fellings on FAWS currently equal the net annual increment. Due to foreseen increases in required felling levels, the utilisation ratio is expected to increase far over 100%. In the baseline scenario, the utilisation rate increases to 144% in 2040. Under the alternative scenario, a maximum 162% is reached in 2030, after which it decreases to 133% because of lack of resources.

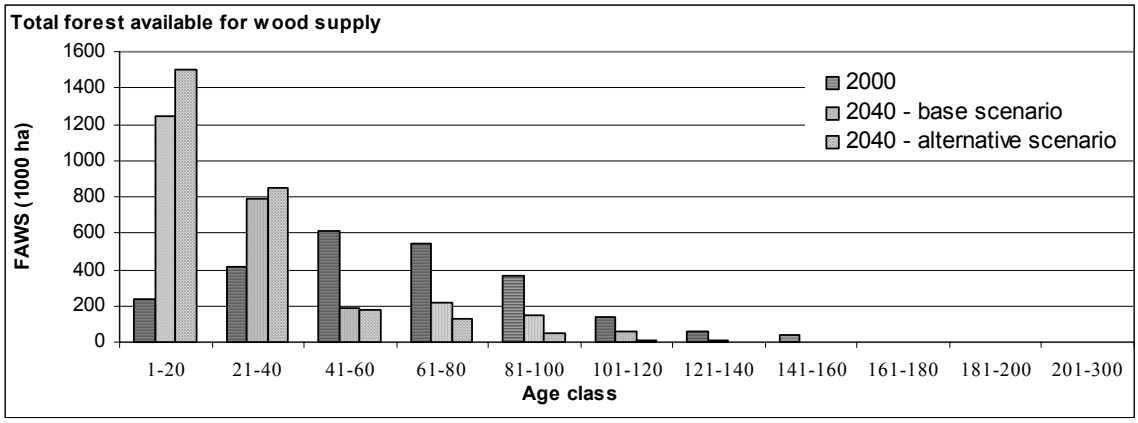

Figure 15 Age class distribution for total FAWS in Latvia
For the year 2000 and for the year 2040 according the baseline and alternative scenario.

Figure 15 shows the wipe-out of the old forests and the sharp increase in young forests due to the high required felling levels. Due to this high level of exploitation, the current total growing stock of 488 million m^3 decreases to 307 million in 2040 under the baseline and to 243 million under the alternative scenario.

Lithuania will encounter under the base scenario a utilisation rate of more than 100% after the year 2020. The total growing stock can increase under the baseline scenario from 343 million m^3 in 2000 to 362 in 2020, after which it declines to 354 million m^3 in 2040. Despite this decrease, there are no problems in finding the required felling level. Due to the faster increase in fellings under the alternative scenario, the fellings exceed the increment already in 2020 by 6% and by 29% in 2040. After 2015 the total growing stock decreases, to a level of 305 million m^3 in 2040. This is a decrease of 21% as compared to the year 2000.

The Former Yugoslav Republic of Macedonia is projected to increase its utilisation rate from about 76% in the year 2000 to about 116% in 2040, following an increase of the fellings by 78% in the base scenario. Under the alternative scenario the required felling level more than doubles by the year 2040. This causes the utilisation rate to cross the 100% level already by 2005.

Poland's FAWS area was scaled to 8.4 million ha for the year 2000 following communication of the country correspondent. The baseline scenario increase of the FAWS area by 18 thousand ha annually is equally based on expert assumptions. Under the forecasted increase of FAWS area and fellings, Poland is still expected to keep its utilisation rate under 90%. The utilisation rate goes from 61% in the year 2000 to 81% under the base scenario and to 87% under the alternative scenario in the year 2040. This results in an increase of the growing stock from 213 m^3 per ha in 2000 to 285 and 273 m^3 per ha respectively in 2040.

Romania will be able to increase its fellings to 77% by the year 2040 under the base scenario. This will still allow an increase of the growing stock per ha, which levels off towards the end of the period. A utilisation rate of 85% is reached by the year 2040. The alternative scenario puts more pressure on the forest resources, because the fellings increase by 121% compared to the year 2000 figure. Here, the utilisation rate will reach almost 100% by the year 2040.

Serbia and Montenegro will see a rapid increase of its utilisation rate in the future. This is the combination of a decline in annual increment and an increase in required felling level. The net annual increment decreases from 5.8 in 2000 to 2.6 million m^3 in 2040, as opposed to an increase by 69% of the fellings from 1.5 to 2.5 million m^3 in the base scenario. In the baseline scenario, the utilisation rate will increase from the current 25% to 95% in 2040. Under the alternative scenario it will increase to 116%. After 2015 there are some problems in meeting the required level of thinnings under both scenarios.

Slovakia will exceed the utilisation rate of 100% under the expected required felling level by 2015 under the base scenario, and already by 2010 under the alternative scenario. According to both scenarios the growing stock starts to decrease afterwards. In the alternative scenario the fellings can continue to increase until the year 2030 to a level of about 15.5 million m^3 (over 7 million m^3 increase compared to 2000). After that the increasing required felling level cannot be met anymore.

Slovenia is projected to increase its utilisation rate over the projected 40-year period from 38% in 2000 to 66% in the year 2040 under the base scenario, and to 86% under the alternative scenario. The growing stock per area develops respectively from 316 m^3 o.b. in 2000 to 416 m^3 o.b. (base scenario) and 391 m^3 o.b. (alternative scenario) in 2040.

Turkey utilises its forest resources at the beginning of the simulation at the utilisation rate of 63% of NAI. The forest resources can follow the slight increase of the required fellings under the base scenario only until the year 2030, and for the alternative scenario only until 2020. Both scenarios show a decrease of the growing stock: of 9% in the base scenario and of 22% in the alternative scenario.

3.2.3 Commonwealth of Independent States

Belarus has a low harvesting intensity, with a utilisation rate of only 23% in 2000. The FAWS area is expected to increase by 166 thousand ha and 284 thousand ha respectively according to baseline and alternative scenario. The required fellings will more than double, which brings the utilisation rate to 52% and 59% respectively by the year 2040.

Republic of Moldova currently utilises its forest resources at a rate of less than 30% of NAI. By the year 2040 this will increase slightly due to the increased required fellings to 37% under of the base scenario and to 42% under the alternative scenario. This low utilisation rate allows the growing stock to increase from 144 m^3 per ha in the year 2000 to 273 and 261 m^3 per ha respectively in the year 2040, according to base and alternative scenario.

The European part of Russian Federation (EUPR), with 56% of total forest resources in this study, is expected to triple its rate of utilisation of net annual increment under the base scenario, from 24% in 2000 to almost 85% in 2040. The data on forest area available for wood supply was based on information from Pisarenko et al. (2001). The required felling level as projected by the market model was derived for the whole of Russian Federation. The share of required fellings for the European part of Russian Federation was estimated at 60% of the total, based on EUPR's share in removals of total Russian Federation(Pisarenko et al., 2001). The required felling level was lowered by 16.4% to account for fellings outside FAWS. The expected increase in felling levels under the alternative scenario is too high for the available forest resources. After the year 2030 the total growing stock as well as the growing stock per hectare start to decrease. The utilisation rate increases to 111% by 2040 under the alternative scenario. This increase is caused by a dramatic intensification of the projected fellings, rather than due to a change in overall net annual increment. However, these projections do not take into account the felling possibilities in the non-European part of Russia.

Ukraine does not fully utilise its forest resources; the utilisation rate for the year 2000 is only 15%. The simulation shows that the country would easily follow tripling (base scenario) or even quadrupling (alternative scenario) of the current level of fellings. Such a high increase will still allow the growing stock to go up by about 120 m^3 per ha (from 229 m^3 per ha in 2000 to 353 m^3 per ha in 2040) in the baseline scenario and with 80 m^3 per ha in the alternative scenario.

4 MAIN FINDINGS AND DISCUSSION

The presented results have sketched a large and increasing forest resource in Europe. The growing stock increases under the baseline scenario from 51 billion m^3 o.b. in 2000 to 63 billion m^3 o.b. in 2040, whereas the net annual increment slightly decreases from 1.2 billion m^3 o.b. to 1.15 billion m^3 o.b. The projections show that fellings can be increased to fulfil the demand for timber and other wood products. The largest part of fellings increase that can be achieved occurs in the CIS countries with 145% increase compared to current fellings. Felling increases in EU/EFTA and CEEC countries were much more limited: of 27 and 45% respectively. In absolute terms the least increase in fellings was projected for CEEC countries: an extra 66 million m^3/y (compared to 94 million m^3/y in the period 2036-2040 for EU/EFTA, and 210 million m^3/y in the period 2036-2040 for CIS). Those figures are remarkable given the attention that is usually given to these countries when it comes to projections on future supply of wood to the Western European market. This can be explained mainly by the limited (14%) share of CEEC in the FAWS, whereas current utilisation ratios are already quite high (60% on average). If the required felling levels increase as fast as foreseen, then it seems that the fellings increases will mostly have to come from CIS countries.

Due to the steadily growing demand, the ratio of fellings over net annual increment increased in several countries to over 100%, causing a decline in growing stock after 2020. Such a high utilisation rate does not necessarily mean that the forest management is not sustainable, however, if this tendency continues for a long period of time, forest resources might be depleted, as shows the examples of the Baltic States.

The current study draws contrasting developments compared to ETTS V (Pajuoja, 1995). Indeed the evaluations of the national correspondents led to a decrease of total FAWS area by 8.59 million ha over the period from 2000 to 2040 in the base scenario, whereas Pajuoja foresaw a total increase of 7 million ha. Another difference is in the fact that the market model outcomes project a much faster increase in required fellings in the current outlook. The required felling level is foreseen to increase from 643 million m^3 o.b. per year in 2000 to 847 billion m^3 o.b. per year in 2020 in the baseline scenario. This means an increase of 32% in 20 years, whereas Pajuoja - based on all correspondent information - foresaw an increase of only 17% over the total time span from 1990 to 2040. This, concurrently with the approach that dynamically simulates age class development and, by the same token, the net annual increment, shows that annual availability of roundwood may get very low after 2020. In the baseline scenario the actual fellings in 2036-2040 were about 2% lower than the required fellings, whereas in the alternative scenario the difference amounted to about 11% per year. In reality market mechanisms will take care of this difference, by adjusting prices and trade according to the principles of supply and demand. These adjustments cannot be simulated with the current modelling system and therefore the system needs to be adapted to make reliable projections for post-2020 under such high increases of required fellings.

The projected outcome of the scenarios is determined by the fast increase of the required felling level, the current state of the forest and the management regimes as incorporated in the model. For assumptions behind the increase in consumption of commodities we refer to Kangas and Baudin (2003). Despite the fact that re-use of by products (i.e. processing efficiency) was taken into account in the market scenarios, a steady increase in required felling level of 1.3% per year over the first 20 years was projected in the base scenario. The management regimes have an important impact on the model outcomes as well. In some cases, growing stocks may still be increasing in a country, while the simulation shows that required fellings couldn't be met (e.g. the baseline scenario for the CEEC country group). In these cases, the incorporation of fixed management regimes may not be optimal. Flexible adaptation of management constraints could be a large improvement to the model when it would come to modelling forest management schemes.

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ANNEX 1: DEFINITIONS

Alternative scenario for the purpose of this study sets higher demands than in short-term historical trends of domestic roundwood demand. The short-to-long term historical trends of FAWS area change according to the historical data in TBFRA 2000. The FAWS change is either set to increase to an area 2% larger than the one in the baseline scenario, or as indicated by the EFSOS country correspondent for Belgium, Bulgaria, Czech Republic, Estonia, France, Norway, Portugal, Slovakia, Slovenia, Spain, Switzerland, Turkey and the United Kingdom. The FAWS change assumption for Spain is the combination of policy forecasts and historical division of the forest in FAWS and non-FAWS. For the European countries of the Commonwealth of Independent States (CIS) the FAWS area changes were based on secretariat estimates.

Base scenario for the purpose of this study includes domestic roundwood demand as modelled by the base and the short-to-long term historical trends of FAWS area change according to the historical data in TBFRA 2000.

Broadleaved trees are all trees classified botanically as Angiospermae. They are sometimes referred to as 'non-coniferous' or 'hardwoods' (UNECE/FAO, 2000). The largest part of this group concerns deciduous species in Europe.

Central and Eastern European Countries (CEEC) include for the purpose and scope of this study and due to data availability: Albania, Bosnia Herzegovina, Bulgaria, Croatia, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Serbia and Montenegro, Slovakia, Slovenia, the Former Yugoslav Republic of Macedonia, Turkey.

Commonwealth of Independent States (CIS) includes for the purpose and scope of this study and due to data availability: Belarus, European part of Russian Federation, Ukraine, and Republic of Moldova.

Coniferous trees are all trees botanically classified as Gymnospermae. They are sometimes referred to as softwoods (UNECE/FAO, 2000).

Coppice and coppice with standards is forest composed of stool-shoots or root suckers with or without scattered trees (standards), which may of seedling or coppice origin (UNECE/FAO, 2000).

Deciduous refers to broadleaved trees that have the capability to drop their leaves during a particular season of the year that coincides with particular circumstances as e.g. severe drought, reduced light intensity and coldness. The trees regenerate their leaf cover in the season that has improved growing conditions, generally spring in the European climate.

Demand is used here as the domestic demand for roundwood unless stated otherwise. A demand model has forecast short-term historical trend of domestic demand for roundwood for the years 2010,2020 and 2030. This linear change in demand has been extrapolated to the year 2040.

EFISCEN (European Forest Information Scenario Model) is the forest resource projection model of the European Forest Institute that was applied in this study.

European Forest Institute (EFI) is a non-governmental, independent research organisation that promotes, conducts and co-operates in research in forestry and forest products at the pan-European level; and makes the results of the research known to all interested Parties, notably in the areas of policy formulation and implementation, in order to promote the conservation and sustainable management of forests in Europe.

European Union and European Free Trade Agreement countries (EU/EFTA) includes for the purpose and scope of this study and due to data availability: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, United Kingdom.

Forest Available for Wood Supply (FAWS) includes forest where any legal, economic, or specific environmental restrictions do not have a significant impact on the supply of wood. The area includes: areas where, although there are no such restrictions, harvesting is not taking place, for example areas included in long-term utilisation plans or intentions (UNECE/FAO, 2000). The original forest resource inventory input data has been contributed to the project by EFI or EFSOS country correspondents. The FAWS area has been upscaled to match with TBFRA2000 data.

Fellings refer to the volume of wood from stems or stakes that is felled in the forest, either in thinnings or in final fellings. The unit is cubic meters (m^3), overbark, unless stated otherwise.

Forest resources are the forest resources on Forest Available for Wood Supple (FAWS) according to the definition used in the TBFRA-2000, except in the case, when it is explicitly indicated to be otherwise.

Growing stock refers to the volume of wood standing in the living trees as measured and reported by national and/or regional forest inventory according to the specific methodology.

Mature forest is forest that has reached the age suitable for implementation of a final felling. The forest is ecologically mature and the trees are able to produce seeds and to regenerate. This term is most suitable for even-aged forest. This is consistent with the EFISCEN model, which calculates in terms of homogenous even-aged forests.

Net Annual Increment is the average annual volume over the given reference period of gross increment minus that of natural losses on all trees as measured and reported by national and/or regional forest inventory according to the specific methodology.

Overmature forest is forest that has reached the final stage of its development and starts to decline. This results in a loss of potential timber value. This term is most suitable for even-aged forest. This is consistent with the EFISCEN model, which calculates in terms of homogenous even-aged forests.

Removals are the amount of the fellings that are removed from the forest. The difference between fellings and removals are the residuals that stay on-site in the forest. The unit is cubic meters (m^3), usually underbark, unless stated otherwise.

Rotation length refers to the number of years between the establishment or regeneration of a forest tree unit or stand and its final cutting at a specified stage of maturity.

Scenario is a set of parameters that is used to constraint the development of the forest resources in the model for a number of periods. The parameters set the demand for the (intermediate and final) fellings in the different classes (broadleaf, coniferous, coppice), the ratio between removals and fellings, young forest coefficients and the area of afforestation or deforestation. Different forest categories, depending on ownership class and site class can be modelled under different scenarios.

Supply is the amount of forest resources in the meaning of removals that have been calculated by the EFISCEN model as an output from the forest, anticipating the demand specified in the model scenario file. Supply does not equal demand in case the model cannot allocate enough resources that could be removed given the pre-defined model constraints.

Sustainable forest management is for the purpose of this study considered as a forest management where the yearly removals from the forest do not exceed the yearly growth of the trees in the forest. The authors of this study understand the complexity of the forest ecosystem and the fact that there are many more factors that contribute to the sustainable management of an ecosystem, e.g. the nutrient balance of the forest soil, conservation of biodiversity, etc.. These factors however cannot (yet) be taken into account in the EFISCEN model approach and are left out of consideration here.

Utilisation rate is for the purpose of this study defined as the ratio of fellings (m^3 o.b.) over net annual increment (m^3 o.b.).

Young forest coefficients are a measure of the effectiveness of regeneration. From the area which is in the bare-forest-land class, this share is entering the lowest age- and volume class and will thus be considered as being planted or naturally regenerated and has reached the average volume of the lowest volume class.

ANNEX 2: NATIONAL DATA CORRESPONDENTS

Albania	Dr. Eng. Bashkim Mal Lushaj
Austria	Dr. Klemens Schadauer
Belarus	Mr. Mikhail V. Kuzmenkov
Belgium	Wallony: Prof. Dr. J. Rondeux & Dr. Hebert
	Flanders: Engineer Bart Roelandt
Bosnia and Herzegovina	Ms. Sabanka Rado
Bulgaria	Mr. Stefan Mirchev
Croatia	Mr. Goran Kovac
Czech Republic	Dr. Miloš Kraus
Denmark	Dr. Kim Dralle
Estonia	Mr. Ulo Viilup
Finland	Prof. Erkki Tomppo
France	Dr. G. Pignard
Germany	Mr. Peter Lohner
Greece	Dr. I Meliadis
Hungary	Dr. Peter Csoka
Ireland	Cormack Judge
Italy	Dr. Franco Cozza
Latvia	Sanda Zauere
Lithuania	Dr. Edmundas Petraukas
Luxembourg	Mr. Marc Wagner
Macedonia, the Former Yugoslav Republic	Mr. Luktscho Nesterovski
Republic of Moldova	–
Netherlands	Engineer H. Schoonderwoerd
Norway	Mr. S.M. Tomter
Poland	Mr. Roman Michalak
Portugal	Mr. Antonio Leite
Romania	Mr. Claudiu Zaharescu
Russian Federation	Mr. Valentin V. Strakhov & Dr. Pisarenko
Serbia and Montenegro	Mr. Milan Medarevic
Slovakia	Mr. Ivan Luptak
Slovenia	Dr. Hocevar
Spain	Dr. J.A. Villanueva
Sweden	Dr. U. Söderberg
Switzerland	Dr. U.-B. Brändli
Turkey	Mr. Ulvius
Ukraine	Mr. V. F Romanovsky & Dr. I. Buksha
United Kingdom	Mr. Simon Gillam

ANNEX 3: QUESTIONNAIRE

Dear country correspondent,

In the past decades the Timber Committee at the UNECE in Geneva has made various outlook studies for the development of the European Forest sector. Considering the recent fast developments in forestry and the forest sector (e.g. opening up of Eastern Europe, bioenergy discussions, nature oriented forest management) it was decided to produce a new outlook study by the end of 2002. This is part of the EFSOS programme. See for more information on EFSOS: http//www.unece.org/trade/timber/efsos

For the projection of the forest resource in Europe the EFSOS specialists and national correspondents suggested applying the European Forest Information Scenario Model (EFISCEN) and to contract the European Forest Institute in Joensuu, Finland. The objective of the EFISCEN model in the framework of EFSOS is to investigate a certain roundwood demand against the sustainability of forest management, simulating the development of the forest resources of European countries over an outlook horizon of 50 years. To successfully implement this task, the currently available European Forest Resource Database that underlies the EFISCEN model will need to be updated and expanded.

In 1996, the EFISCEN team had contacted [national inventory specialist name] directly in order to build a European Forest Resource Database. He/she informed and / supplied the EFISCEN team with [your latest country data or you informed us of the reliability/accuracy of the old dataset which we had received earlier from the IIASA's Forest Study (some details of what we received these old data are included here to this letter on floppy disc)]. (http://www.efi.fi/projects/eefr) Several projects have been implemented, or are presently underway with these data.

Further in 1997/98 UNECE/FAO collected the Temperate and Boreal Forest Resource Assessment data. A big effort was made in common definitions on various forest parameters. Now this data presents a comprehensive and consistent overview on forest resources in the region. (www.unece.org/trade/timber/fra) The results are approved by the countries and have an official status. At the same time the structure of this data set is not detailed enough to serve as input data for EFISCEN.

The goal of the current inquiry is to update the EFISCEN dataset based on your latest National Forest Inventory. To run EFISCEN, the main parameters (age, area, growing stock, increment) need to be cross structured by tree species, owner ship classes, site classes and regions

The attached questionnaire explains the requested information.

In the case of further questions please contact:

European Forest Institute
Andreas Schuck
Torikatu 34
Fin 80100 Joensuu, Finland.
Tel + 358.13.2520227
Fax + 358.13.124393
Andreas.schuck@efi.fi

We would ask you to please send the actual data before 15 September to Andreas Schuck at EFI.

We would appreciate in the meantime an immediate response to this letter (by email or phone), informing us on your possibilities to provide the data.

We would like to thank you very much in advance.

Yours sincerely,

Dr. Volker Sasse Mr. Kit Prins

Questionnaire
For the collection of forest inventory data as input to the
European Forest Information Scenario Model

1. Introduction

Firstly, we are looking for data representing your national forest area.

Please indicate your

- area of forest available for wood supply ..…... 1000 ha, and
- your area of forest not available for wood supply …..1000 ha.

We are now looking for detailed data representing your national 'forest available for wood supply' on

- area (ha),
- growing stock volume (m^3/ha overbark),
- net annual increment (m^3/ha/y overbark)

cross structured by

- regions,
- owner ship classes,
- site classes,
- tree species, and
- age classes

At the end of this questionnaire you find some requests for general information.

An example of the data required (one of such a set of data we call a SEDS: Single Entity Data Set):

REGION = 1			
OWNER = 1			
SITE CLASS = 1			
SPECIES = 1 (PINE, Pinus sylvestris)			
AGE	AREA Ha	GROWING STOCK m^3/ha	INCREMENT m^3/ha/a
10	110151	20	2.37
30	74586	107	7.23
50	66139	197	7.96
70	74203	240	7.3
90	66980	256	6.34
110	27967	269	5.53
130	4800	212	3.53
150	3180	240	2.92
160	0		

2. Structure of SEDS

SEDS are to be distinguished in a detailed way for your national forest available for wood supply, but the number of SEDS you distinguish depends on your data availability.

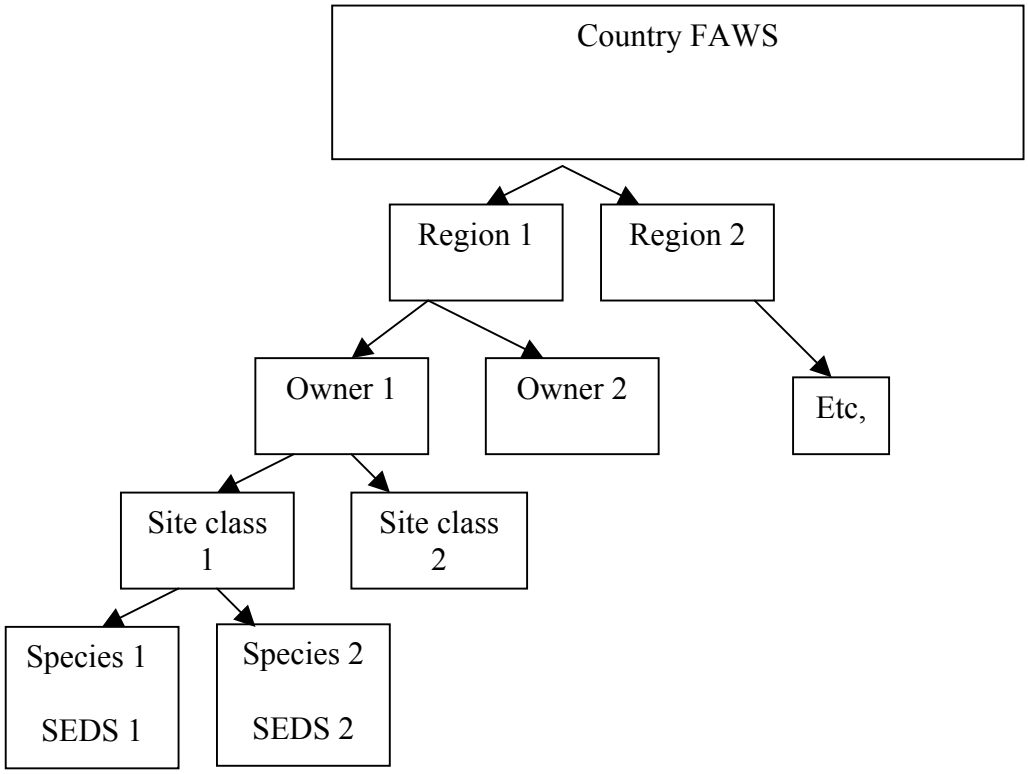


Figure 1. Example of hierarchy of distinguishing SEDS. In this case it was assumed that in each level, two types could be distinguished. For the FAWS area you would have 16 SEDS.

The structure of the data you provide determines the smallest unit for which results are available. In order to produce best results for modelling, the data should be compiled as detailed as possible (see figure). Of course some data tables may contain no data as, for example if there is no tree species “Aspen” on a “poor site”, the table will be empty.

3 Explanatory Notes

3.1. Parameters

Area
area per age class, ha

Growing stock
mean stemwood volume of the age class, m^3/ha overbark

Increment
net current annual increment (CAI) of the age class, m^3/ha/year overbark
please indicate in your reply the definition you applied.

3.2. SEDS Indices

Region

For more detailed georeferenced presentation of forest resources, a structure by regions would be highly needed and appreciated. The region could represent administrative units e.g. provinces or counties.

For your country .....NUTS level was provided in 1996, we would appreciate:

Owner classes

Distinguish owners by appropriate groups valid for your country. A short description of the individual ownership classes should be provided.

Site classes

Distinguish site classes by appropriate groups that are valid/in-use for your country. A short description of the site classes should be provided.

Tree species (groups)

The main tree species should be distinguished. The remaining tree species may be provided individually but can also be added to a species groups, e.g. other broadleaves, other coniferous. The scientific names of all species in that group should be given where appropriate in order to allow clear distinction.

Age classes and clear-cut areas

Age classes are preferably to be given by 5-year classes; in case this is impossible, by 10, or 20-year classes. Also the number of age classes may vary between tables depending on the forest structure.

Clear-cut areas can usually not be assigned to a specific SEDS, and should therefore be provided separately as one number for each combination of distinguished region and owner.

Organising the data

We leave to your choice the organisation of data: whether an excel sheet with tables as organised in the included old data set, or whether as a more proper database format (e.g. MS Access).

4 Additional information

4.1 Changes in tree species distribution for the region/country

Indicate in relative terms what you expect as tree species composition changes in your country for the time span 2000-2050.

Example for a country where only three species were distinguished.

Tree species group	2000 (from inventory)	2050 (your expectation)
1	10%	25%
2	60%	40%
3	30%	35%

4.2 Changes in total 'Forest area available for wood supply'

Indicate in relative terms what you expect as area change in your country for the time span 2000-2050. (this may also include loss of FAWS due to establishment of e.g. forest reserves)

Year	Index 2000 = 100%	Comment
2000 (from inventory)	100%	
2010 (your expectation)		
2020 (your expectation)		
2030 (your expectation)		
2040 (your expectation)		

4.3. Management regimes

Rotation length (clear cutting regimes)

Specify commonly used average rotation lengths per tree species in your country.

Example for a country where only three species were distinguished.

Tree species group	Rotation length (year)
1	
2	
3	

Thinning regimes

Specify commonly used thinning regimes per tree species in your country.

Example for a country where only three species were distinguished.

Tree species group	Age of earliest thinning	Periodicity (e.g. every 5, 10, etc. years)
1		
2		
3		

Share in total national fellings coming from thinnings

Example for a country where only three species were distinguished.

Tree species group	Share from thinnings	Share from clear cuts	Sum
Coniferous			100
Deciduous			100

4.4. Background information

Year of forestry inventory

Please indicate the period to which the data refer

New developments in forest inventory activities

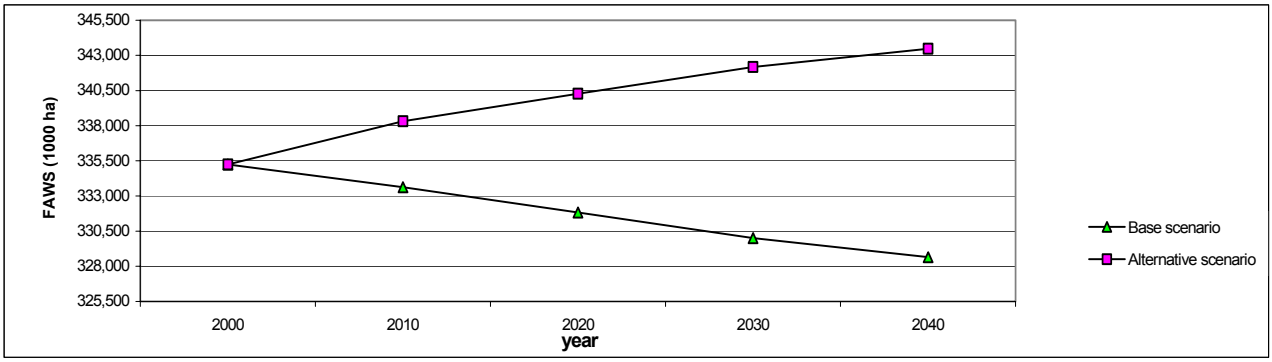
Will new inventories be completed in the near future and when will the data become available.

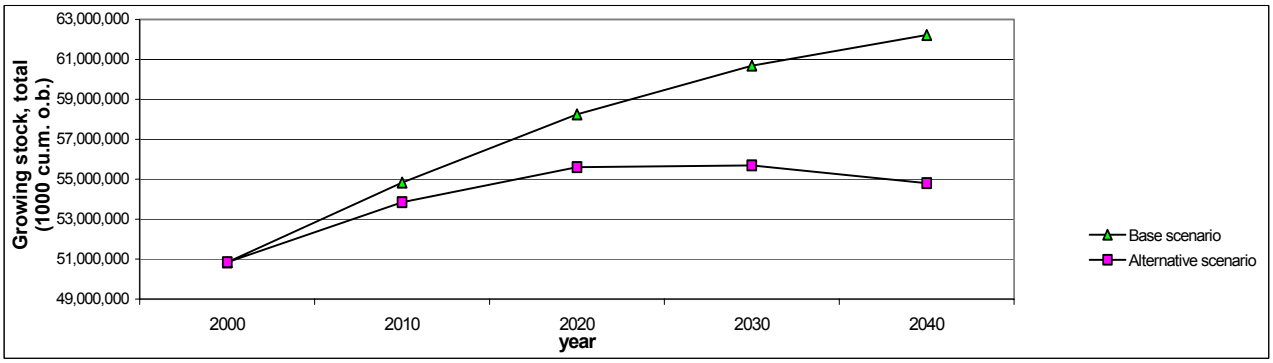
5. Forest area

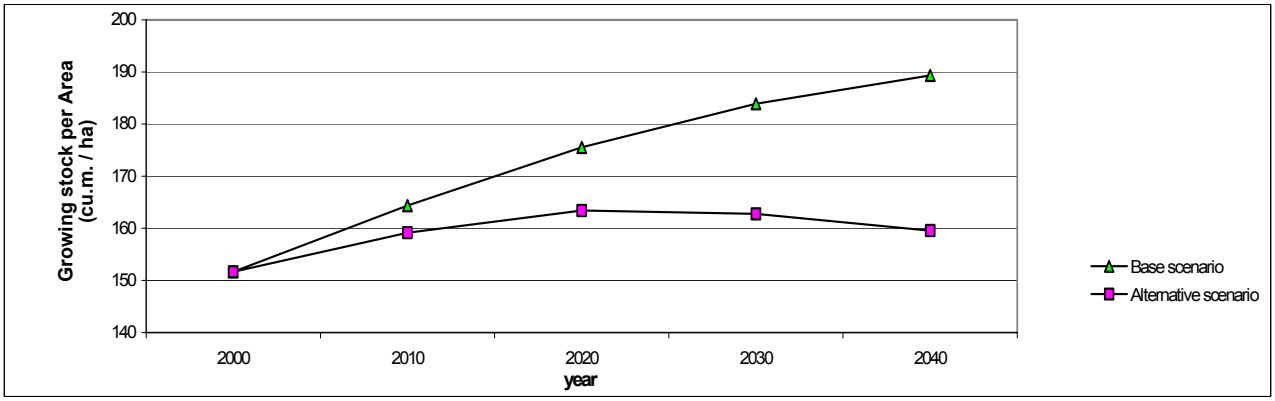
The data should cover the total forest area of a country/region (FAWS and FNAWS). If not, the gaps should be explained. The gaps in forest area should be made available by the regions that have been specified.

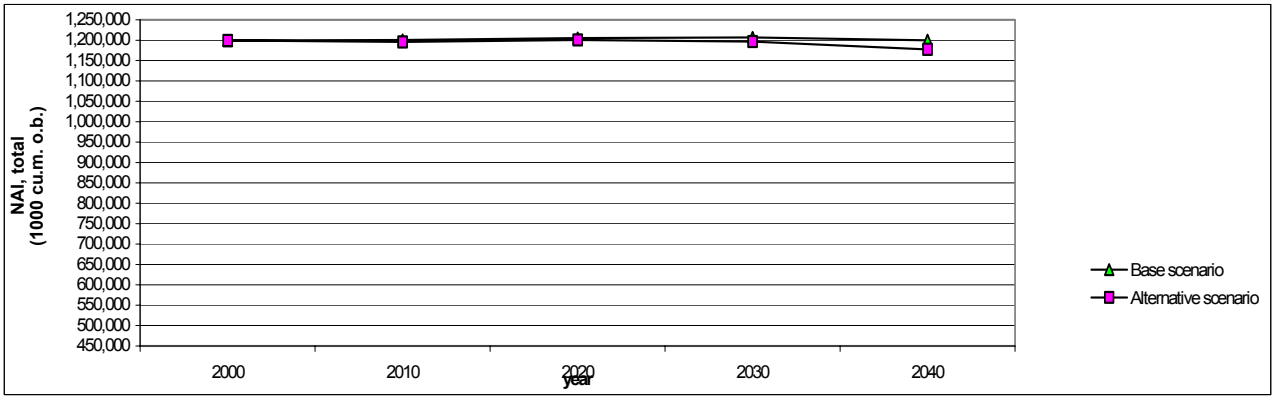
ANNEX 4: COUNTRY PROFILE SHEETS

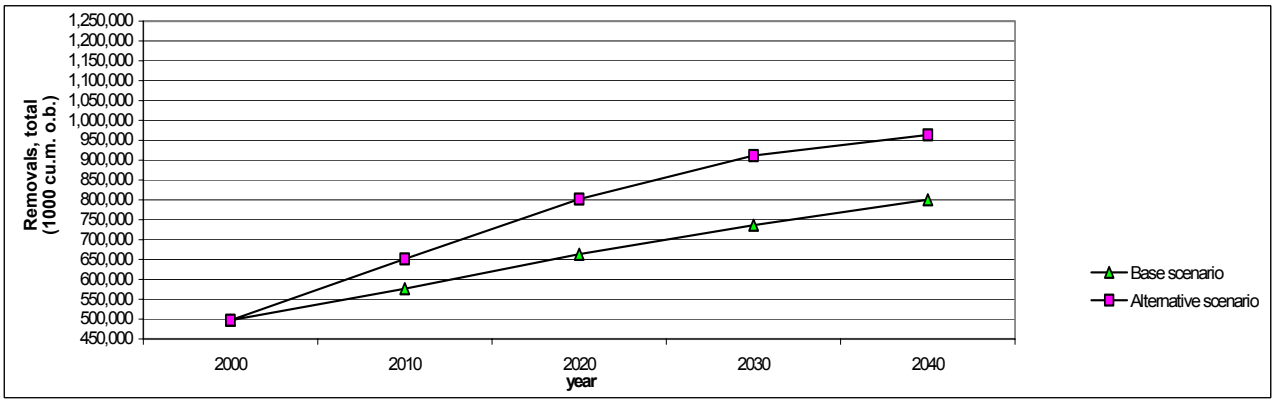
Europe	**Base scenario**					
	Unit	**2000**	**2010**	**2020**	**2030**	**2040**
Forest resource parameters						
Area of forest available for wood supply	1000 ha	335,243	333,624	331,826	330,004	328,644
- coniferous	*1000 ha*	*203,641*	*202,443*	*201,189*	*199,937*	*199,000*
- broadleaved	*1000 ha*	*131,602*	*131,181*	*130,636*	*130,067*	*129,645*
Growing stock, total	1000 cu.m. o.b.	50,845,431	54,833,302	58,250,009	60,688,335	62,223,946
- coniferous	*1000 cu.m. o.b.*	*30,901,855*	*32,468,589*	*33,676,376*	*34,181,175*	*34,055,840*
- broadleaved	*1002 cu.m. o.b.*	*19,943,576*	*22,364,713*	*24,573,634*	*26,507,159*	*28,168,106*
Net annual increment, total	1000 cu.m. o.b. / y.	1,199,171	1,200,510	1,205,073	1,206,664	1,199,768
- coniferous	*1000 cu.m. o.b. / y.*	*750,188*	*758,166*	*765,084*	*776,779*	*783,378*
- broadleaved	*1000 cu.m. o.b. / y.*	*448,983*	*442,344*	*439,989*	*429,885*	*416,390*
Fellings, total	1000 cu.m. o.b. / y.	664,863	771,026	886,889	984,943	1,070,097
- coniferous	*1000 cu.m. o.b. / y.*	*491,617*	*572,023*	*662,626*	*741,220*	*810,801*
- broadleaved	*1000 cu.m. o.b. / y.*	173,246	199,003	224,262	243,723	259,296
Removals, total	1000 cu.m. u.b. / y.	497,101	576,538	663,210	736,574	800,300
- coniferous	*1000 cu.m. u.b. / y.*	*367,409*	*427,566*	*495,336*	*554,128*	*606,184*
- broadleaved	*1000 cu.m. u.b. / y.*	*129,691*	*148,972*	*167,874*	*182,446*	*194,116*
Removals, total from final fellings	1000 cu.m. u.b. / y.	352,930	409,954	472,447	525,826	571,235
- coniferous	*1000 cu.m. u.b. / y.*	*258,478*	*300,855*	*349,085*	*390,945*	*428,498*
- broadleaved	*1000 cu.m. u.b. / y.*	*94,452*	*109,098*	*123,362*	*134,881*	*142,737*
Removals, total from thinnings	1000 cu.m. u.b. / y.	144,171	166,584	190,763	210,747	229,065
- coniferous	*1000 cu.m. u.b. / y.*	*108,932*	*126,710*	*146,250*	*163,182*	*177,686*
- broadleaved	*1000 cu.m. u.b. / y.*	*35,239*	*39,874*	*44,513*	*47,565*	*51,379*
Ratios						
- Growing stock per Area	cu.m. o.b. / ha	152	164	176	184	189
- Net annual increment per growing stock	cu.m. o.b. / cu.m. o.b.	2.4%	2.2%	2.1%	2.0%	1.9%
- Net annual increment per Area	cu.m. o.b. / ha / y.	3.6	3.6	3.6	3.7	3.7
- Fellings per Net annual increment	cu.m. o.b. / cu.m. o.b.	55%	64%	74%	82%	89%
- Removals per Area	cu.m. u.b. / ha / y.	1.5	1.7	2.0	2.2	2.4

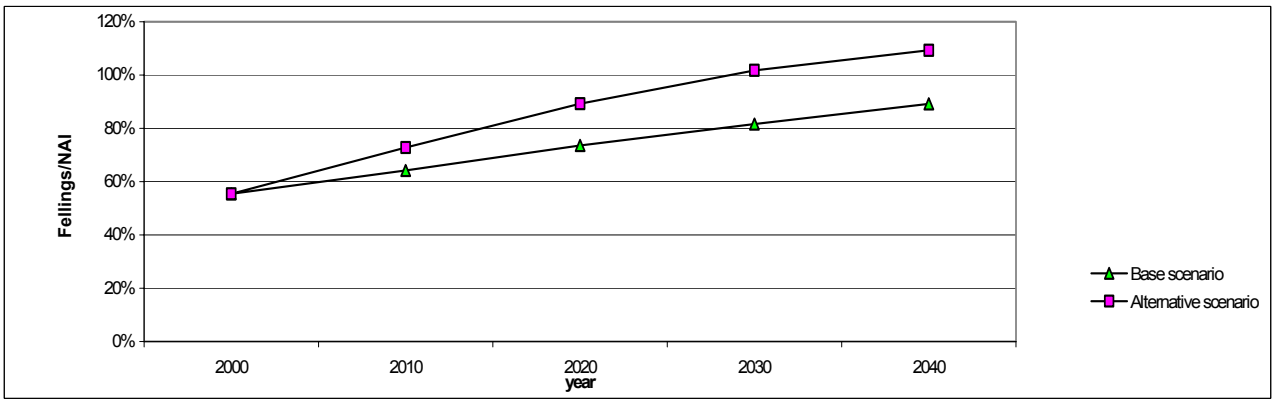




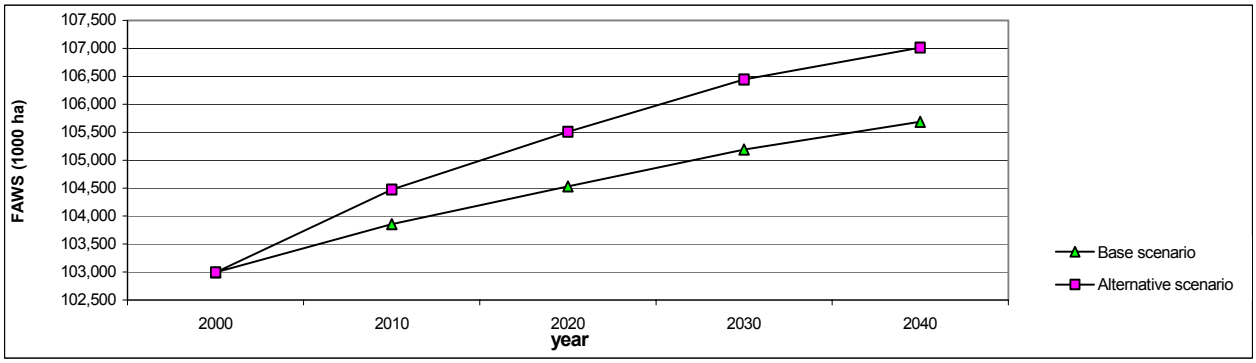

Growing stock per Area (cu.m. / ha)
200
190
180
170
160
150
140
2000
2010
2020
2030
2040
year
Base scenario
Alternative scenario

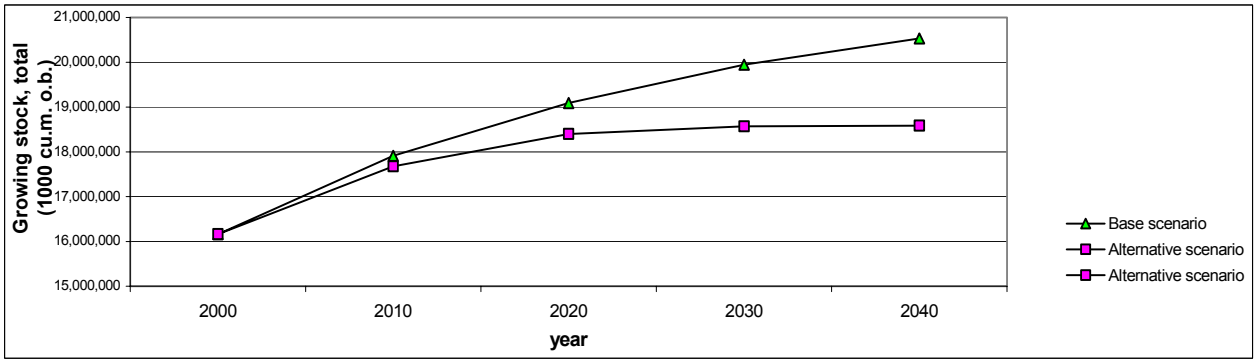

NAI, total (1000 cu.m. o.b.)
1,250,000
1,200,000
1,150,000
1,100,000
1,050,000
1,000,000
950,000
900,000
850,000
800,000
750,000
700,000
650,000
600,000
550,000
500,000
450,000
2000
2010
2020
2030
2040
year
Base scenario
Alternative scenario

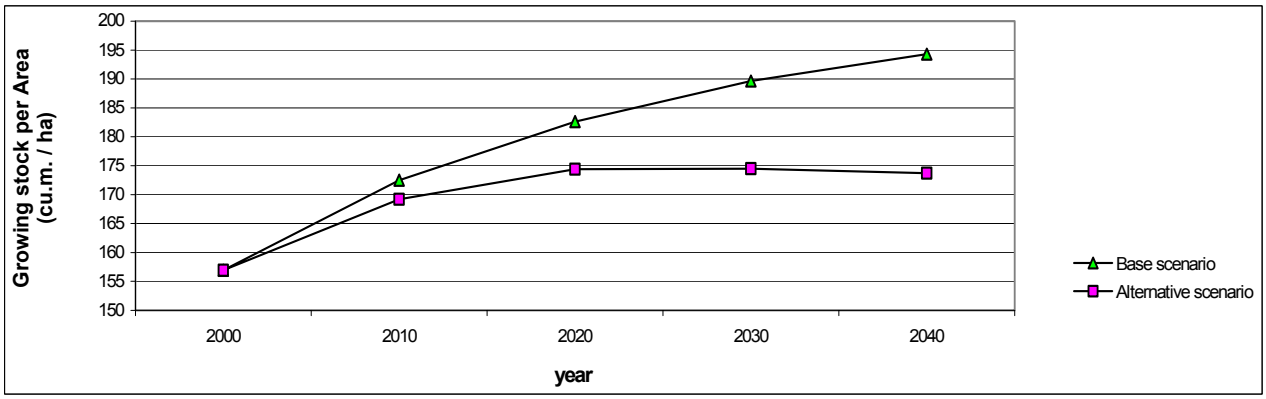

Removals, total (1000 cu.m. o.b.)
1,250,000
1,200,000
1,150,000
1,100,000
1,050,000
1,000,000
950,000
900,000
850,000
800,000
750,000
700,000
650,000
600,000
550,000
500,000
450,000
2000
2010
2020
2030
2040
year
Base scenario
Alternative scenario

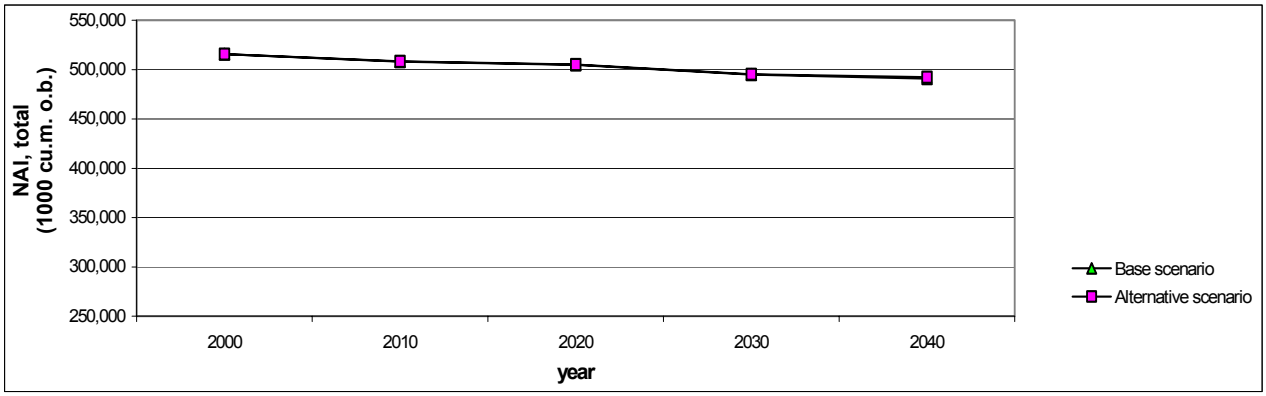

Fellings/NAI
120%
100%
80%
60%
40%
20%
0%
2000
2010
2020
2030
2040
year
Base scenario
Alternative scenario

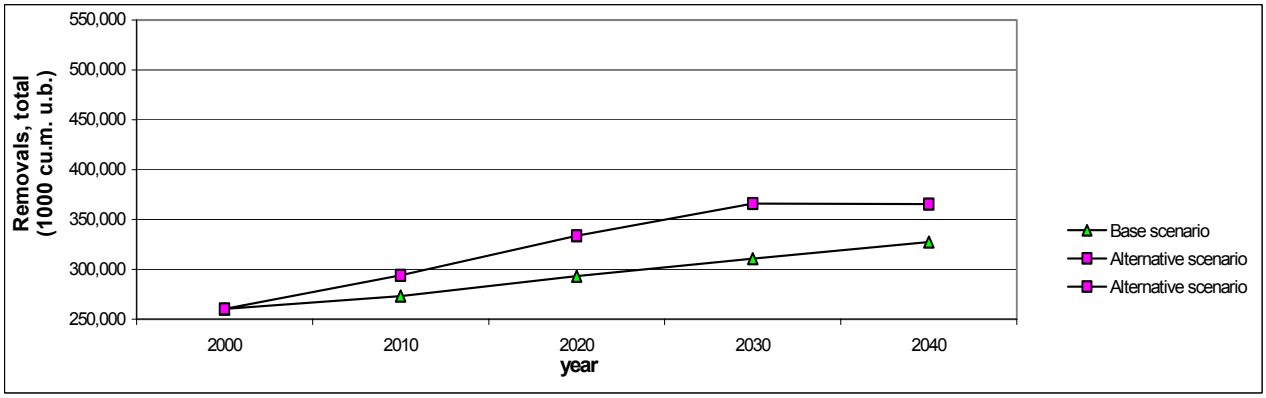
EU and EFTA	**Base scenario**					
	Unit	**2000**	**2010**	**2020**	**2030**	**2040**
Forest resource parameters						
Area of forest available for wood supply	1000 ha	102,995	103,854	104,534	105,190	105,689
- coniferous	*1000 ha*	64,615	64,892	65,114	65,336	65,505
- broadleaved	*1000 ha*	*38,380*	*38,962*	*39,420*	*39,855*	*40,184*
Growing stock, total	1000 cu.m. o.b.	16,160,908	17,912,671	19,089,295	19,947,212	20,533,790
- coniferous	*1000 cu.m. o.b.*	10,504,176	11,569,172	12,272,997	12,755,823	13,056,653
- broadleaved	*1000 cu.m. o.b.*	*5,656,732*	*6,343,499*	*6,816,297*	*7,191,389*	*7,477,137*
Net annual increment, total	1000 cu.m. o.b. / y.	515,614	508,094	504,692	494,995	490,940
- coniferous	*1000 cu.m. o.b. / y.*	352,046	354,414	356,193	351,933	350,294
- broadleaved	*1000 cu.m. o.b. / y.*	*163,568*	*153,680*	*148,499*	*143,062*	*140,646*
Fellings, total	1000 cu.m. o.b. / y.	348,640	365,914	392,726	416,255	438,294
- coniferous	*1000 cu.m. o.b. / y.*	258,680	269,539	290,556	307,884	323,381
- broadleaved	*1000 cu.m. o.b. / y.*	89,562	95,942	101,710	107,880	114,387
Removals, total	1000 cu.m. u.b. / y.	260,291	273,188	293,206	310,773	327,227
- coniferous	*1000 cu.m. u.b. / y.*	193,157	201,266	216,959	229,898	241,469
- broadleaved	*1000 cu.m. u.b. / y.*	*67,134*	*71,922*	*76,247*	*80,875*	*85,757*
Removals, total from final fellings	1000 cu.m. u.b. / y.	189,629	199,305	214,370	227,745	239,283
- coniferous	*1000 cu.m. u.b. / y.*	139,233	145,279	157,156	166,975	174,623
- broadleaved	*1000 cu.m. u.b. / y.*	*50,396*	*54,026*	*57,215*	*60,769*	*64,660*
Removals, total from thinnings	1000 cu.m. u.b. / y.	70,662	73,883	78,836	83,028	87,944
- coniferous	*1000 cu.m. u.b. / y.*	53,924	55,987	59,803	62,923	66,847
- broadleaved	*1000 cu.m. u.b. / y.*	*16,738*	*17,896*	*19,033*	*20,106*	*21,097*
Ratios						
- Growing stock per Area	cu.m. o.b. / ha	157	172	183	190	194
- Net annual increment per growing stock	cu.m. o.b. / cu.m. o.b.	3.2%	2.8%	2.6%	2.5%	2.4%
- Net annual increment per Area	cu.m. o.b. / ha / y.	5.0	4.9	4.8	4.7	4.6
- Fellings per Net annual increment	cu.m. o.b. / cu.m. o.b.	68%	72%	78%	84%	89%
- Removals per Area	cu.m. u.b. / ha / y.	2.5	2.6	2.8	3.0	3.1

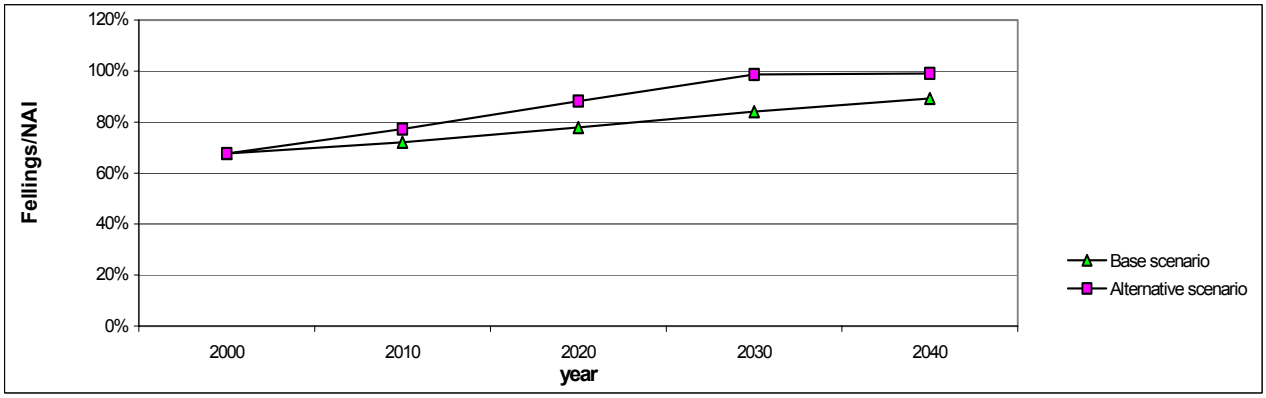




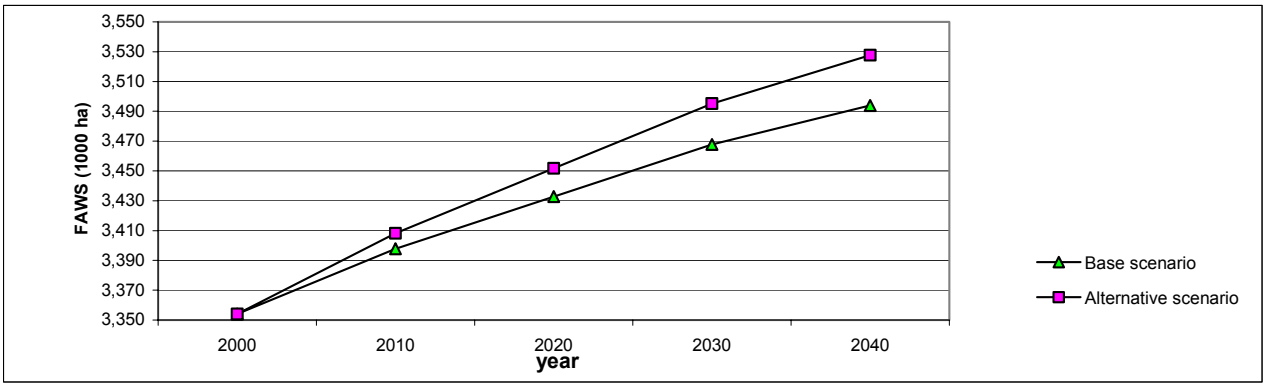

Growing stock per Area (cu.m. / ha)
200
195
190
185
180
175
170
165
160
155
150
2000
2010
2020
2030
2040
year
Base scenario
Alternative scenario

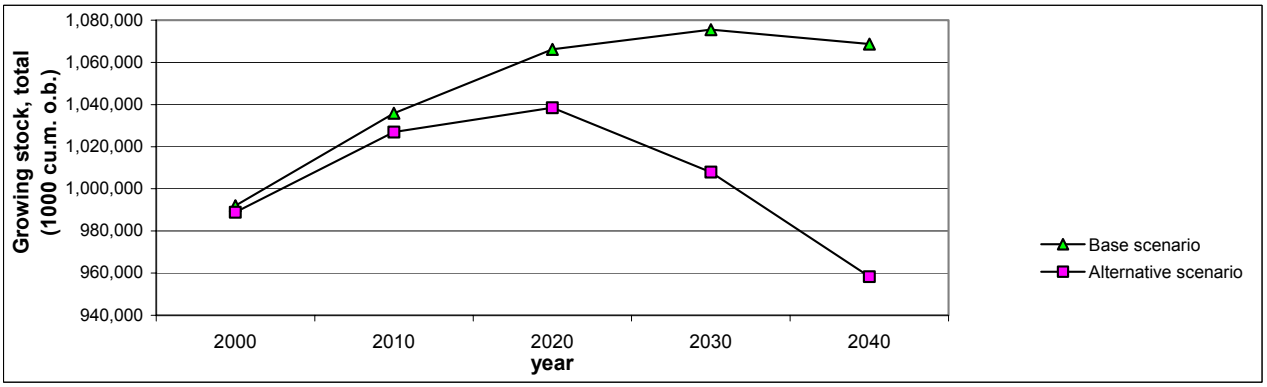

NAI, total (1000 cu.m. o.b.)
550,000
500,000
450,000
400,000
350,000
300,000
250,000
2000
2010
2020
2030
2040
year
Base scenario
Alternative scenario

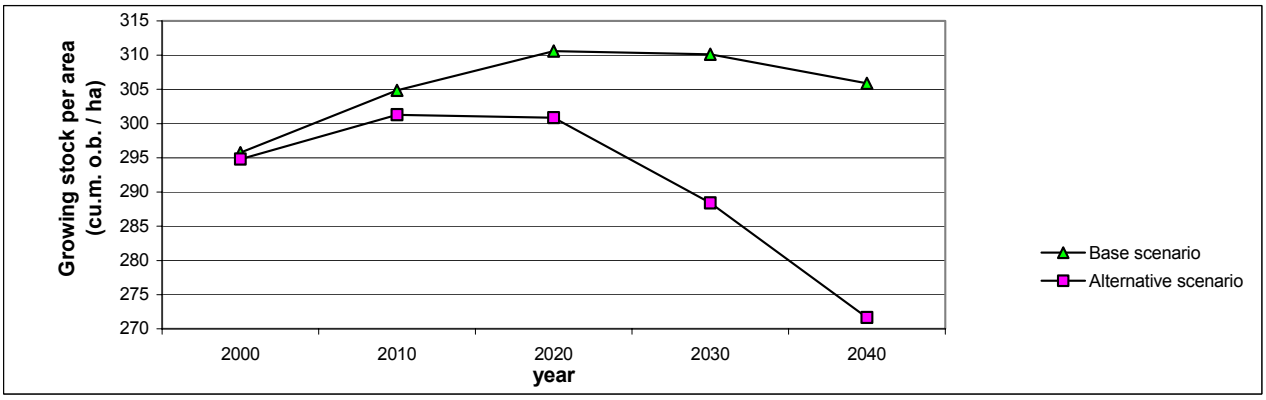

Removals, total (1000 cu.m. u.b.)
550,000
500,000
450,000
400,000
350,000
300,000
250,000
2000
2010
2020
2030
2040
year
Base scenario
Alternative scenario
Alternative scenario

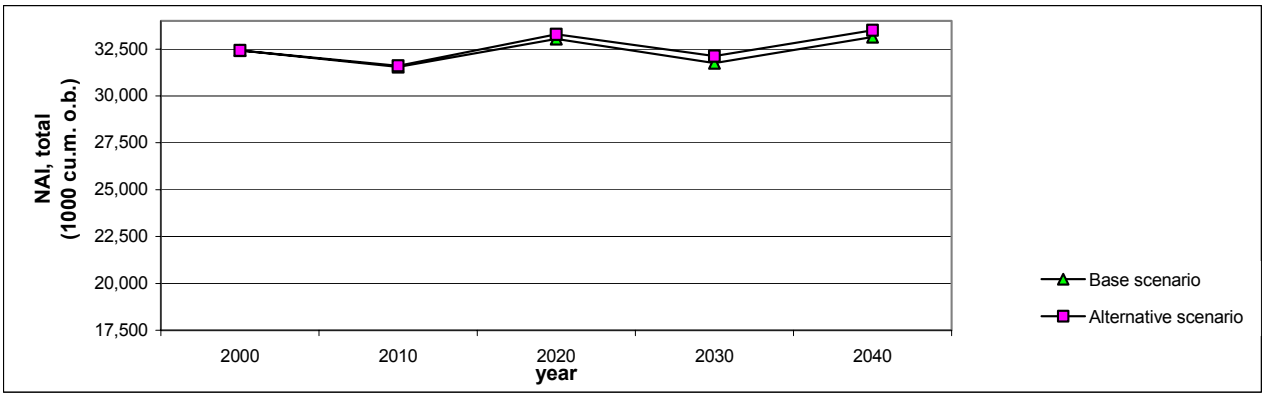

Fellings/NAI
120%
100%
80%
60%
40%
20%
0%
2000
2010
2020
2030
2040
year
Base scenario
Alternative scenario

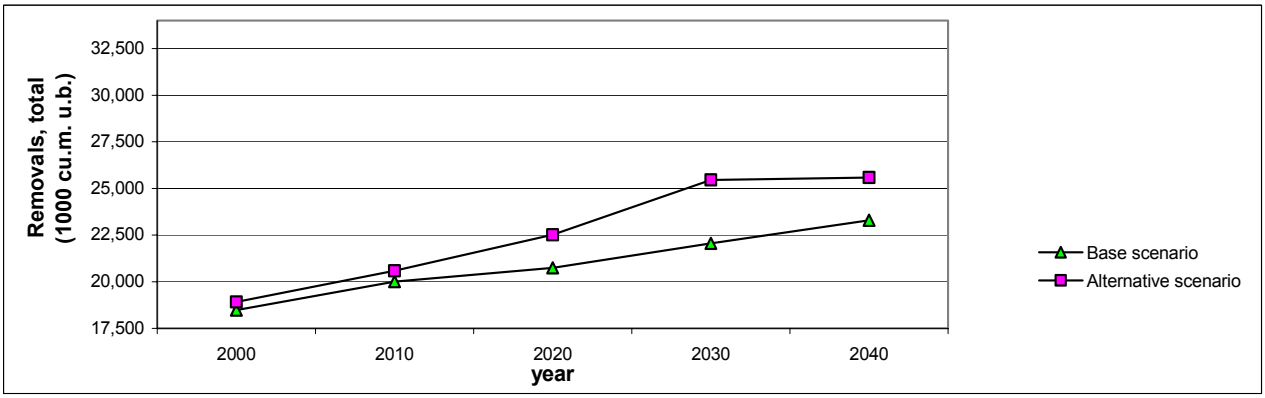
Austria	**Base scenario**					
	Unit	**2000**	**2010**	**2020**	**2030**	**2040**
Forest resource parameters						
Area of forest available for wood supply	1000 ha	3,354	3,398	3,433	3,468	3,494
- coniferous	*1000 ha*	*2,541*	*2,574*	*2,601*	*2,627*	*2,647*
- broadleaved	*1000 ha*	*813*	*824*	*832*	*841*	*847*
Growing stock, total	1000 cu.m. o.b.	991,911	1,035,817	1,066,221	1,075,512	1,068,713
- coniferous	*1000 cu.m. o.b.*	*821,284*	*855,295*	*871,771*	*869,620*	*857,793*
- broadleaved	*1000 cu.m. o.b.*	*170,628*	*180,522*	*194,450*	*205,893*	*210,920*
Net annual increment, total	1000 cu.m. o.b. / y.	32,422	31,550	33,039	31,745	33,143
- coniferous	*1000 cu.m. o.b. / y.*	*26,504*	*25,987*	*27,269*	*26,075*	*27,371*
- broadleaved	*1000 cu.m. o.b. / y.*	*5,918*	*5,563*	*5,770*	*5,670*	*5,772*
Fellings, total	1000 cu.m. o.b. / y.	26,645	28,854	29,912	31,795	33,584
- coniferous	*1000 cu.m. o.b. / y.*	*22,019*	*24,030*	*25,729*	*27,031*	*28,275*
- broadleaved	*1000 cu.m. o.b. / y.*	*4,626*	*4,824*	*4,183*	*4,764*	*5,309*
Removals, total	1000 cu.m. u.b. / y.	18,476	20,007	20,741	22,047	23,287
- coniferous	*1000 cu.m. u.b. / y.*	*15,268*	*16,663*	*17,840*	*18,744*	*19,606*
- broadleaved	*1000 cu.m. u.b. / y.*	*3,208*	*3,345*	*2,901*	*3,303*	*3,681*
Removals, total from final fellings	1000 cu.m. u.b. / y.	15,705	16,986	17,515	18,653	19,736
- coniferous	*1000 cu.m. u.b. / y.*	*12,978*	*14,163*	*15,164*	*15,932*	*16,665*
- broadleaved	*1000 cu.m. u.b. / y.*	*2,726*	*2,823*	*2,351*	*2,721*	*3,071*
Removals, total from thinnings	1000 cu.m. u.b. / y.	2,771	3,021	3,226	3,394	3,551
- coniferous	*1000 cu.m. u.b. / y.*	*2,290*	*2,499*	*2,676*	*2,812*	*2,941*
- broadleaved	*1000 cu.m. u.b. / y.*	*481*	*522*	*550*	*582*	*610*
Ratios						
- Growing stock per Area	cu.m. o.b. / ha	296	305	311	310	306
- Net annual increment per growing stock	cu.m. o.b. / cu.m. o.b.	3.3%	3.0%	3.1%	3.0%	3.1%
- Net annual increment per ha	cu.m. o.b. / ha / y.	9.7	9.3	9.6	9.2	9.5
- Fellings per Net annual increment	cu.m. o.b. / cu.m. o.b.	82%	91%	91%	100%	101%
- Removals per Area	cu.m. u.b. / ha / y.	5.5	5.9	6.0	6.4	6.7

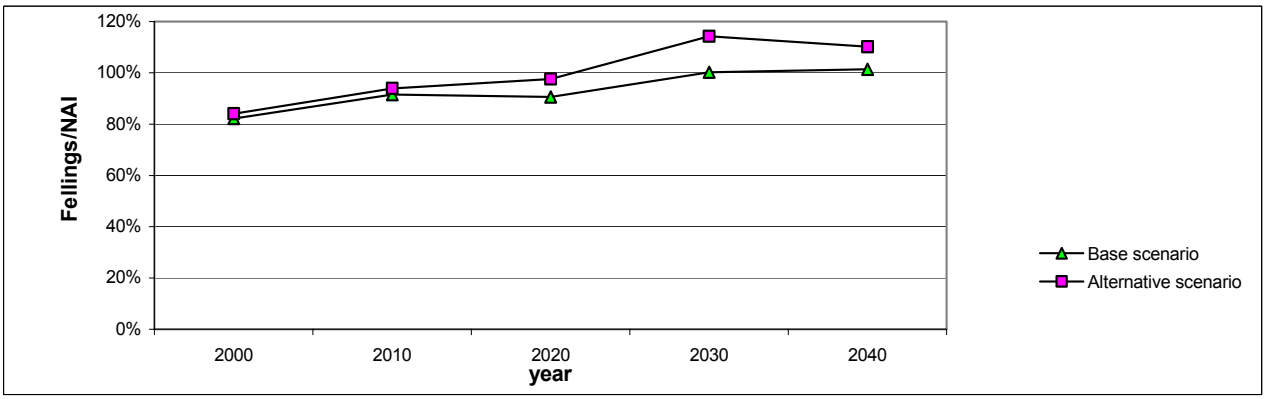




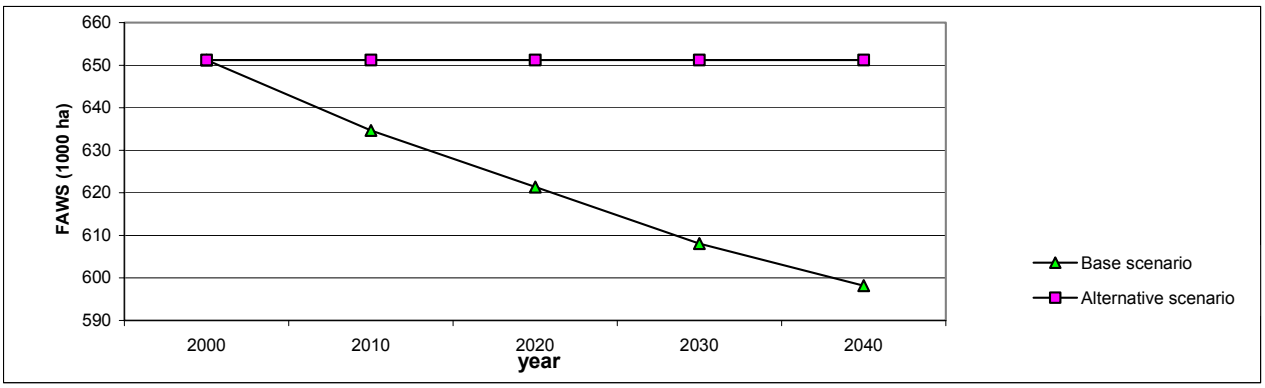

Growing stock per area
(cu.m. o.b. / ha)
315
310
305
300
295
290
285
280
275
270
2000
2010
2020
2030
2040
year
Base scenario
Alternative scenario

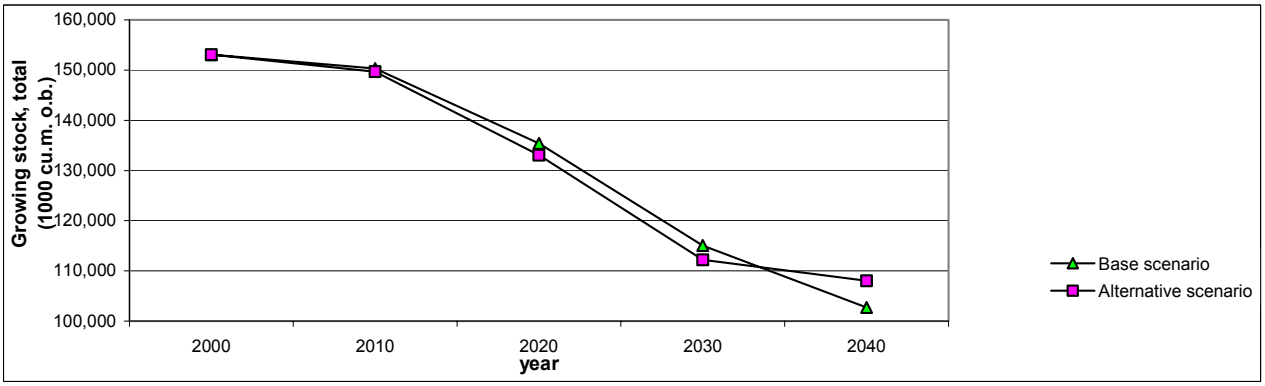

NAI, total
(1000 cu.m. o.b.)
32,500
30,000
27,500
25,000
22,500
20,000
17,500
2000
2010
2020
2030
2040
year
Base scenario
Alternative scenario

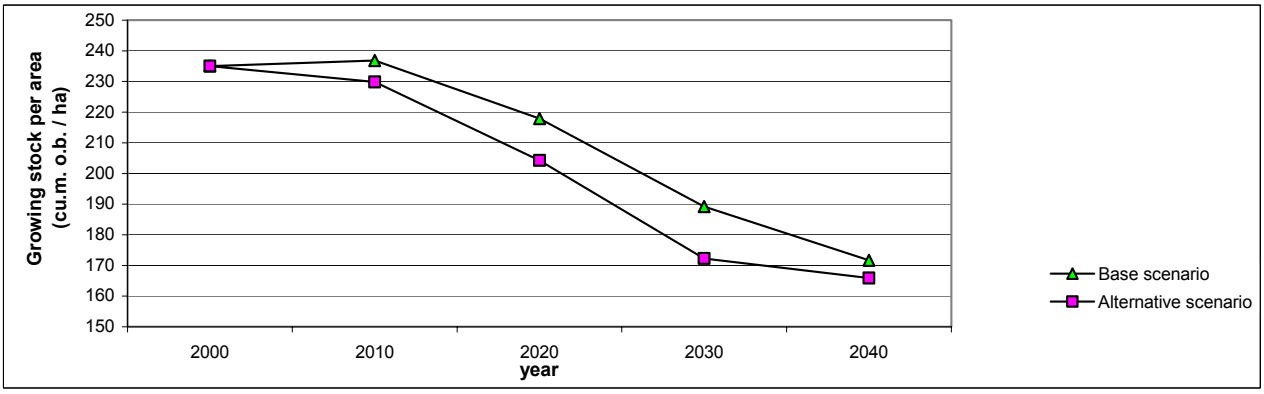

Removals, total
(1000 cu.m. u.b.)
32,500
30,000
27,500
25,000
22,500
20,000
17,500
2000
2010
2020
2030
2040
year
Base scenario
Alternative scenario

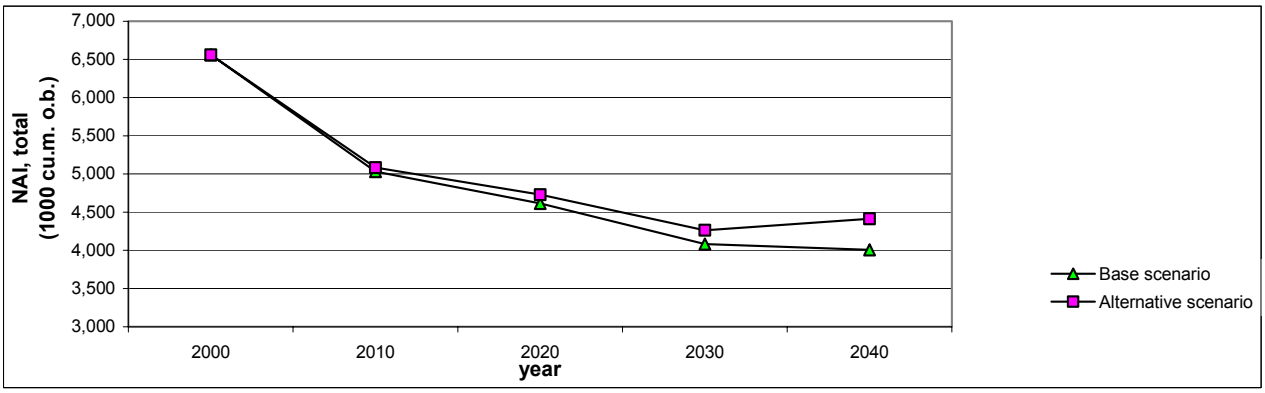

Fellings/NAI
120%
100%
80%
60%
40%
20%
0%
2000
2010
2020
2030
2040
year
Base scenario
Alternative scenario

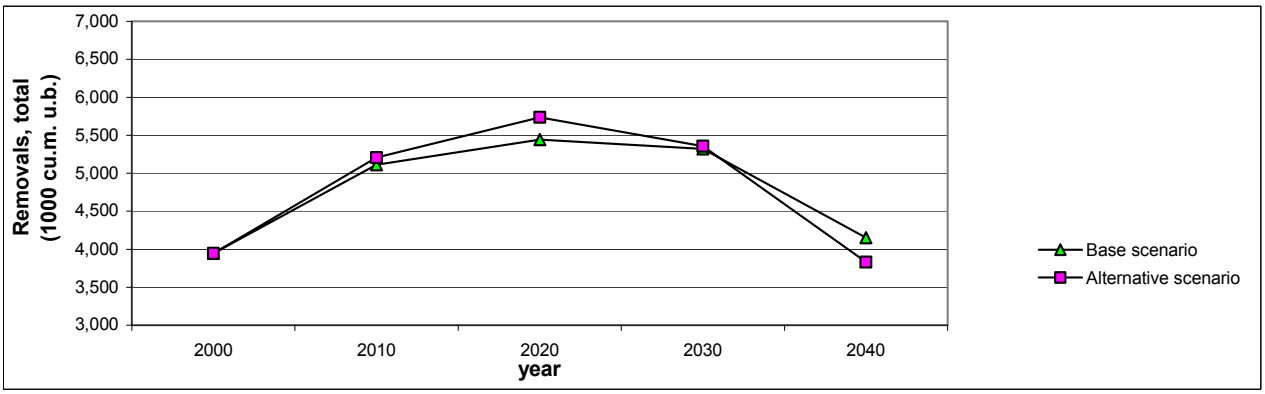
Belgium-Luxembourg	**Base scenario**					
	Unit	**2000**	**2010**	**2020**	**2030**	**2040**
Forest resource parameters						
Area of forest available for wood supply	1000 ha	651	635	621	608	598
- coniferous	*1000 ha*	*311*	*303*	*297*	*291*	*286*
- broadleaved	*1000 ha*	*340*	*331*	*325*	*318*	*312*
Growing stock, total	1000 cu.m. o.b.	153,058	150,305	135,402	115,055	102,732
- coniferous	*1000 cu.m. o.b.*	*88,881*	*85,457*	*74,331*	*57,490*	*46,500*
- broadleaved	*1000 cu.m. o.b.*	*64,177*	*64,848*	*61,071*	*57,565*	*56,232*
Net annual increment, total	1000 cu.m. o.b. / y.	6,558	5,032	4,613	4,084	4,007
- coniferous	*1000 cu.m. o.b. / y.*	*4,075*	*3,461*	*3,114*	*2,690*	*2,675*
- broadleaved	*1000 cu.m. o.b. / y.*	*2,483*	*1,571*	*1,499*	*1,394*	*1,332*
Fellings, total	1000 cu.m. o.b. / y.	4,570	5,918	6,302	6,159	4,808
- coniferous	*1000 cu.m. o.b. / y.*	*3,272*	*4,165*	*4,381*	*4,483*	*3,340*
- broadleaved	*1000 cu.m. o.b. / y.*	*1,298*	*1,753*	*1,921*	*1,677*	*1,469*
Removals, total	1000 cu.m. u.b. / y.	3,947	5,111	5,442	5,319	4,152
- coniferous	*1000 cu.m. u.b. / y.*	*2,826*	*3,597*	*3,784*	*3,872*	*2,884*
- broadleaved	*1000 cu.m. u.b. / y.*	*1,121*	*1,514*	*1,659*	*1,448*	*1,268*
Removals, total from final fellings	1000 cu.m. u.b. / y.	2,763	3,597	4,092	4,080	2,960
- coniferous	*1000 cu.m. u.b. / y.*	*1,978*	*2,538*	*2,935*	*3,120*	*2,153*
- broadleaved	*1000 cu.m. u.b. / y.*	*785*	*1,059*	*1,157*	*960*	*807*
Removals, total from thinnings	1000 cu.m. u.b. / y.	1,184	1,514	1,351	1,239	1,192
- coniferous	*1000 cu.m. u.b. / y.*	*848*	*1,059*	*848*	*751*	*731*
- broadleaved	*1000 cu.m. u.b. / y.*	*336*	*455*	*502*	*488*	*461*
Ratios						
- Growing stock per Area	cu.m. o.b. / ha	235	237	218	189	172
- Net annual increment per growing stock	cu.m. o.b. / cu.m. o.b.	4.3%	3.3%	3.4%	3.5%	3.9%
- Net annual increment per ha	cu.m. o.b. / ha / y.	10.1	7.9	7.4	6.7	6.7
- Fellings per Net annual increment	cu.m. o.b. / cu.m. o.b.	70%	118%	137%	151%	120%
- Removals per Area	cu.m. u.b. / ha / y.	6.1	8.1	8.8	8.7	6.9

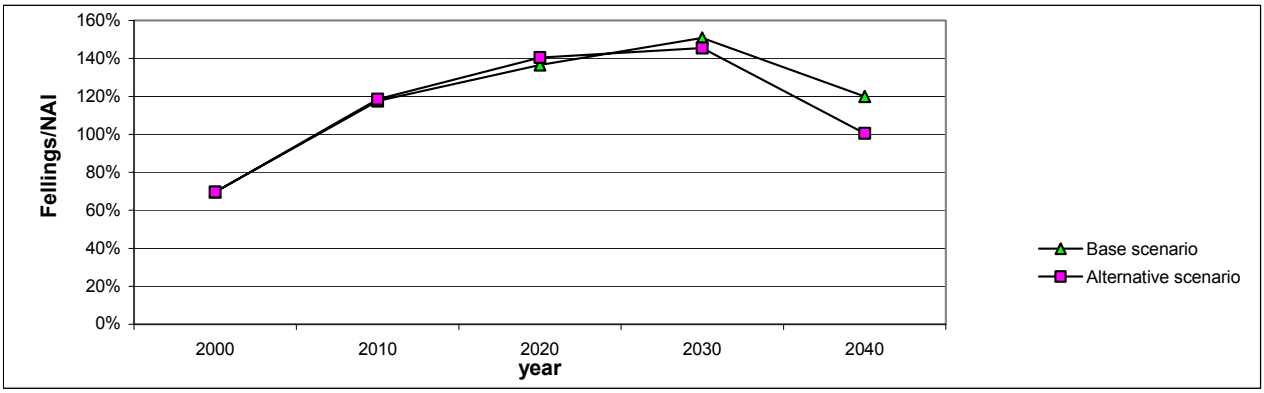




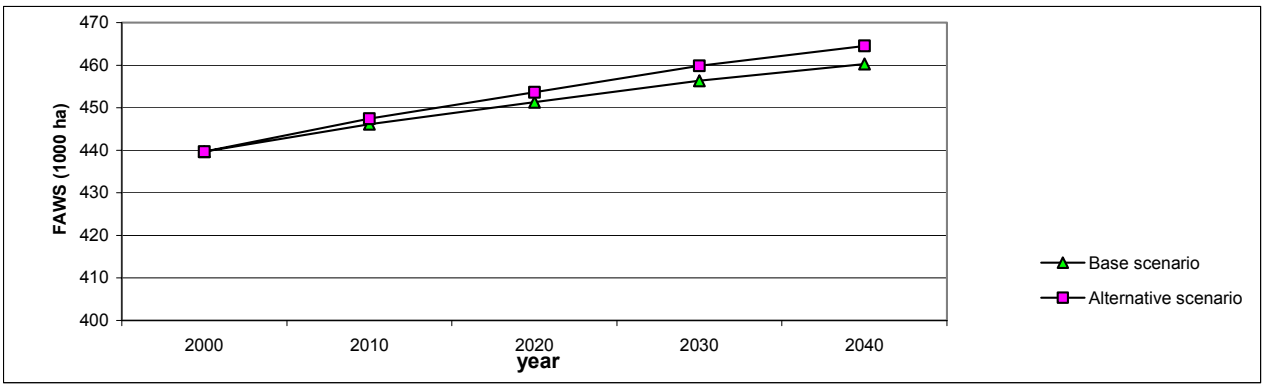

Growing stock per area (cu.m. o.b. / ha)
250
240
230
220
210
200
190
180
170
160
150
2000
2010
2020
2030
2040
year
Base scenario
Alternative scenario

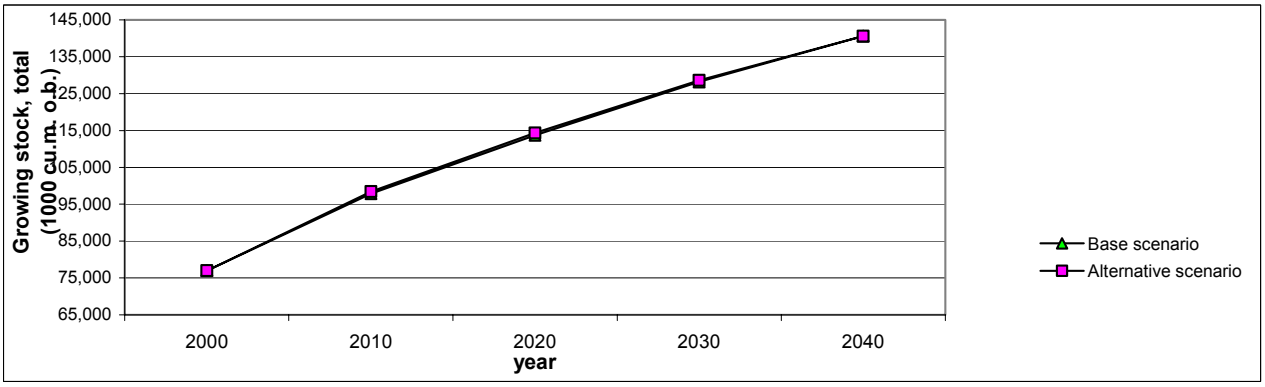

NAI, total (1000 cu.m. o.b.)
7,000
6,500
6,000
5,500
5,000
4,500
4,000
3,500
3,000
2000
2010
2020
2030
2040
year
Base scenario
Alternative scenario

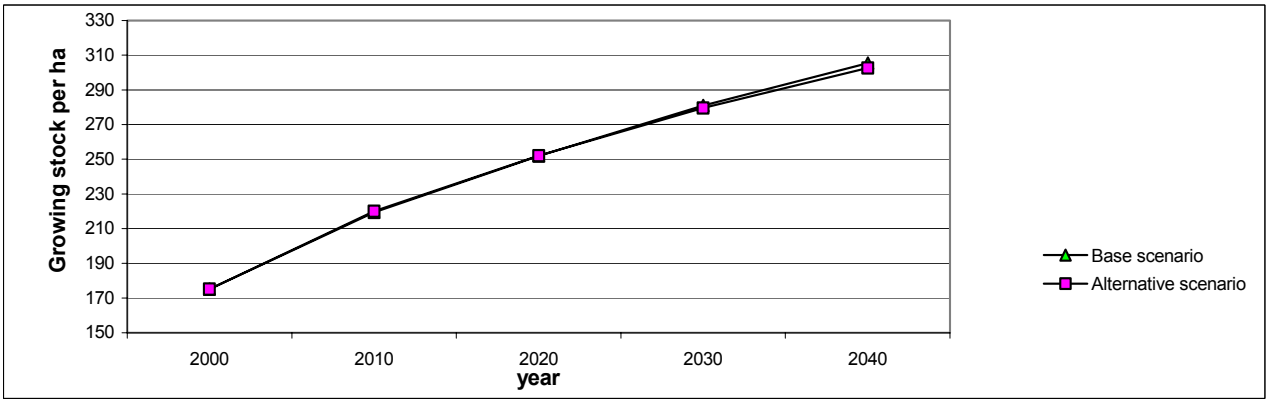

Removals, total (1000 cu.m. u.b.)
7,000
6,500
6,000
5,500
5,000
4,500
4,000
3,500
3,000
2000
2010
2020
2030
2040
year
Base scenario
Alternative scenario

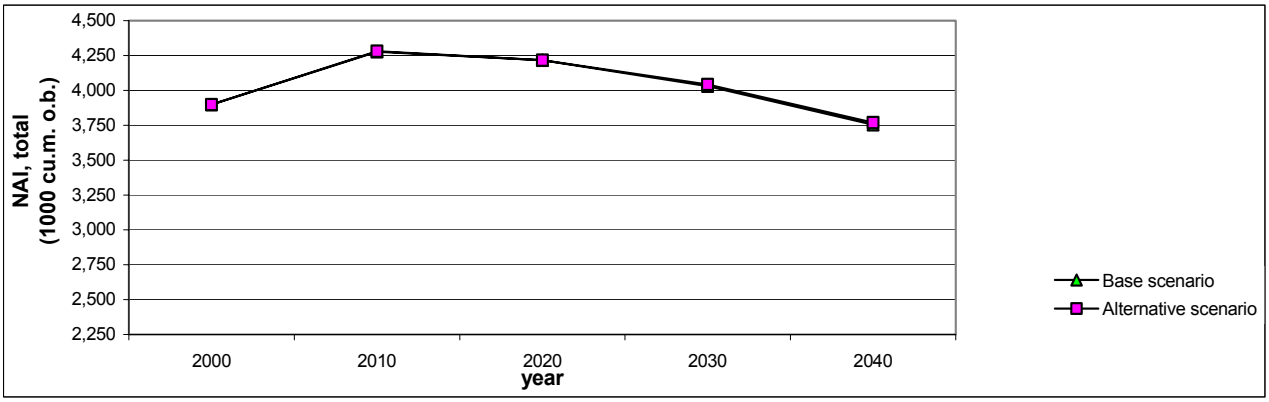

Fellings/NAI
160%
140%
120%
100%
80%
60%
40%
20%
0%
2000
2010
2020
2030
2040
year
Base scenario
Alternative scenario

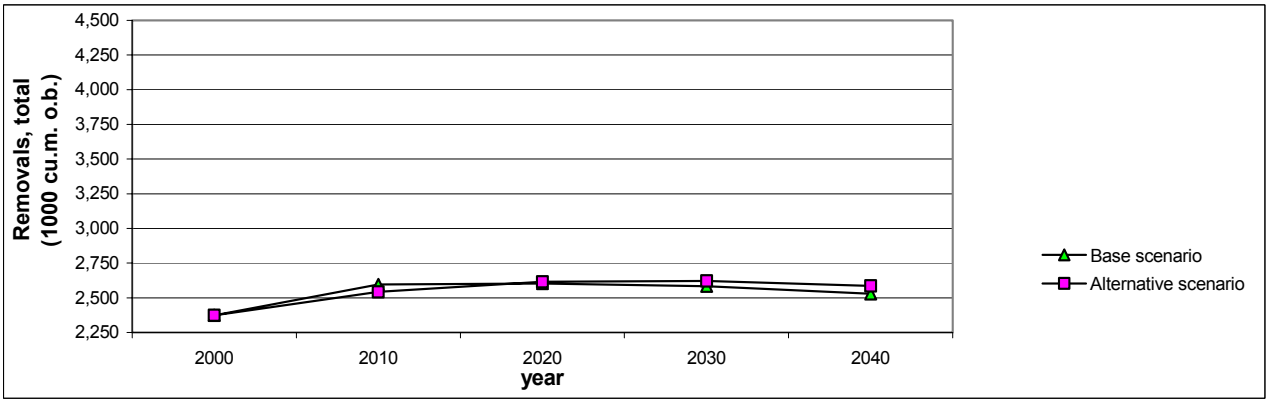
Denmark	**Base scenario**					
	Unit	**2000**	**2010**	**2020**	**2030**	**2040**
Forest resource parameters						
Area of forest available for wood supply	1000 ha	440	446	451	456	460
- coniferous	*1000 ha*	*298*	*302*	*305*	*309*	*312*
- broadleaved	*1000 ha*	*142*	*144*	*146*	*148*	*149*
Growing stock, total	1000 cu.m. o.b.	76,976	97,897	113,730	128,199	140,605
- coniferous	*1000 cu.m. o.b.*	*45,146*	*62,005*	*74,716*	*86,493*	*96,627*
- broadleaved	*1000 cu.m. o.b.*	*31,830*	*35,891*	*39,014*	*41,706*	*43,978*
Net annual increment, total	1000 cu.m. o.b. / y.	3,898	4,277	4,216	4,032	3,755
- coniferous	*1000 cu.m. o.b. / y.*	*2,803*	*3,090*	*3,039*	*2,917*	*2,682*
- broadleaved	*1000 cu.m. o.b. / y.*	*1,094*	*1,186*	*1,177*	*1,115*	*1,073*
Fellings, total	1000 cu.m. o.b. / y.	2,418	2,644	2,652	2,632	2,575
- coniferous	*1000 cu.m. o.b. / y.*	*1,618*	*1,772*	*1,784*	*1,771*	*1,723*
- broadleaved	*1000 cu.m. o.b. / y.*	*800*	*872*	*868*	*860*	*852*
Removals, total	1000 cu.m. u.b. / y.	2,374	2,596	2,603	2,584	2,528
- coniferous	*1000 cu.m. u.b. / y.*	*1,588*	*1,740*	*1,751*	*1,739*	*1,692*
- broadleaved	*1000 cu.m. u.b. / y.*	*785*	*856*	*852*	*844*	*836*
Removals, total from final fellings	1000 cu.m. u.b. / y.	1,702	1,853	1,870	1,875	1,880
- coniferous	*1000 cu.m. u.b. / y.*	*1,191*	*1,297*	*1,309*	*1,312*	*1,316*
- broadleaved	*1000 cu.m. u.b. / y.*	*511*	*556*	*561*	*562*	*564*
Removals, total from thinnings	1000 cu.m. u.b. / y.	672	743	733	709	648
- coniferous	*1000 cu.m. u.b. / y.*	*397*	*443*	*442*	*427*	*376*
- broadleaved	*1000 cu.m. u.b. / y.*	*275*	*300*	*291*	*282*	*272*
Ratios						
- Growing stock per Area	cu.m. o.b. / ha	175	219	252	281	305
- Net annual increment per growing stock	cu.m. o.b. / cu.m. o.b.	5.1%	4.4%	3.7%	3.1%	2.7%
- Net annual increment per ha	cu.m. o.b. / ha / y.	8.9	9.6	9.3	8.8	8.2
- Fellings per Net annual increment	cu.m. o.b. / cu.m. o.b.	62%	62%	63%	65%	69%
- Removals per Area	cu.m. u.b. / ha / y.	5.4	5.8	5.8	5.7	5.5

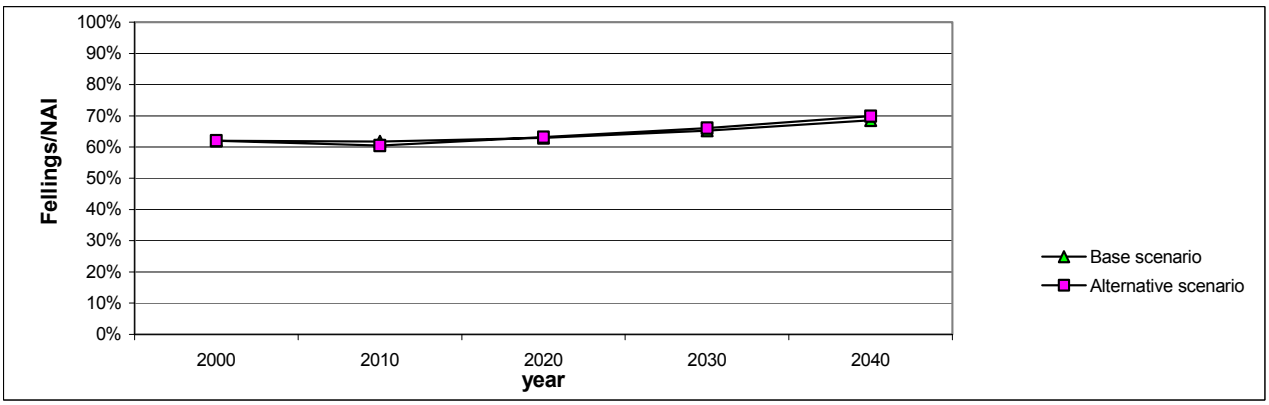




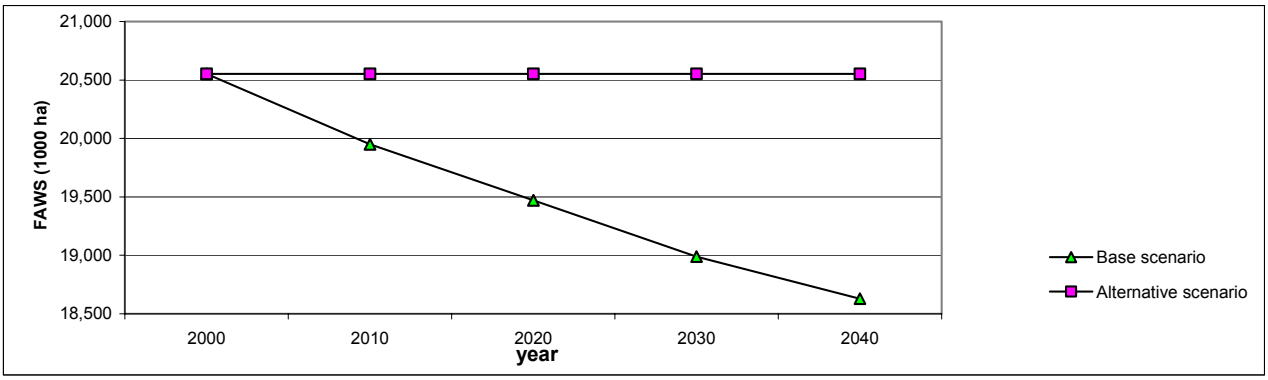

Growing stock per ha
330
310
290
270
250
230
210
190
170
150
2000
2010
2020
2030
2040
year
Base scenario
Alternative scenario

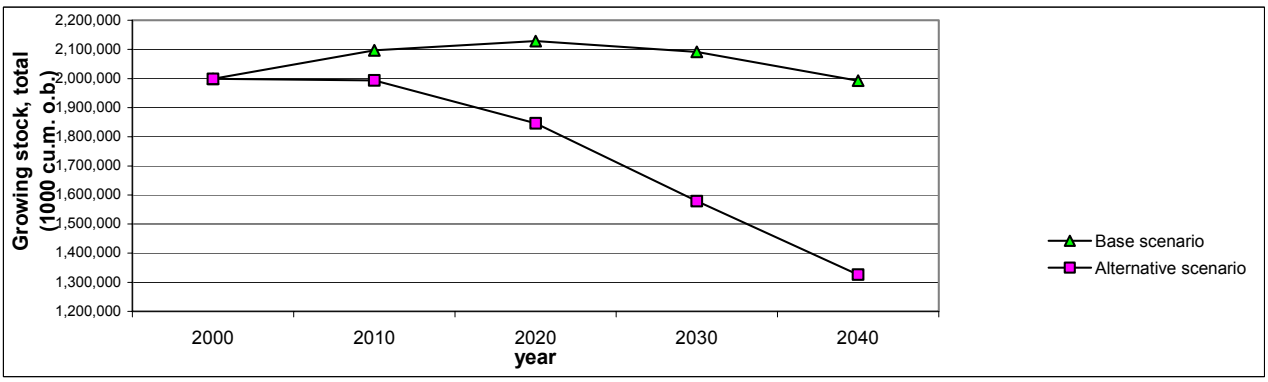

NAI, total
(1000 cu.m. o.b.)
4,500
4,250
4,000
3,750
3,500
3,250
3,000
2,750
2,500
2,250
2000
2010
2020
2030
2040
year
Base scenario
Alternative scenario

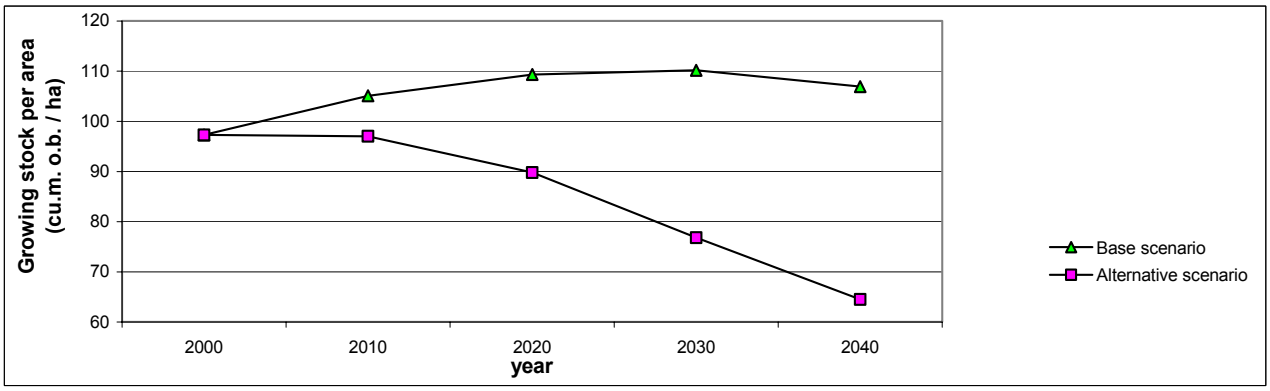

Removals, total
(1000 cu.m. o.b.)
4,500
4,250
4,000
3,750
3,500
3,250
3,000
2,750
2,500
2,250
2000
2010
2020
2030
2040
year
Base scenario
Alternative scenario

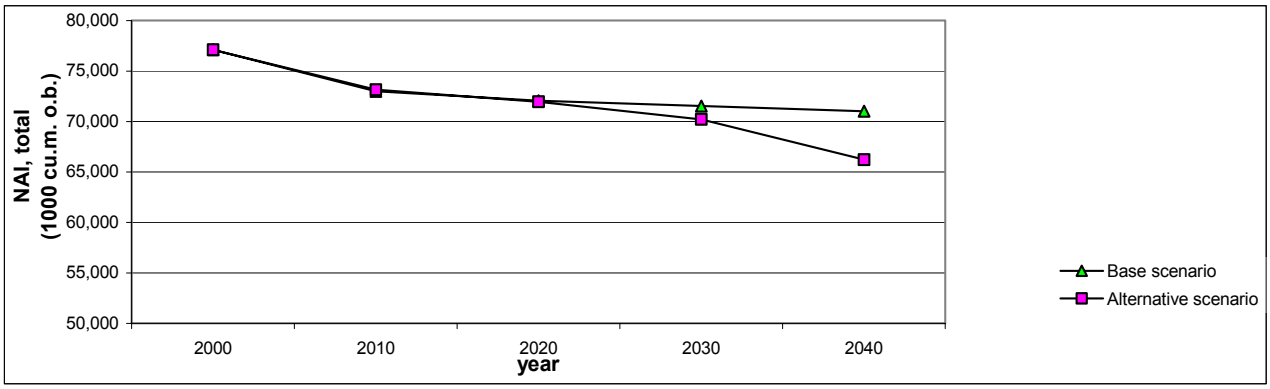

Fellings/NAI
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
2000
2010
2020
2030
2040
year
Base scenario
Alternative scenario

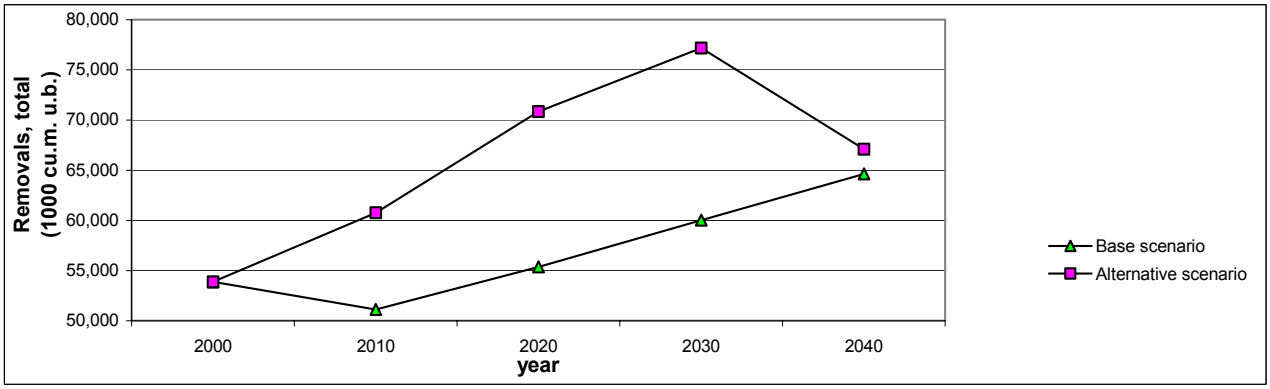
Finland	**Base scenario**					
	Unit	**2000**	**2010**	**2020**	**2030**	**2040**
Forest resource parameters						
Area of forest available for wood supply	1000 ha	20,551	19,951	19,470	18,990	18,630
- coniferous	*1000 ha*	*16,478*	*15,994*	*15,606*	*15,218*	*14,927*
- broadleaved	*1000 ha*	*4,073*	*3,957*	*3,865*	*3,772*	*3,703*
Growing stock, total	1000 cu.m. o.b.	1,998,773	2,096,606	2,128,332	2,091,649	1,992,226
- coniferous	*1000 cu.m. o.b.*	*1,637,923*	*1,719,301*	*1,750,190*	*1,728,788*	*1,659,186*
- broadleaved	*1000 cu.m. o.b.*	*360,850*	*377,305*	*378,141*	*362,862*	*333,040*
Net annual increment, total	1000 cu.m. o.b. / y.	77,107	73,002	72,046	71,524	71,007
- coniferous	*1000 cu.m. o.b. / y.*	*61,793*	*58,776*	*58,366*	*58,134*	*57,919*
- broadleaved	*1000 cu.m. o.b. / y.*	*15,314*	*14,226*	*13,680*	*13,390*	*13,088*
Fellings, total	1000 cu.m. o.b. / y.	68,816	65,321	70,726	76,681	82,585
- coniferous	*1000 cu.m. o.b. / y.*	*55,120*	*52,324*	*56,657*	*61,428*	*66,149*
- broadleaved	*1000 cu.m. o.b. / y.*	*13,695*	*12,997*	*14,068*	*15,254*	*16,436*
Removals, total	1000 cu.m. u.b. / y.	53,861	51,126	55,356	60,018	64,638
- coniferous	*1000 cu.m. u.b. / y.*	*43,142*	*40,954*	*44,345*	*48,079*	*51,774*
- broadleaved	*1000 cu.m. u.b. / y.*	*10,719*	*10,173*	*11,011*	*11,939*	*12,864*
Removals, total from final fellings	1000 cu.m. u.b. / y.	38,232	36,293	39,299	42,607	45,826
- coniferous	*1000 cu.m. u.b. / y.*	*30,199*	*28,667*	*31,042*	*33,655*	*36,198*
- broadleaved	*1000 cu.m. u.b. / y.*	*8,032*	*7,626*	*8,257*	*8,952*	*9,629*
Removals, total from thinnings	1000 cu.m. u.b. / y.	15,630	14,833	16,057	17,410	18,812
- coniferous	*1000 cu.m. u.b. / y.*	*12,943*	*12,286*	*13,304*	*14,424*	*15,576*
- broadleaved	*1000 cu.m. u.b. / y.*	*2,687*	*2,547*	*2,754*	*2,986*	*3,235*
Ratios						
- Growing stock per Area	cu.m. o.b. / ha	97	105	109	110	107
- Net annual increment per growing stock	cu.m. o.b. / cu.m. o.b.	3.9%	3.5%	3.4%	3.4%	3.6%
- Net annual increment per ha	cu.m. o.b. / ha / y.	3.8	3.7	3.7	3.8	3.8
- Fellings per Net annual increment	cu.m. o.b. / cu.m. o.b.	89%	89%	98%	107%	116%
- Removals per Area	cu.m. u.b. / ha / y.	2.6	2.6	2.8	3.2	3.5

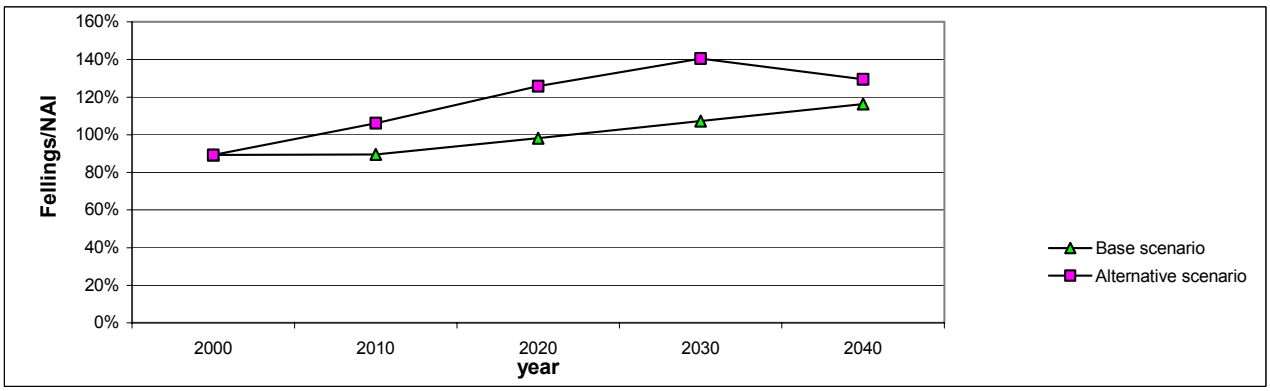




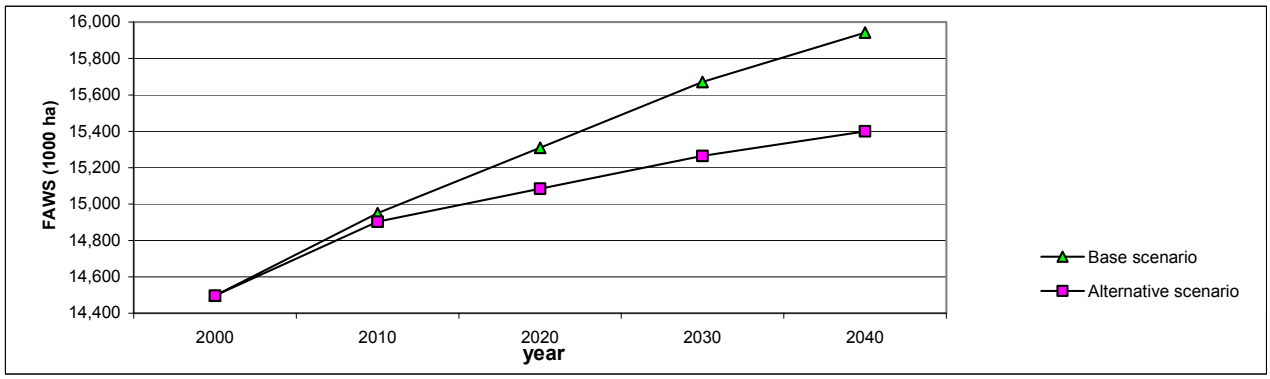

Growing stock per area (cu.m. o.b. / ha)
120
110
100
90
80
70
60
2000
2010
2020
2030
2040
year
Base scenario
Alternative scenario

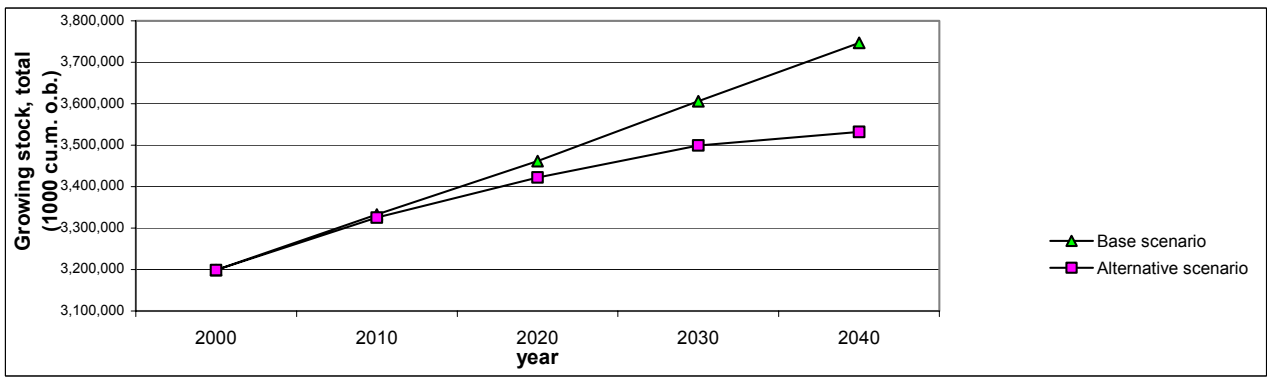

NAI, total (1000 cu.m. o.b.)
80,000
75,000
70,000
65,000
60,000
55,000
50,000
2000
2010
2020
2030
2040
year
Base scenario
Alternative scenario

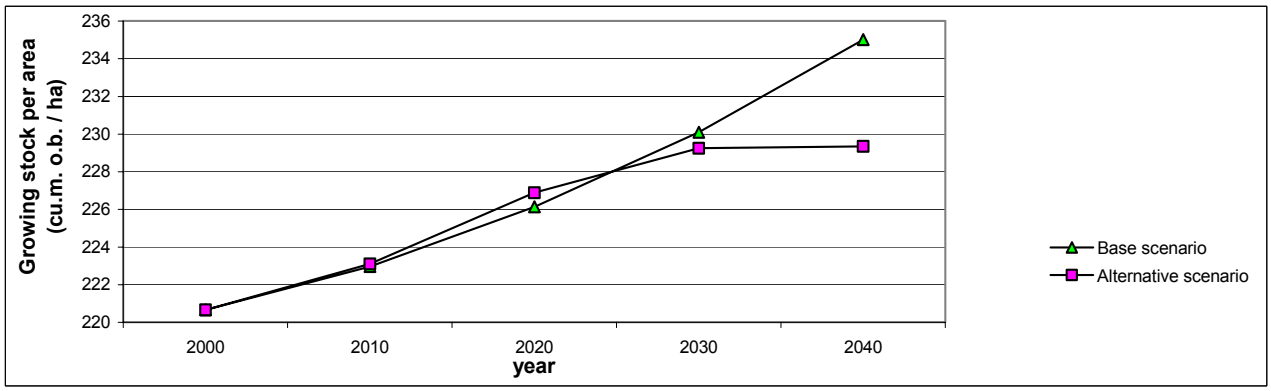

Removals, total (1000 cu.m. u.b.)
80,000
75,000
70,000
65,000
60,000
55,000
50,000
2000
2010
2020
2030
2040
year
Base scenario
Alternative scenario

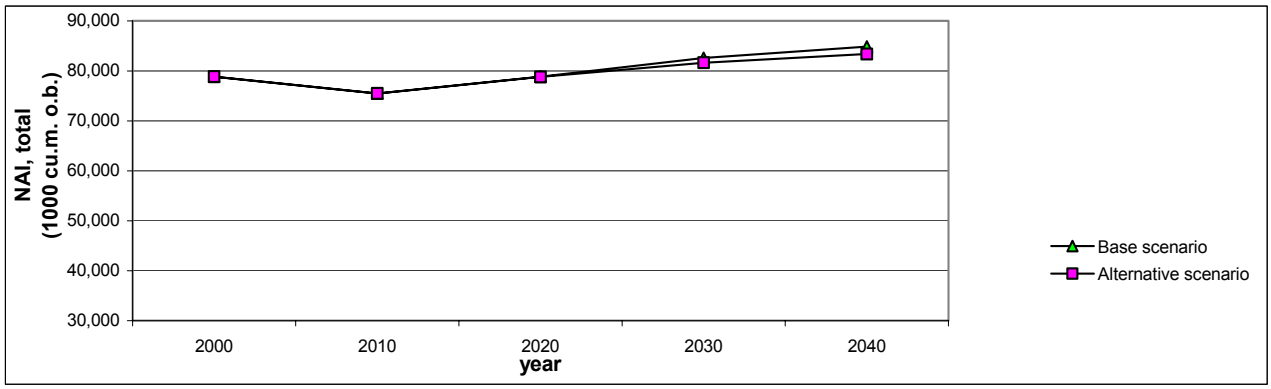

Fellings/NAI
160%
140%
120%
100%
80%
60%
40%
20%
0%
2000
2010
2020
2030
2040
year
Base scenario
Alternative scenario

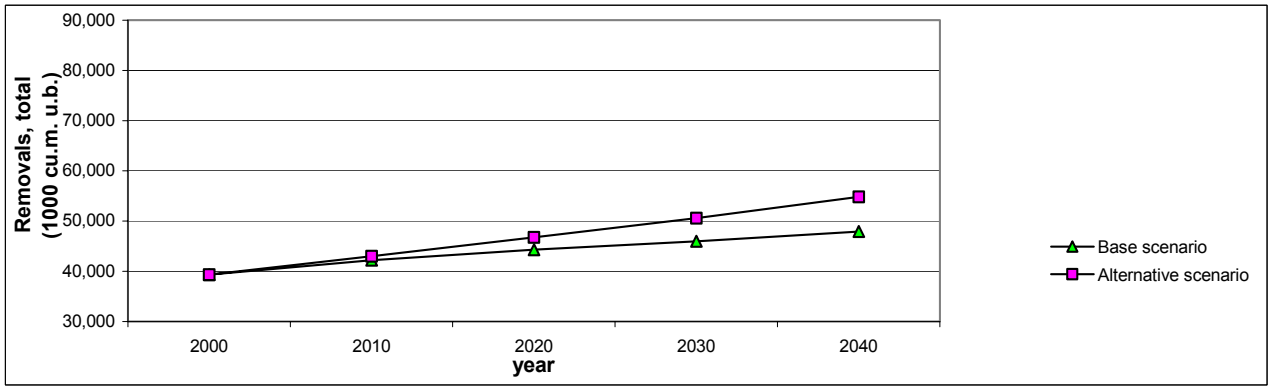
France	**Base scenario**					
	Unit	**2000**	**2010**	**2020**	**2030**	**2040**
Forest resource parameters						
Area of forest available for wood supply	1000 ha	14,497	14,949	15,310	15,672	15,942
- coniferous	*1000 ha*	*5,221*	*5,384*	*5,514*	*5,644*	*5,742*
- broadleaved	*1000 ha*	*9,276*	*9,565*	*9,796*	*10,027*	*10,201*
Growing stock, total	1000 cu.m. o.b.	3,198,928	3,332,959	3,462,032	3,606,002	3,746,610
- coniferous	*1000 cu.m. o.b.*	*1,229,569*	*1,263,028*	*1,307,358*	*1,361,357*	*1,414,730*
- broadleaved	*1000 cu.m. o.b.*	*1,969,358*	*2,069,931*	*2,154,674*	*2,244,645*	*2,331,880*
Net annual increment, total	1000 cu.m. o.b. / y.	78,847	75,448	78,857	82,593	84,827
- coniferous	*1000 cu.m. o.b. / y.*	*35,712*	*36,852*	*38,350*	*40,327*	*41,627*
- broadleaved	*1000 cu.m. o.b. / y.*	*43,135*	*38,596*	*40,507*	*42,266*	*43,200*
Fellings, total	1000 cu.m. o.b. / y.	58,224	62,498	65,579	68,031	70,926
- coniferous	*1000 cu.m. o.b. / y.*	*30,166*	*32,147*	*33,670*	*34,826*	*36,458*
- broadleaved	*1000 cu.m. o.b. / y.*	*28,058*	*30,351*	*31,909*	*33,206*	*34,468*
Removals, total	1000 cu.m. u.b. / y.	39,322	42,208	44,289	45,946	47,901
- coniferous	*1000 cu.m. u.b. / y.*	*20,373*	*21,711*	*22,739*	*23,520*	*24,622*
- broadleaved	*1000 cu.m. u.b. / y.*	*18,949*	*20,498*	*21,550*	*22,426*	*23,278*
Removals, total from final fellings	1000 cu.m. u.b. / y.	27,487	29,758	31,288	32,562	33,814
- coniferous	*1000 cu.m. u.b. / y.*	*14,243*	*15,419*	*16,212*	*16,873*	*17,521*
- broadleaved	*1000 cu.m. u.b. / y.*	*13,244*	*14,338*	*15,076*	*15,690*	*16,293*
Removals, total from thinnings	1000 cu.m. u.b. / y.	11,835	12,451	13,001	13,383	14,087
- coniferous	*1000 cu.m. u.b. / y.*	*6,130*	*6,291*	*6,527*	*6,647*	*7,101*
- broadleaved	*1000 cu.m. u.b. / y.*	*5,705*	*6,159*	*6,475*	*6,736*	*6,985*
Ratios						
- Growing stock per Area	cu.m. o.b. / ha	221	223	226	230	235
- Net annual increment per growing stock	cu.m. o.b. / cu.m. o.b.	2.5%	2.3%	2.3%	2.3%	2.3%
- Net annual increment per ha	cu.m. o.b. / ha / y.	5.4	5.0	5.2	5.3	5.3
- Fellings per Net annual increment	cu.m. o.b. / cu.m. o.b.	74%	83%	83%	82%	84%
- Removals per Area	cu.m. u.b. / ha / y.	2.7	2.8	2.9	2.9	3.0

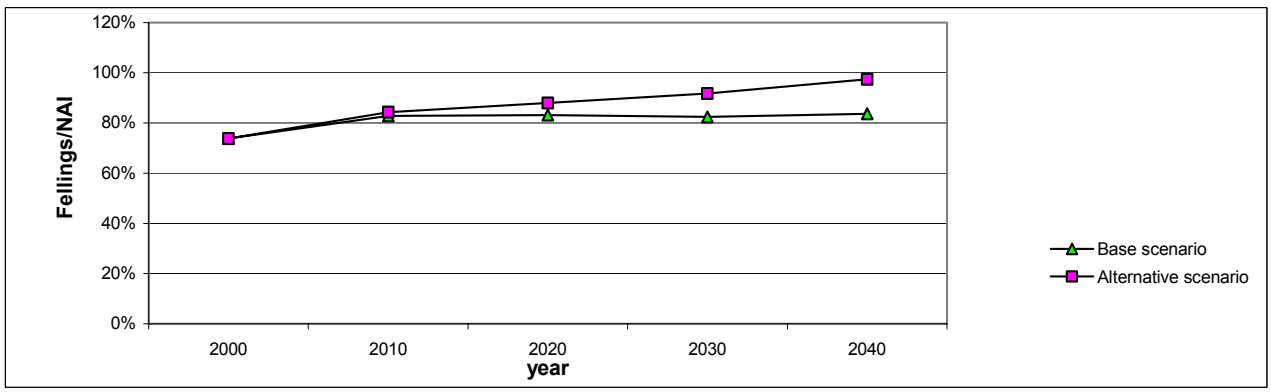




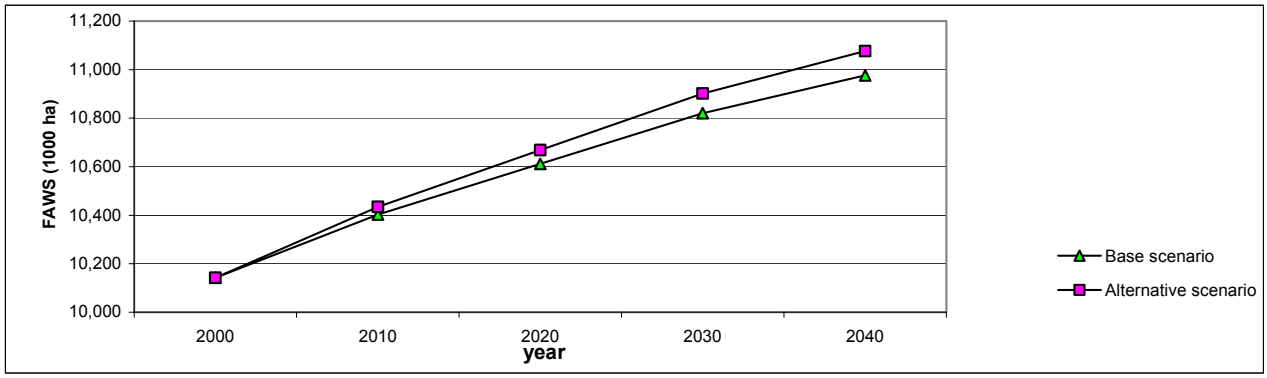

Growing stock per area (cu.m. o.b. / ha)
236
234
232
230
228
226
224
222
220
2000
2010
2020
2030
2040
year
Base scenario
Alternative scenario

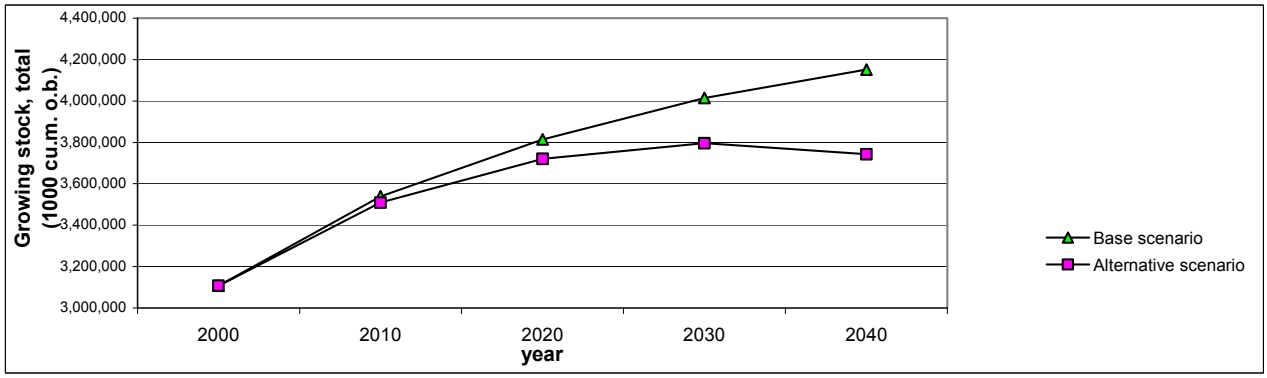

NAI, total (1000 cu.m. o.b.)
90,000
80,000
70,000
60,000
50,000
40,000
30,000
2000
2010
2020
2030
2040
year
Base scenario
Alternative scenario

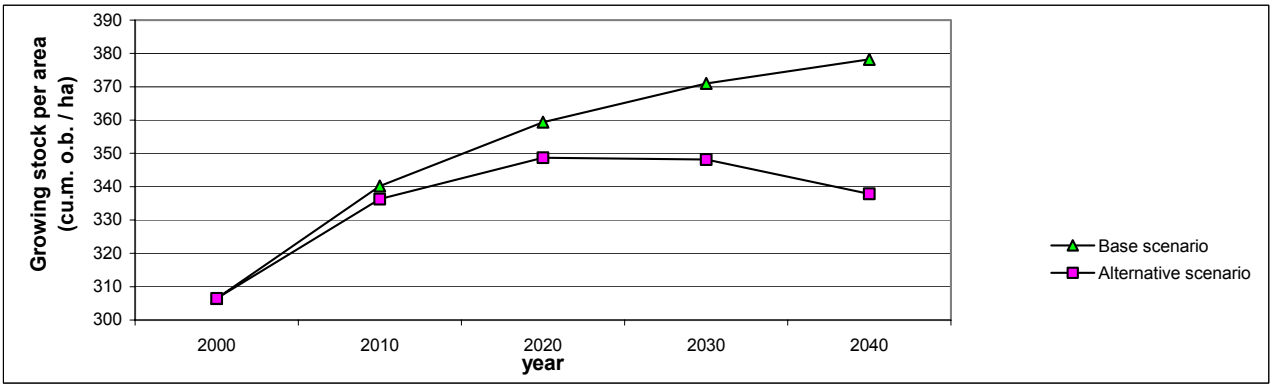

Removals, total (1000 cu.m. u.b.)
90,000
80,000
70,000
60,000
50,000
40,000
30,000
2000
2010
2020
2030
2040
year
Base scenario
Alternative scenario

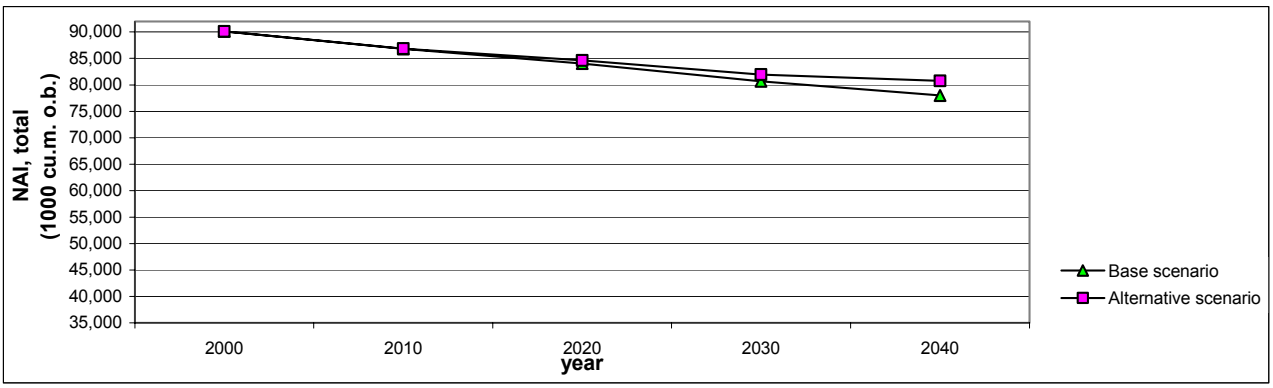

Fellings/NAI
120%
100%
80%
60%
40%
20%
0%
2000
2010
2020
2030
2040
year
Base scenario
Alternative scenario

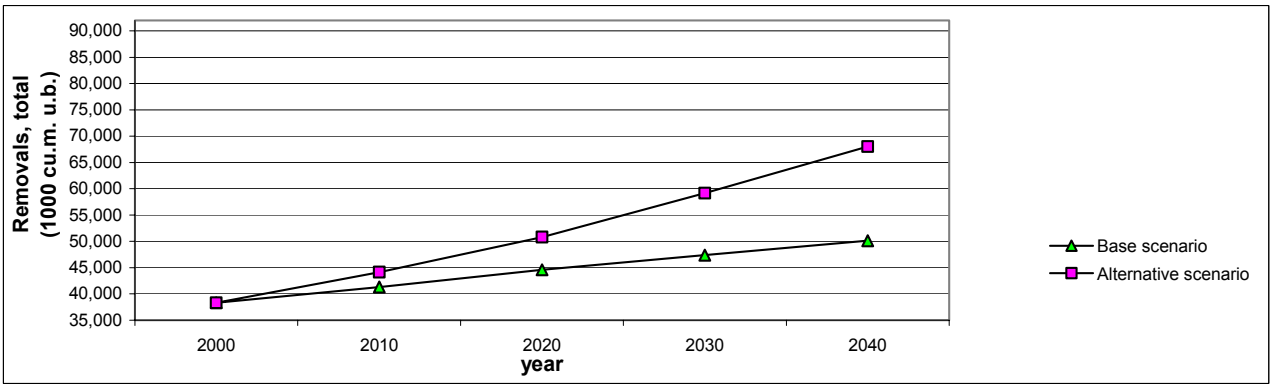
Germany	**Base scenario**					
	Unit	**2000**	**2010**	**2020**	**2030**	**2040**
Forest resource parameters						
Area of forest available for wood supply	1000 ha	10,143	10,403	10,612	10,820	10,976
- coniferous	*1000 ha*	*6,664*	*6,835*	*6,972*	*7,109*	*7,212*
- broadleaved	*1000 ha*	*3,479*	*3,568*	*3,639*	*3,711*	*3,764*
Growing stock, total	1000 cu.m. o.b.	3,107,870	3,539,144	3,813,819	4,014,021	4,151,575
- coniferous	*1000 cu.m. o.b.*	*2,165,865*	*2,480,549*	*2,683,619*	*2,831,574*	*2,933,039*
- broadleaved	*1000 cu.m. o.b.*	*942,005*	*1,058,596*	*1,130,200*	*1,182,446*	*1,218,536*
Net annual increment, total	1000 cu.m. o.b. / y.	90,102	86,788	84,054	80,671	78,006
- coniferous	*1000 cu.m. o.b. / y.*	*67,108*	*65,380*	*63,692*	*61,245*	*59,353*
- broadleaved	*1000 cu.m. o.b. / y.*	*22,994*	*21,407*	*20,362*	*19,426*	*18,653*
Fellings, total	1000 cu.m. o.b. / y.	50,326	54,243	58,524	62,221	65,808
- coniferous	*1000 cu.m. o.b. / y.*	*38,512*	*41,510*	*44,786*	*47,615*	*50,360*
- broadleaved	*1000 cu.m. o.b. / y.*	*11,814*	*12,733*	*13,738*	*14,606*	*15,448*
Removals, total	1000 cu.m. u.b. / y.	38,343	41,328	44,589	47,406	50,139
- coniferous	*1000 cu.m. u.b. / y.*	*29,342*	*31,626*	*34,122*	*36,278*	*38,369*
- broadleaved	*1000 cu.m. u.b. / y.*	*9,001*	*9,702*	*10,467*	*11,128*	*11,770*
Removals, total from final fellings	1000 cu.m. u.b. / y.	27,290	29,414	31,736	33,741	35,686
- coniferous	*1000 cu.m. u.b. / y.*	*20,539*	*22,138*	*23,885*	*25,394*	*26,858*
- broadleaved	*1000 cu.m. u.b. / y.*	*6,751*	*7,276*	*7,850*	*8,346*	*8,827*
Removals, total from thinnings	1000 cu.m. u.b. / y.	11,053	11,913	12,853	13,665	14,453
- coniferous	*1000 cu.m. u.b. / y.*	*8,803*	*9,488*	*10,237*	*10,883*	*11,511*
- broadleaved	*1000 cu.m. u.b. / y.*	*2,250*	*2,425*	*2,617*	*2,782*	*2,943*
Ratios						
- Growing stock per Area	cu.m. o.b. / ha	306	340	359	371	378
- Net annual increment per growing stock	cu.m. o.b. / cu.m. o.b.	2.9%	2.5%	2.2%	2.0%	1.9%
- Net annual increment per ha	cu.m. o.b. / ha / y.	8.9	8.3	7.9	7.5	7.1
- Fellings per Net annual increment	cu.m. o.b. / cu.m. o.b.	56%	63%	70%	77%	84%
- Removals per Area	cu.m. u.b. / ha / y.	3.8	4.0	4.2	4.4	4.6

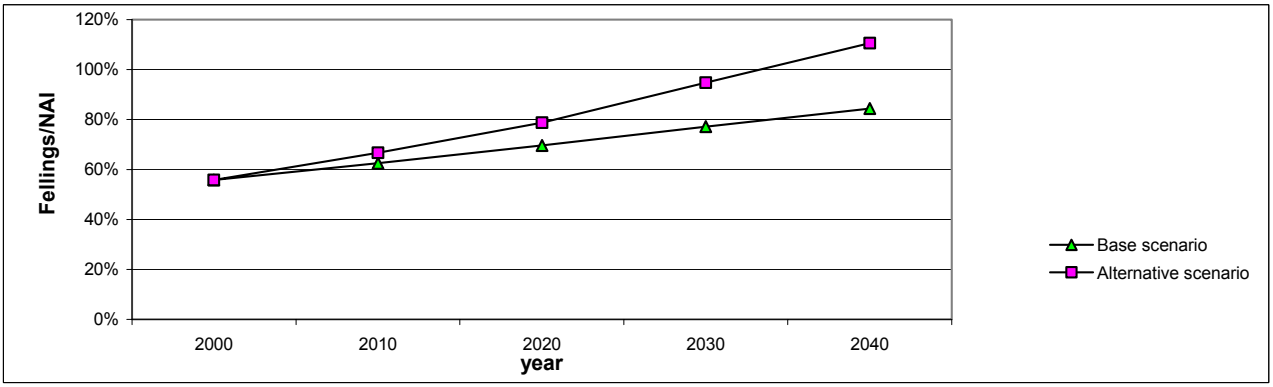





Growing stock per area (cu.m. o.b. / ha)
390
380
370
360
350
340
330
320
310
300
2000
2010
2020
2030
2040
year
Base scenario
Alternative scenario

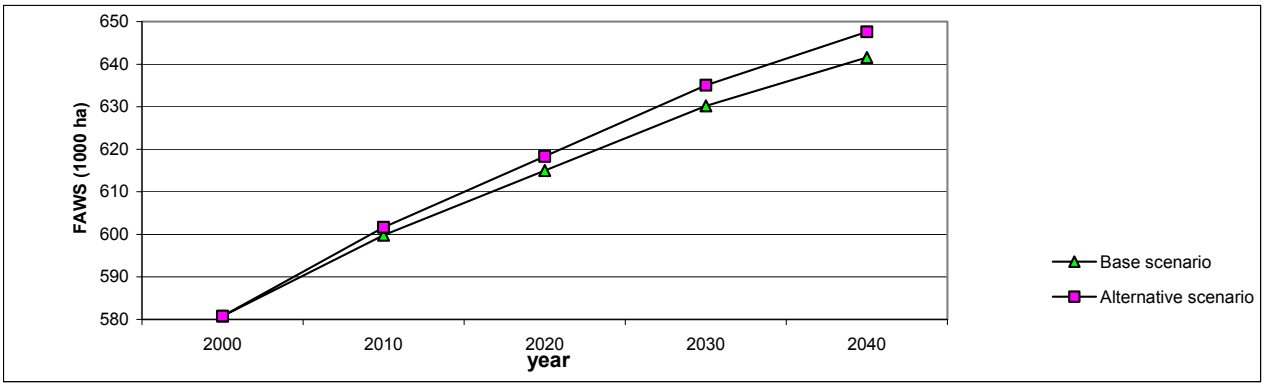

NAI, total (1000 cu.m. o.b.)
90,000
85,000
80,000
75,000
70,000
65,000
60,000
55,000
50,000
45,000
40,000
35,000
2000
2010
2020
2030
2040
year
Base scenario
Alternative scenario

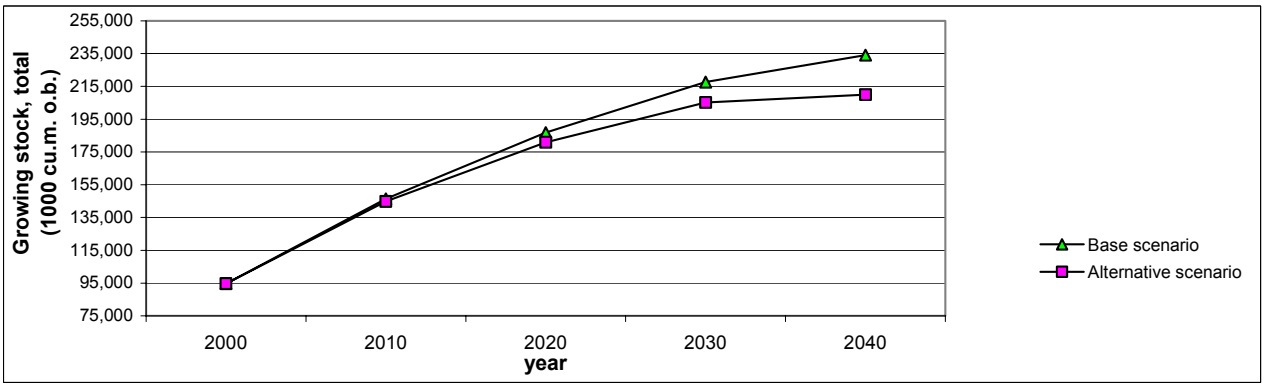

Removals, total (1000 cu.m. u.b.)
90,000
85,000
80,000
75,000
70,000
65,000
60,000
55,000
50,000
45,000
40,000
35,000
2000
2010
2020
2030
2040
year
Base scenario
Alternative scenario

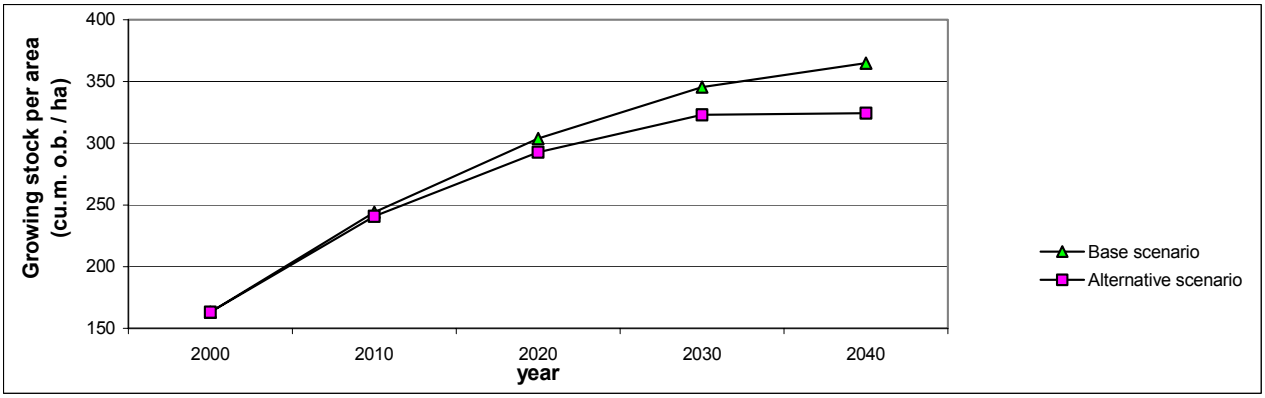

Fellings/NAI
120%
100%
80%
60%
40%
20%
0%
2000
2010
2020
2030
2040
year
Base scenario
Alternative scenario

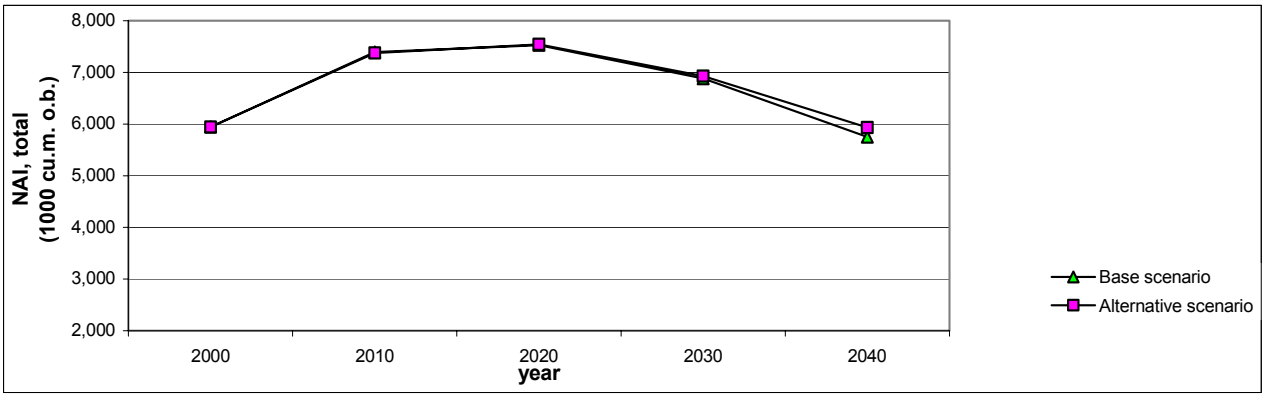
Ireland **Base scenario**

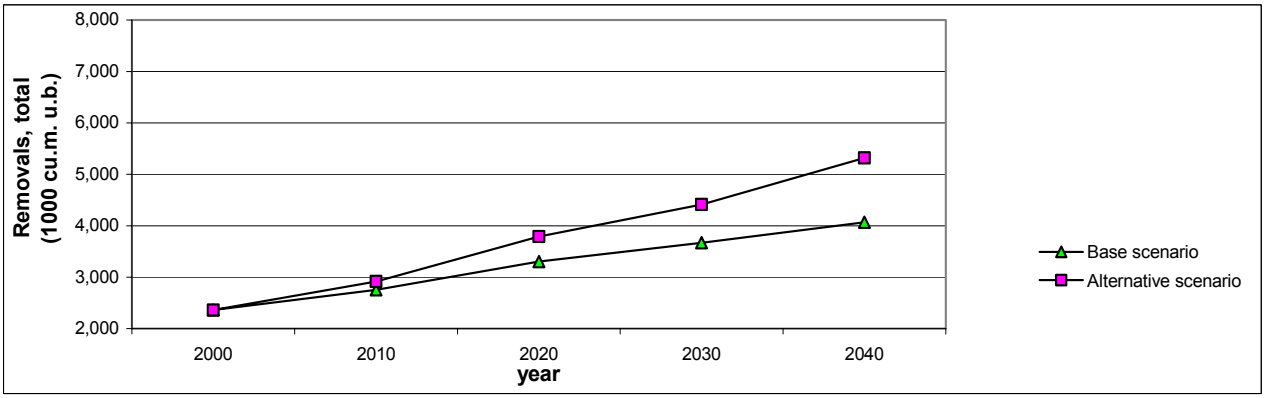
	Unit	2000	2010	2020	2030	2040
Forest resource parameters						
Area of forest available for wood supply	1000 ha	581	600	615	630	642
- coniferous	*1000 ha*	*581*	*600*	*615*	*630*	*642*
- broadleaved	*1000 ha*	*0*	*0*	*0*	*0*	*0*
Growing stock, total	1000 cu.m. o.b.	94,670	146,351	186,806	217,671	234,120
- coniferous	*1000 cu.m. o.b.*	*94,670*	*146,351*	*186,806*	*217,671*	*234,120*
- broadleaved	*1000 cu.m. o.b.*	*0*	*0*	*0*	*0*	*0*
Net annual increment, total	1000 cu.m. o.b. / y.	5,942	7,393	7,528	6,882	5,752
- coniferous	*1000 cu.m. o.b. / y.*	*5,942*	*7,393*	*7,528*	*6,882*	*5,752*
- broadleaved	*1000 cu.m. o.b. / y.*	*0*	*0*	*0*	*0*	*0*
Fellings, total	1000 cu.m. o.b. / y.	2,625	3,063	3,669	4,079	4,520
- coniferous	*1000 cu.m. o.b. / y.*	*2,625*	*3,063*	*3,669*	*4,079*	*4,520*
- broadleaved	*1000 cu.m. o.b. / y.*	*0*	*0*	*0*	*0*	*0*
Removals, total	1000 cu.m. u.b. / y.	2,363	2,757	3,302	3,671	4,068
- coniferous	*1000 cu.m. u.b. / y.*	*2,363*	*2,757*	*3,302*	*3,671*	*4,068*
- broadleaved	*1000 cu.m. u.b. / y.*	*0*	*0*	*0*	*0*	*0*
Removals, total from final fellings	1000 cu.m. u.b. / y.	1,796	2,095	2,504	2,963	3,427
- coniferous	*1000 cu.m. u.b. / y.*	*1,796*	*2,095*	*2,504*	*2,963*	*3,427*
- broadleaved	*1000 cu.m. u.b. / y.*	*0*	*0*	*0*	*0*	*0*
Removals, total from thinnings	1000 cu.m. u.b. / y.	567	662	798	708	641
- coniferous	*1000 cu.m. u.b. / y.*	*567*	*662*	*798*	*708*	*641*
- broadleaved	*1000 cu.m. u.b. / y.*	*0*	*0*	*0*	*0*	*0*
Ratios						
- Growing stock per Area	cu.m. o.b. / ha	163	244	304	345	365
- Net annual increment per growing stock	cu.m. o.b. / cu.m. o.b.	6.3%	5.1%	4.0%	3.2%	2.5%
- Net annual increment per ha	cu.m. o.b. / ha / y.	10.2	12.3	12.2	10.9	9.0
- Fellings per Net annual increment	cu.m. o.b. / cu.m. o.b.	44%	41%	49%	59%	79%
- Removals per Area	cu.m. u.b. / ha / y.	4.1	4.6	5.4	5.8	6.3

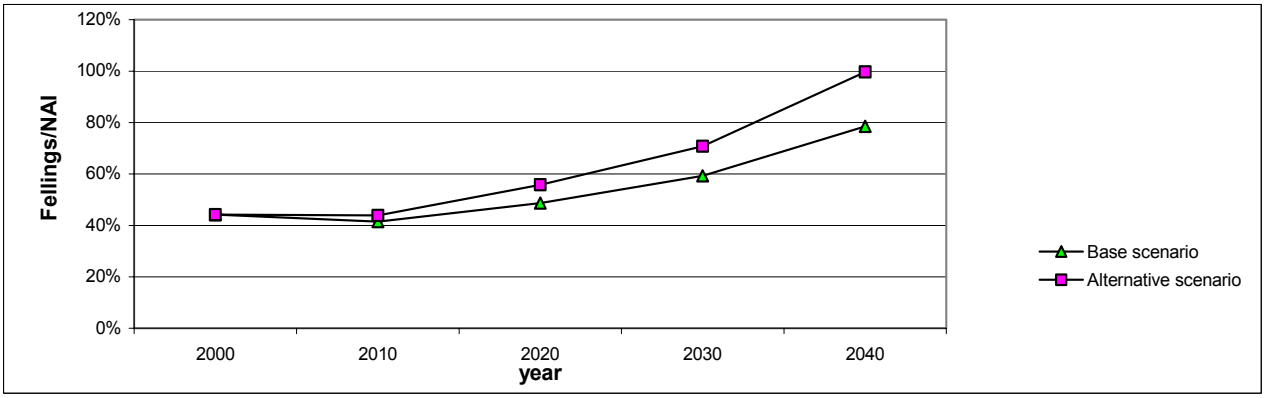




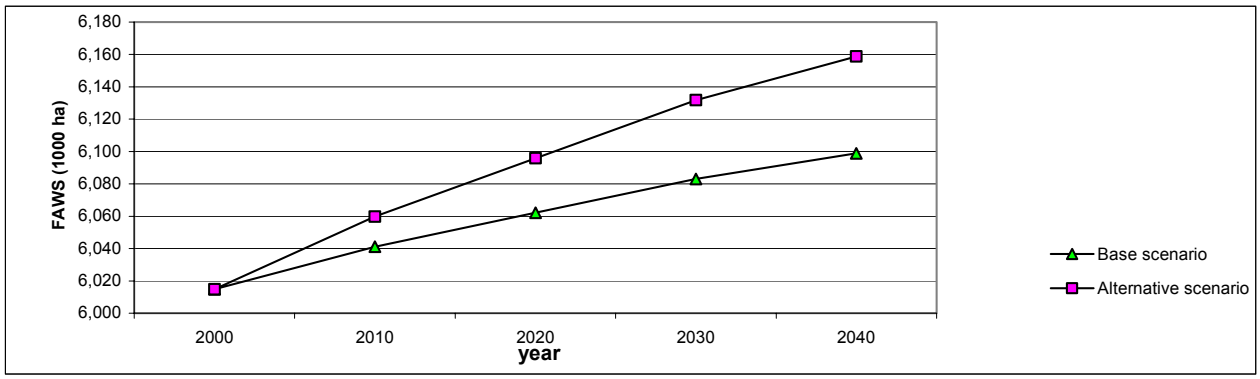

Growing stock per area
(cu.m. o.b. / ha)
400
350
300
250
200
150
2000
2010
2020
2030
2040
year
Base scenario
Alternative scenario

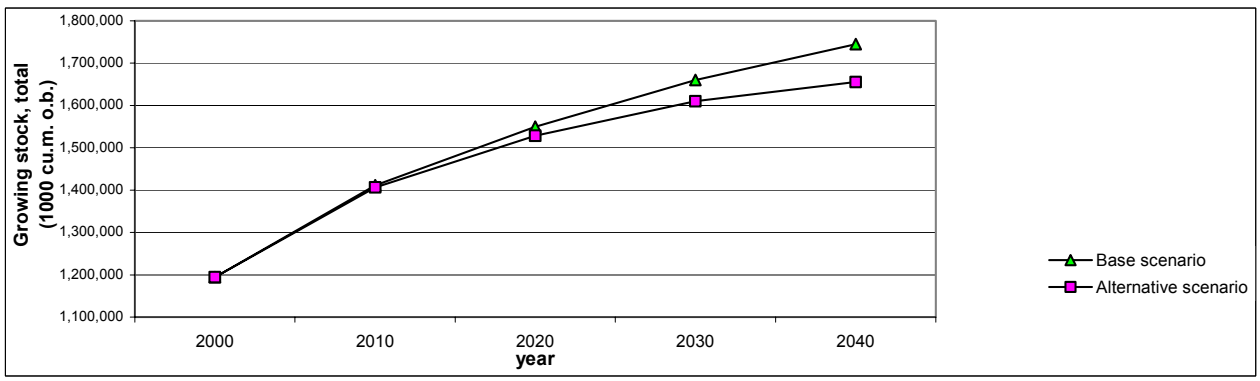

NAI, total
(1000 cu.m. o.b.)
8,000
7,000
6,000
5,000
4,000
3,000
2,000
2000
2010
2020
2030
2040
year
Base scenario
Alternative scenario

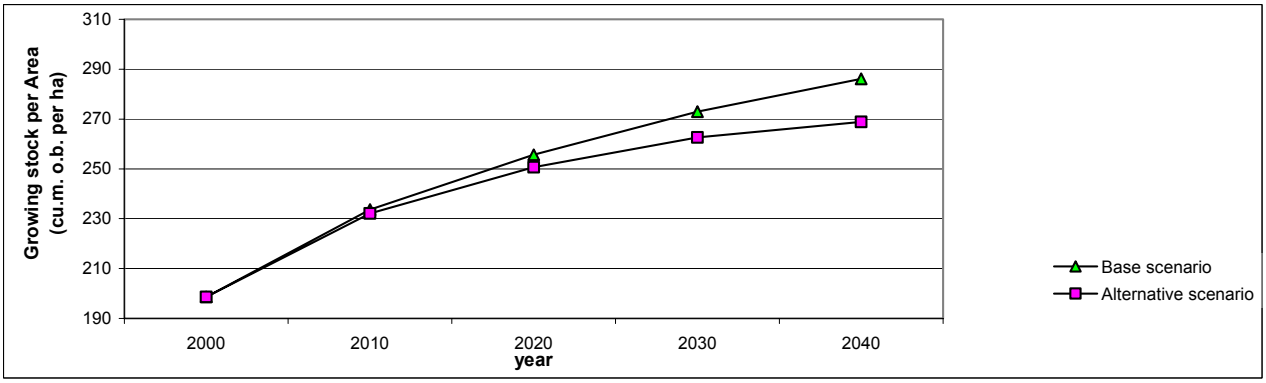

Removals, total
(1000 cu.m. u.b.)
8,000
7,000
6,000
5,000
4,000
3,000
2,000
2000
2010
2020
2030
2040
year
Base scenario
Alternative scenario

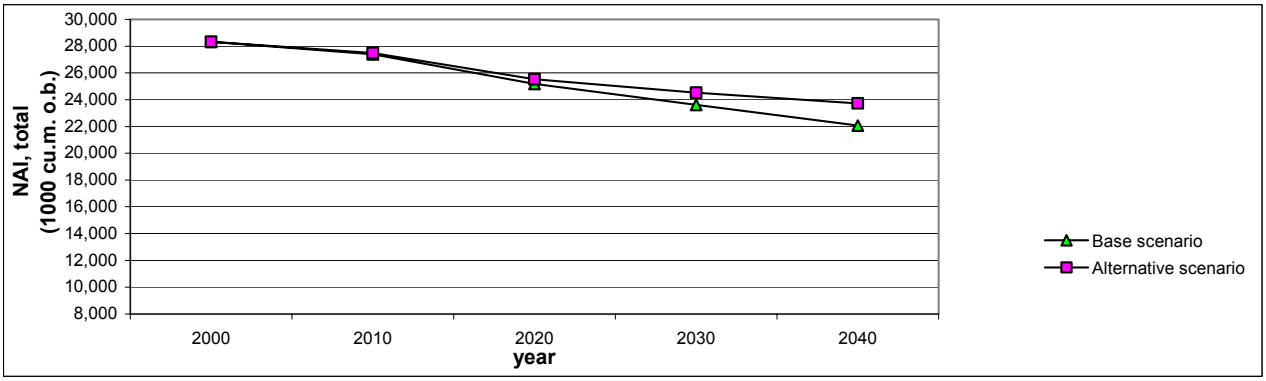

Fellings/NAI
120%
100%
80%
60%
40%
20%
0%
2000
2010
2020
2030
2040
year
Base scenario
Alternative scenario

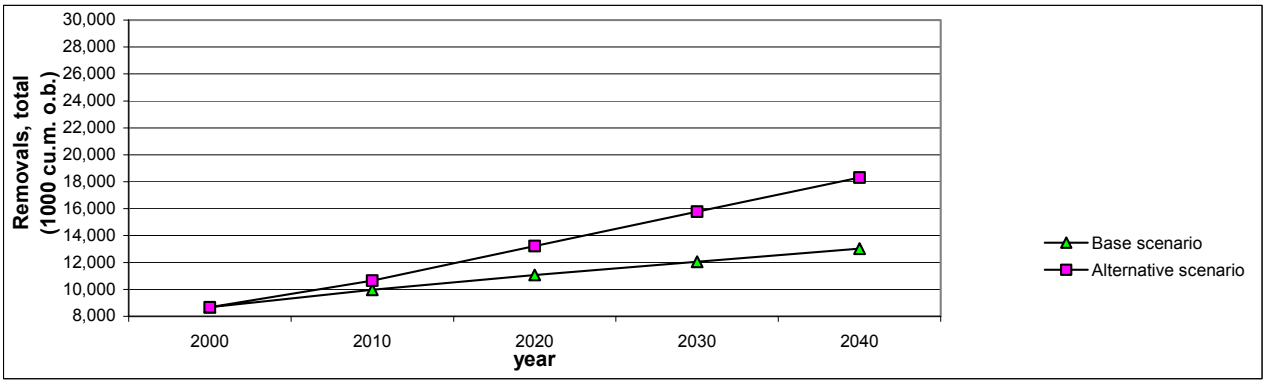
Italy	**Base scenario**					
	Unit	**2000**	**2010**	**2020**	**2030**	**2040**
Forest resource parameters						
Area of forest available for wood supply	1000 ha	6,015	6,041	6,062	6,083	6,099
- coniferous	*1000 ha*	*949*	*954*	*957*	*960*	*963*
- broadleaved	*1000 ha*	*5,065*	*5,088*	*5,105*	*5,123*	*5,136*
Growing stock, total	1000 cu.m. o.b.	1,194,445	1,411,430	1,550,026	1,660,500	1,745,204
- coniferous	*1000 cu.m. o.b.*	*321,182*	*383,709*	*428,621*	*469,273*	*503,011*
- broadleaved	*1000 cu.m. o.b.*	*873,263*	*1,027,722*	*1,121,405*	*1,191,227*	*1,242,194*
Net annual increment, total	1000 cu.m. o.b. / y.	28,330	27,397	25,167	23,622	22,075
- coniferous	*1000 cu.m. o.b. / y.*	*6,779*	*7,247*	*6,889*	*6,702*	*6,166*
- broadleaved	*1000 cu.m. o.b. / y.*	*21,551*	*20,150*	*18,278*	*16,920*	*15,909*
Fellings, total	1000 cu.m. o.b. / y.	9,503	10,939	12,144	13,228	14,298
- coniferous	*1000 cu.m. o.b. / y.*	*1,982*	*2,281*	*2,533*	*2,759*	*2,982*
- broadleaved	*1000 cu.m. o.b. / y.*	7,521	8,658	9,612	10,469	11,316
Removals, total	1000 cu.m. u.b. / y.	8,663	9,972	11,071	12,059	13,034
- coniferous	*1000 cu.m. u.b. / y.*	*1,807*	*2,080*	*2,309*	*2,515*	*2,718*
- broadleaved	*1000 cu.m. u.b. / y.*	*6,857*	*7,892*	*8,762*	*9,544*	*10,316*
Removals, total from final fellings	1000 cu.m. u.b. / y.	7,813	8,993	9,984	10,875	11,754
- coniferous	*1000 cu.m. u.b. / y.*	*1,265*	*1,456*	*1,616*	*1,760*	*1,903*
- broadleaved	*1000 cu.m. u.b. / y.*	*6,548*	*7,537*	*8,368*	*9,115*	*9,852*
Removals, total from thinnings	1000 cu.m. u.b. / y.	851	979	1,087	1,184	1,280
- coniferous	*1000 cu.m. u.b. / y.*	*542*	*624*	*693*	*755*	*815*
- broadleaved	*1000 cu.m. u.b. / y.*	*308*	*355*	*394*	*429*	*464*
Ratios						
- Growing stock per Area	cu.m. o.b. / ha	199	234	256	273	286
- Net annual increment per growing stock	cu.m. o.b. / cu.m. o.b.	2.4%	1.9%	1.6%	1.4%	1.3%
- Net annual increment per Area	cu.m. o.b. / ha / y.	4.7	4.5	4.2	3.9	3.6
- Fellings per Net annual increment	cu.m. o.b. / cu.m. o.b.	34%	40%	48%	56%	65%
- Removals per Area	cu.m. u.b. / ha / y.	1.4	1.7	1.8	2.0	2.1

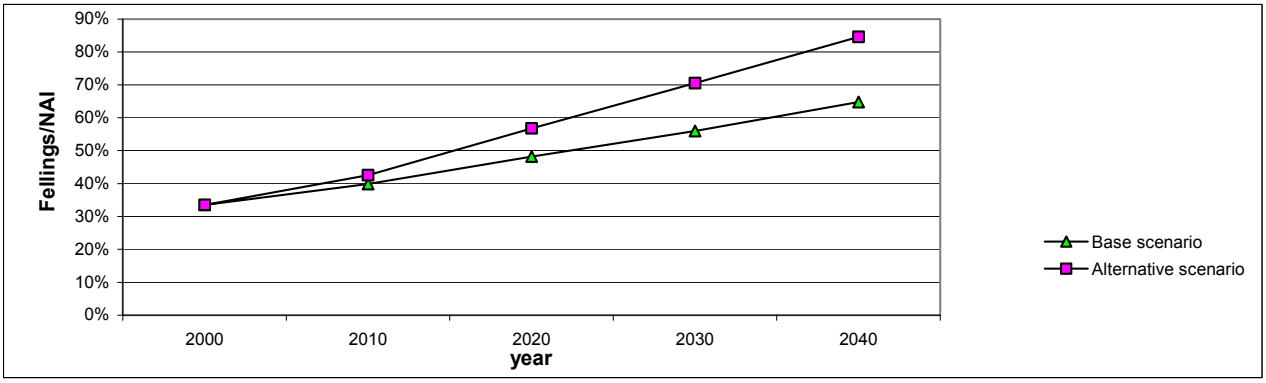




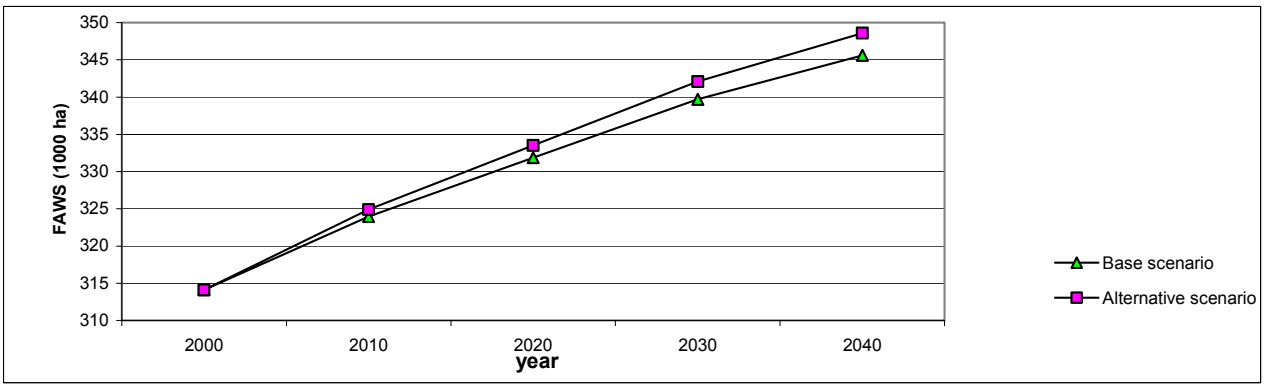

Growing stock per Area (cu.m. o.b. per ha)
310
290
270
250
230
210
190
2000
2010
2020
2030
2040
year
Base scenario
Alternative scenario

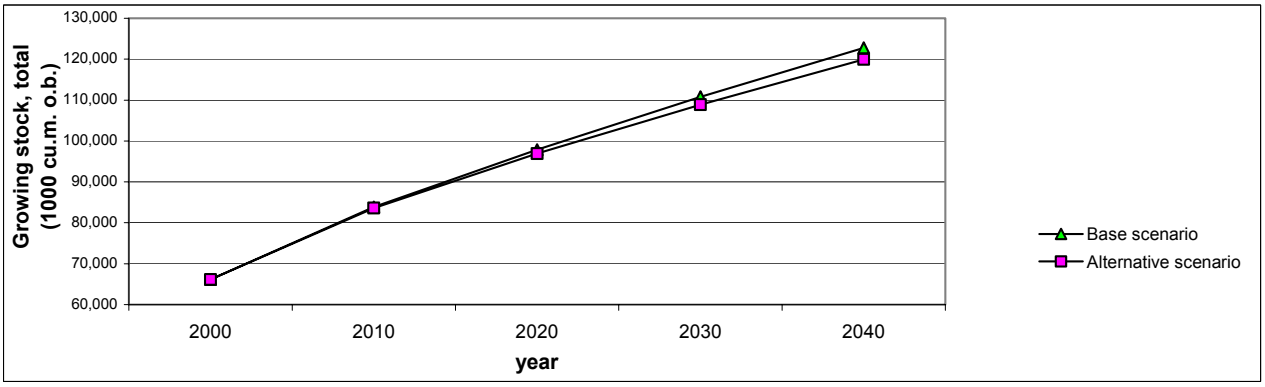

NAI, total (1000 cu.m. o.b.)
30,000
28,000
26,000
24,000
22,000
20,000
18,000
16,000
14,000
12,000
10,000
8,000
2000
2010
2020
2030
2040
year
Base scenario
Alternative scenario

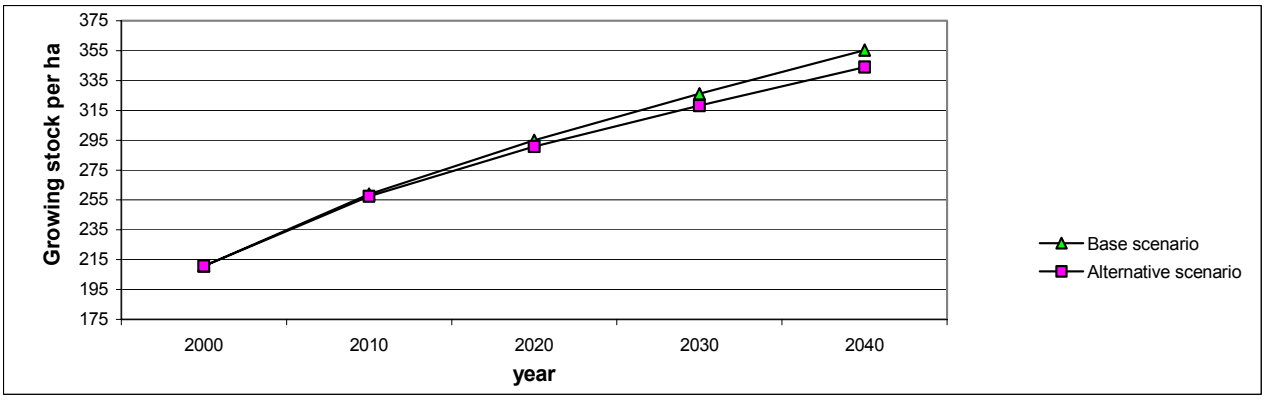

Removals, total (1000 cu.m. o.b.)
30,000
28,000
26,000
24,000
22,000
20,000
18,000
16,000
14,000
12,000
10,000
8,000
2000
2010
2020
2030
2040
year
Base scenario
Alternative scenario

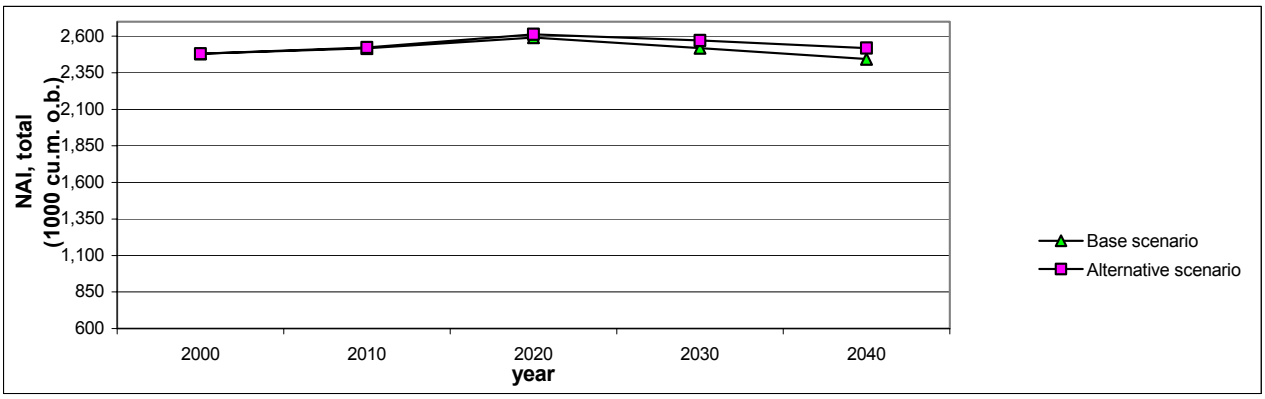

Fellings/NAI
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
2000
2010
2020
2030
2040
year
Base scenario
Alternative scenario

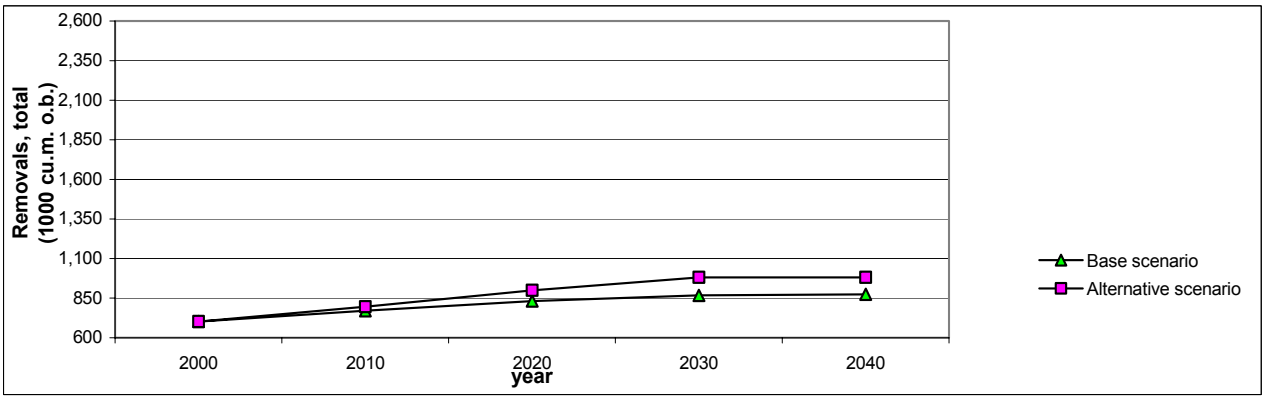
The Netherlands	**Base scenario**					
	Unit	**2000**	**2010**	**2020**	**2030**	**2040**
Forest resource parameters						
Area of forest available for wood supply	1000 ha	314	324	332	340	346
- coniferous	*1000 ha*	*172*	*178*	*182*	*186*	*189*
- broadleaved	*1000 ha*	*142*	*146*	*150*	*154*	*156*
Growing stock, total	1000 cu.m. o.b.	66,161	83,871	97,855	110,816	122,789
- coniferous	*1000 cu.m. o.b.*	*37,690*	*46,248*	*52,727*	*58,541*	*63,894*
- broadleaved	*1000 cu.m. o.b.*	*28,471*	*37,623*	*45,128*	*52,274*	*58,895*
Net annual increment, total	1000 cu.m. o.b. / y.	2,480	2,518	2,591	2,519	2,445
- coniferous	*1000 cu.m. o.b. / y.*	*1,354*	*1,414*	*1,428*	*1,392*	*1,356*
- broadleaved	*1000 cu.m. o.b. / y.*	*1,126*	*1,104*	*1,163*	*1,127*	*1,089*
Fellings, total	1000 cu.m. o.b. / y.	1,016	1,114	1,203	1,254	1,263
- coniferous	*1000 cu.m. o.b. / y.*	*671*	*736*	*794*	*828*	*821*
- broadleaved	*1000 cu.m. o.b. / y.*	*345*	*378*	*408*	*426*	*442*
Removals, total	1000 cu.m. u.b. / y.	702	770	831	867	873
- coniferous	*1000 cu.m. u.b. / y.*	*464*	*509*	*549*	*572*	*568*
- broadleaved	*1000 cu.m. u.b. / y.*	*238*	*261*	*282*	*294*	*305*
Removals, total from final fellings	1000 cu.m. u.b. / y.	281	308	333	347	360
- coniferous	*1000 cu.m. u.b. / y.*	*186*	*204*	*220*	*229*	*238*
- broadleaved	*1000 cu.m. u.b. / y.*	*95*	*104*	*113*	*118*	*122*
Removals, total from thinnings	1000 cu.m. u.b. / y.	421	462	499	519	513
- coniferous	*1000 cu.m. u.b. / y.*	*278*	*305*	*329*	*343*	*330*
- broadleaved	*1000 cu.m. u.b. / y.*	*143*	*157*	*169*	*177*	*183*
Ratios						
- Growing stock per Area	cu.m. o.b. / ha	211	259	295	326	355
- Net annual increment per growing stock	cu.m. o.b. / cu.m. o.b.	3.7%	3.0%	2.6%	2.3%	2.0%
- Net annual increment per ha	cu.m. o.b. / ha / y.	7.9	7.8	7.8	7.4	7.1
- Fellings per Net annual increment	cu.m. o.b. / cu.m. o.b.	41%	44%	46%	50%	52%
- Removals per Area	cu.m. u.b. / ha / y.	2.2	2.4	2.5	2.6	2.5

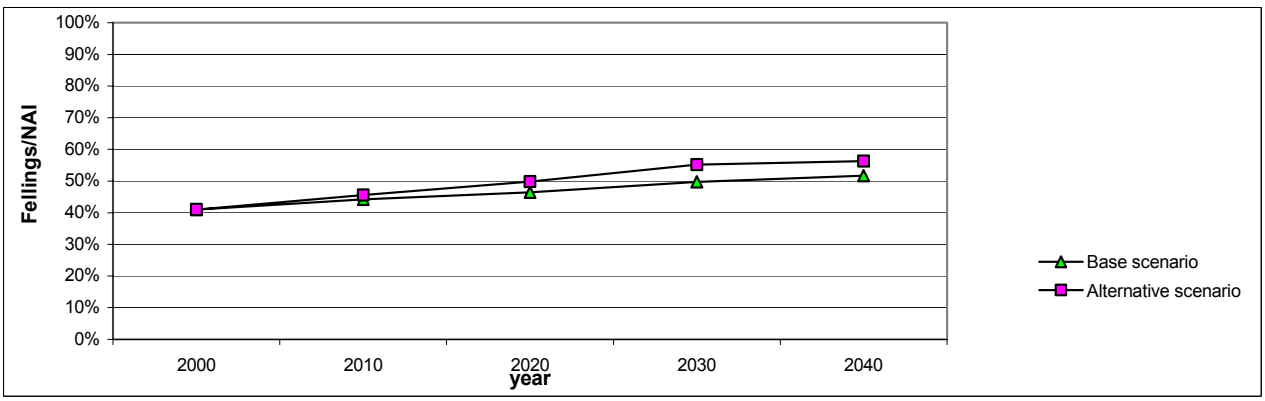




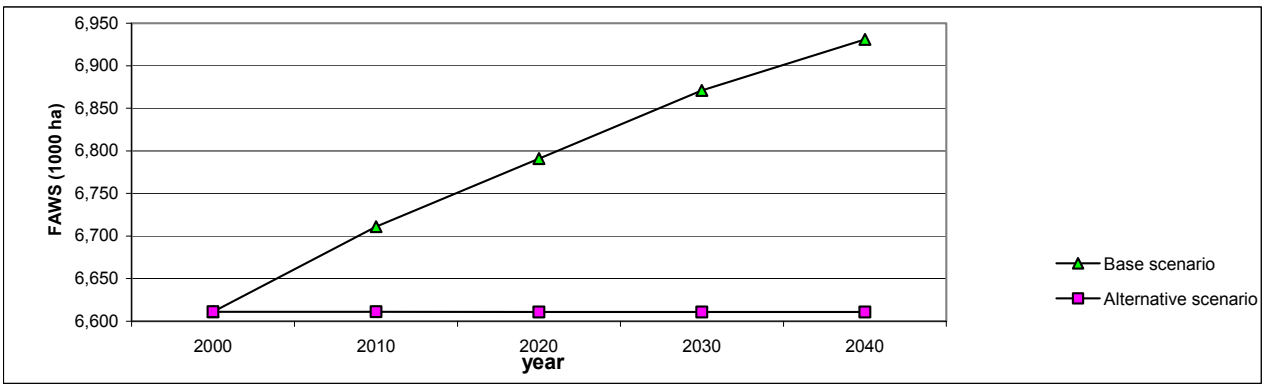

Growing stock per ha
375
355
335
315
295
275
255
235
215
195
175
2000
2010
2020
2030
2040
year
Base scenario
Alternative scenario

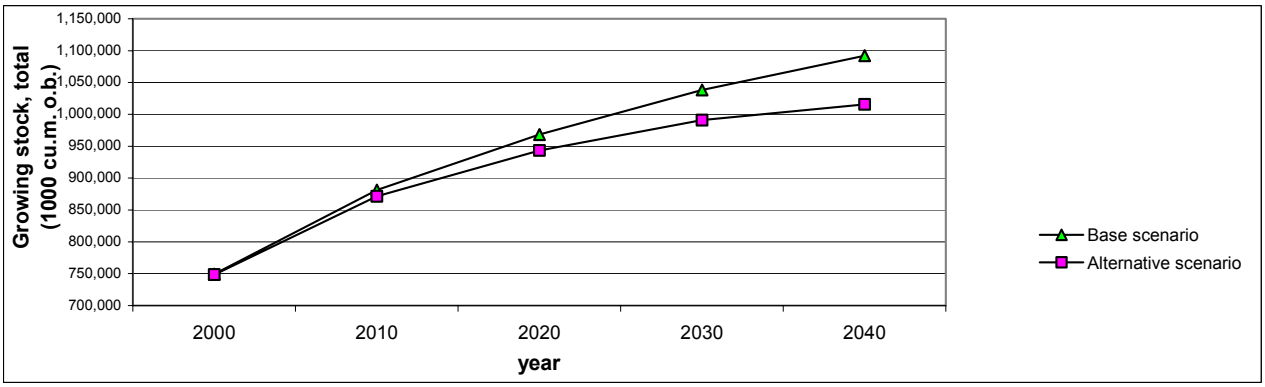

NAI, total (1000 cu.m. o.b.)
2,600
2,350
2,100
1,850
1,600
1,350
1,100
850
600
2000
2010
2020
2030
2040
year
Base scenario
Alternative scenario

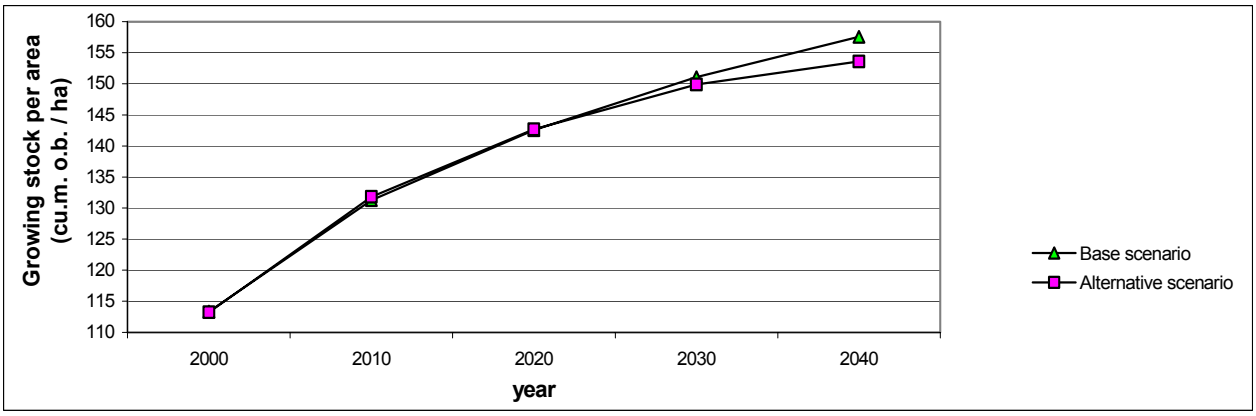

Removals, total (1000 cu.m. o.b.)
2,600
2,350
2,100
1,850
1,600
1,350
1,100
850
600
2000
2010
2020
2030
2040
year
Base scenario
Alternative scenario

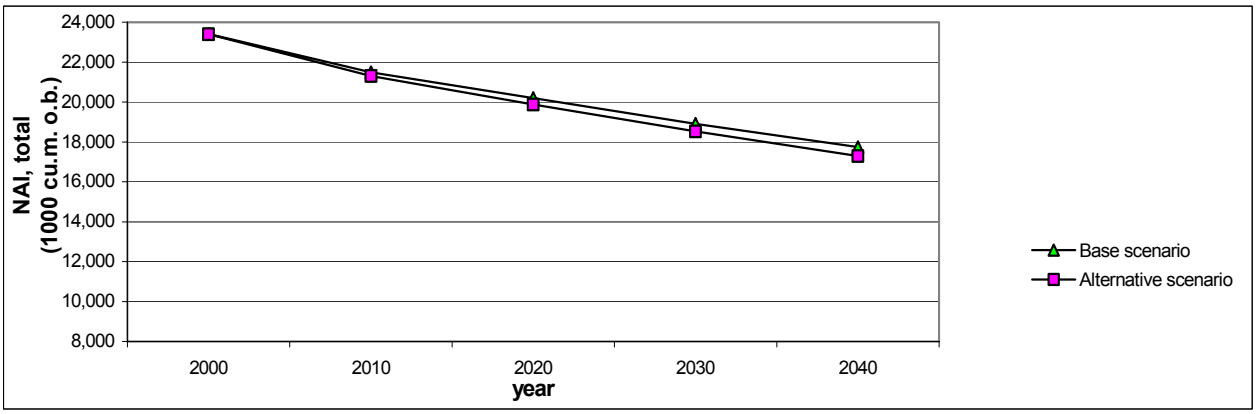

Fellings/NAI
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
2000
2010
2020
2030
2040
year
Base scenario
Alternative scenario

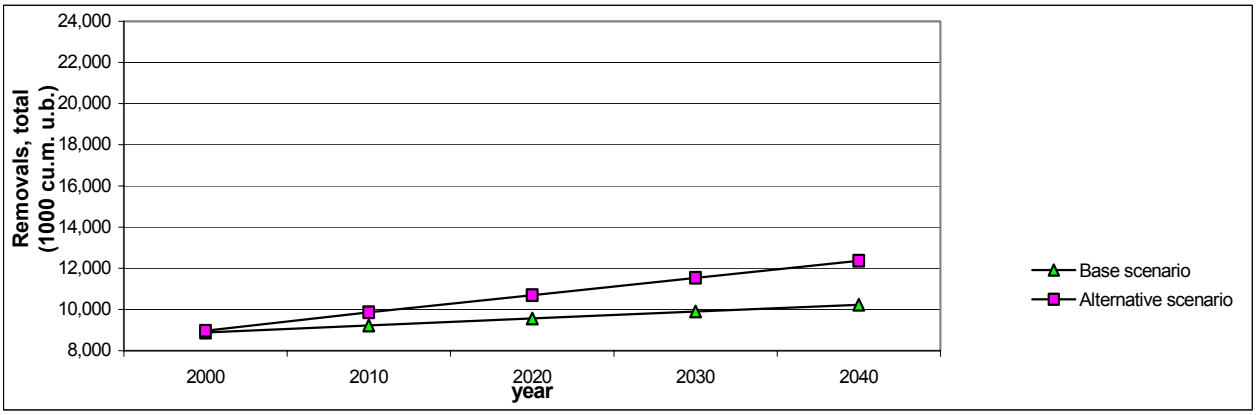
Norway	**Base scenario**					
	Unit	**2000**	**2010**	**2020**	**2030**	**2040**
Forest resource parameters						
Area of forest available for wood supply	1000 ha	6,611	6,711	6,791	6,871	6,931
- coniferous	*1000 ha*	*5,024*	*5,100*	*5,160*	*5,221*	*5,267*
- broadleaved	*1000 ha*	*1,587*	*1,611*	*1,631*	*1,650*	*1,664*
Growing stock, total	1000 cu.m. o.b.	749,229	881,060	968,187	1,038,121	1,091,927
- coniferous	*1000 cu.m. o.b.*	*633,991*	*742,247*	*811,731*	*864,892*	*902,458*
- broadleaved	*1000 cu.m. o.b.*	*115,238*	*138,813*	*156,456*	*173,229*	*189,469*
Net annual increment, total	1000 cu.m. o.b. / y.	23,410	21,482	20,195	18,905	17,747
- coniferous	*1000 cu.m. o.b. / y.*	*20,045*	*18,308*	*17,081*	*15,820*	*14,668*
- broadleaved	*1000 cu.m. o.b. / y.*	*3,365*	*3,174*	*3,114*	*3,085*	*3,079*
Fellings, total	1000 cu.m. o.b. / y.	11,060	11,484	11,916	12,334	12,749
- coniferous	*1000 cu.m. o.b. / y.*	*9,785*	*10,160*	*10,543*	*10,912*	*11,279*
- broadleaved	*1000 cu.m. o.b. / y.*	*1,275*	*1,324*	*1,374*	*1,422*	*1,470*
Removals, total	1000 cu.m. u.b. / y.	8,881	9,221	9,568	9,904	10,237
- coniferous	*1000 cu.m. u.b. / y.*	*7,857*	*8,158*	*8,465*	*8,762*	*9,057*
- broadleaved	*1000 cu.m. u.b. / y.*	*1,024*	*1,063*	*1,103*	*1,142*	*1,180*
Removals, total from final fellings	1000 cu.m. u.b. / y.	7,993	8,299	8,611	8,913	9,213
- coniferous	*1000 cu.m. u.b. / y.*	*7,071*	*7,342*	*7,619*	*7,886*	*8,151*
- broadleaved	*1000 cu.m. u.b. / y.*	*921*	*957*	*993*	*1,028*	*1,062*
Removals, total from thinnings	1000 cu.m. u.b. / y.	888	922	957	990	1,024
- coniferous	*1000 cu.m. u.b. / y.*	*786*	*816*	*846*	*876*	*906*
- broadleaved	*1000 cu.m. u.b. / y.*	*102*	*106*	*110*	*114*	*118*
Ratios						
- Growing stock per Area	cu.m. o.b. / ha	113	131	143	151	158
- Net annual increment per growing stock	cu.m. o.b. / cu.m. o.b.	3.1%	2.4%	2.1%	1.8%	1.6%
- Net annual increment per ha	cu.m. o.b. / ha / y.	3.5	3.2	3.0	2.8	2.6
- Fellings per Net annual increment	cu.m. o.b. / cu.m. o.b.	47%	53%	59%	65%	72%
- Removals per Area	cu.m. u.b. / ha / y.	1.3	1.4	1.4	1.4	1.5

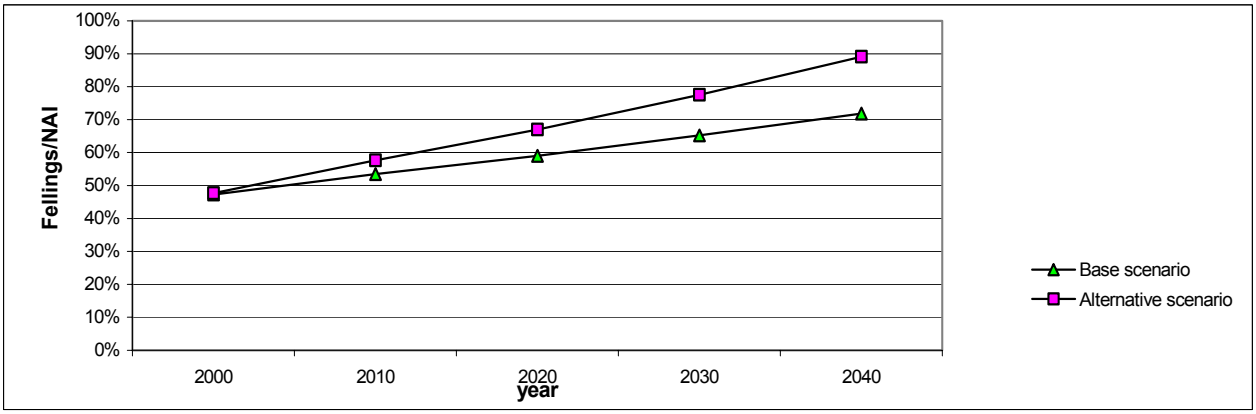




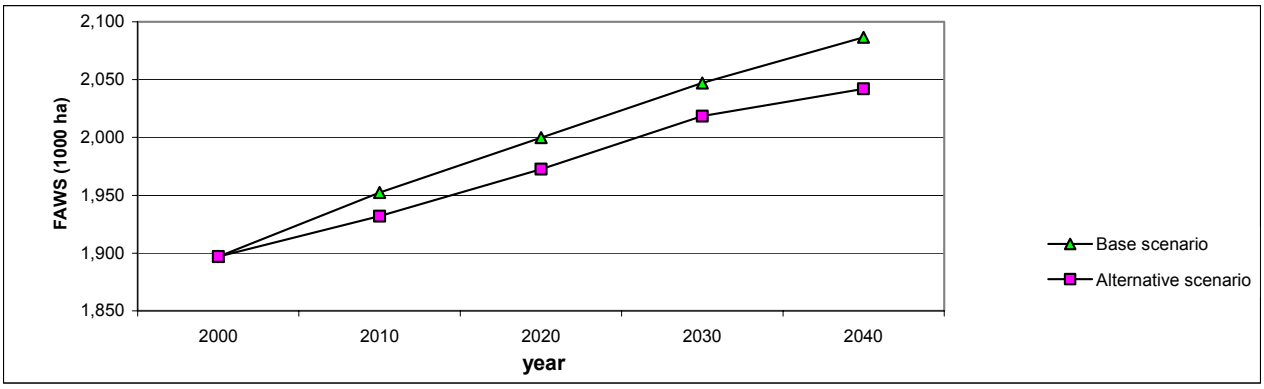

Growing stock per area (cu.m. o.b. / ha)
160
155
150
145
140
135
130
125
120
115
110
2000
2010
2020
2030
2040
year
Base scenario
Alternative scenario

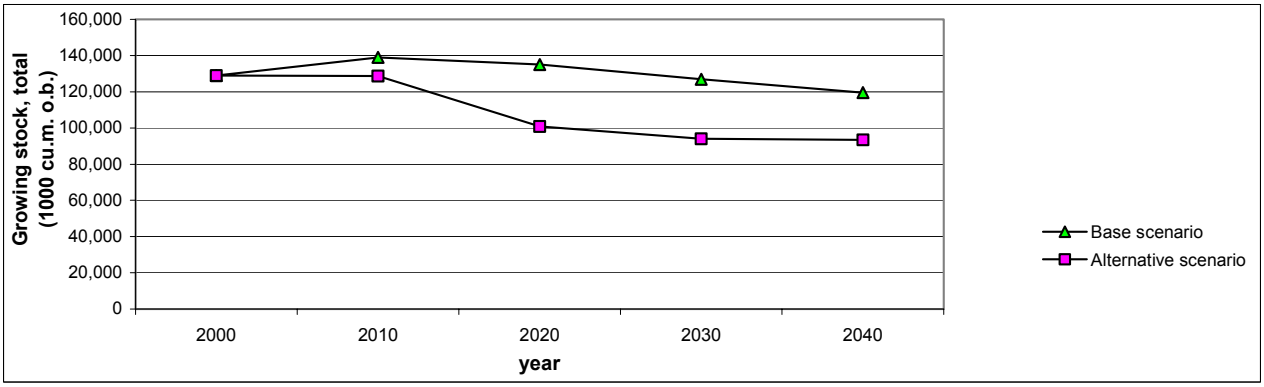

NAI, total (1000 cu.m. o.b.)
24,000
22,000
20,000
18,000
16,000
14,000
12,000
10,000
8,000
2000
2010
2020
2030
2040
year
Base scenario
Alternative scenario

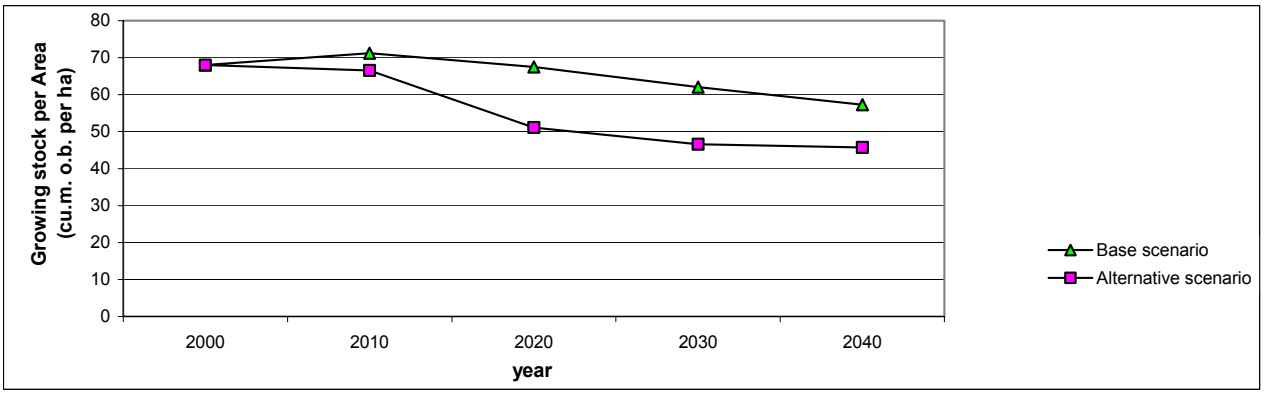

Removals, total (1000 cu.m. u.b.)
24,000
22,000
20,000
18,000
16,000
14,000
12,000
10,000
8,000
2000
2010
2020
2030
2040
year
Base scenario
Alternative scenario

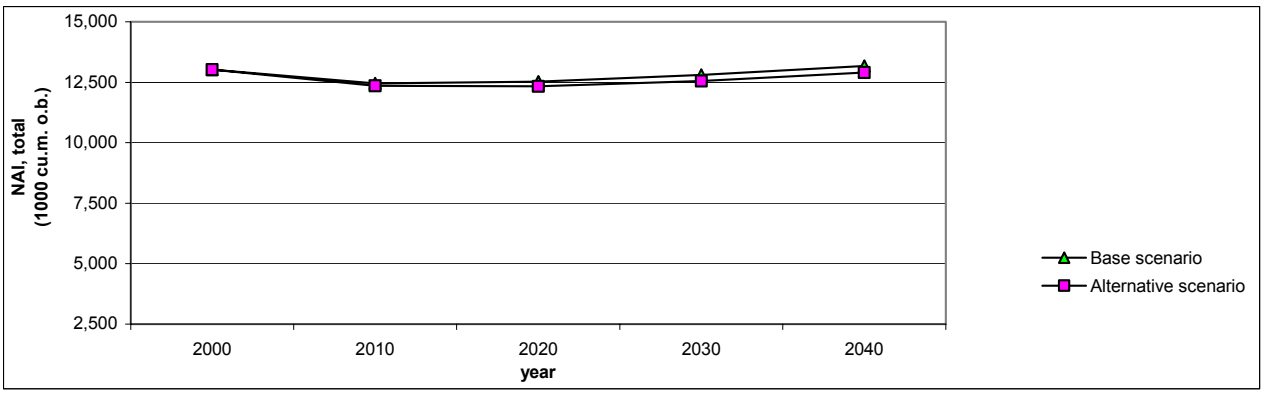

Fellings/NAI
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
2000
2010
2020
2030
2040
year
Base scenario
Alternative scenario

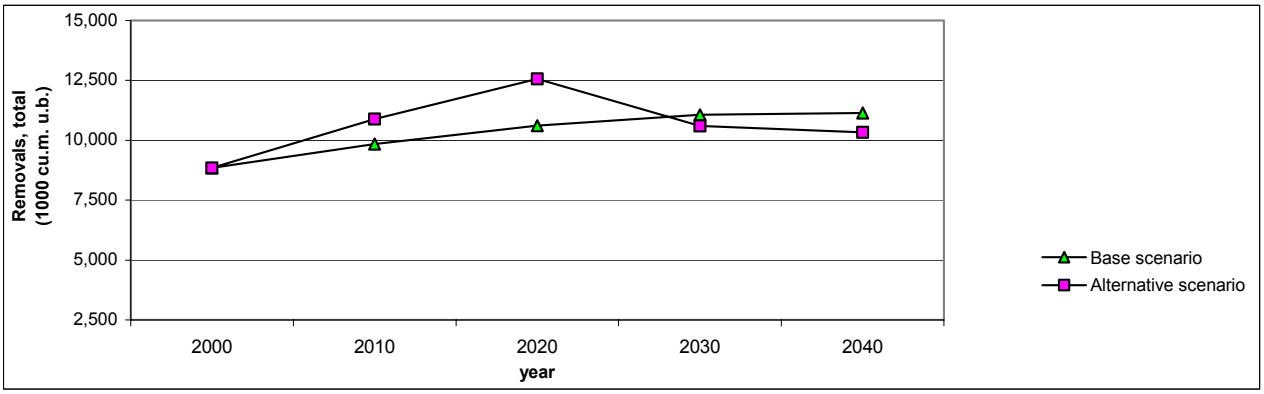
Portugal	**Base scenario**					
	Unit	**2000**	**2010**	**2020**	**2030**	**2040**
Forest resource parameters						
Area of forest available for wood supply	1000 ha	1,897	1,952	2,000	2,047	2,087
- coniferous	*1000 ha*	*914*	*942*	*965*	*988*	*1,005*
- broadleaved	*1000 ha*	*983*	*1,010*	*1,035*	*1,059*	*1,082*
Growing stock, total	1000 cu.m. o.b.	128,936	139,034	135,016	126,954	119,596
- coniferous	*1000 cu.m. o.b.*	*75,463*	*74,901*	*68,708*	*62,429*	*59,948*
- broadleaved	*1000 cu.m. o.b.*	*53,473*	*64,133*	*66,308*	*64,525*	*59,648*
Net annual increment, total	1000 cu.m. o.b. / y.	13,018	12,456	12,523	12,801	13,171
- coniferous	*1000 cu.m. o.b. / y.*	*4,468*	*4,127*	*4,121*	*4,139*	*4,166*
- broadleaved	*1000 cu.m. o.b. / y.*	*8,550*	*8,329*	*8,403*	*8,663*	*9,006*
Fellings, total	1000 cu.m. o.b. / y.	10,883	12,111	13,049	13,620	13,708
- coniferous	*1000 cu.m. o.b. / y.*	*6,059*	*4,471*	*4,780*	*4,754*	*4,221*
- broadleaved	*1000 cu.m. o.b. / y.*	*4,825*	*7,641*	*8,270*	*8,865*	*9,487*
Removals, total	1000 cu.m. u.b. / y.	8,843	9,840	10,603	11,066	11,138
- coniferous	*1000 cu.m. u.b. / y.*	*4,923*	*3,632*	*3,884*	*3,863*	*3,430*
- broadleaved	*1000 cu.m. u.b. / y.*	*3,920*	*6,208*	*6,719*	*7,203*	*7,708*
Removals, total from final fellings	1000 cu.m. u.b. / y.	7,566	8,912	9,603	10,032	10,042
- coniferous	*1000 cu.m. u.b. / y.*	*3,646*	*2,704*	*2,884*	*2,829*	*2,334*
- broadleaved	*1000 cu.m. u.b. / y.*	*3,920*	*6,208*	*6,719*	*7,203*	*7,708*
Removals, total from thinnings	1000 cu.m. u.b. / y.	1,276	929	1,000	1,034	1,096
- coniferous	*1000 cu.m. u.b. / y.*	*1,276*	*929*	*1,000*	*1,034*	*1,096*
- broadleaved	*1000 cu.m. u.b. / y.*	*0*	*0*	*0*	*0*	*0*
Ratios						
- Growing stock per Area	cu.m. o.b. / ha	68	71	68	62	57
- Net annual increment per growing stock	cu.m. o.b. / cu.m. o.b.	10.1%	9.0%	9.3%	10.1%	11.0%
- Net annual increment per Area	cu.m. o.b. / ha / y.	6.9	6.4	6.3	6.3	6.3
- Fellings per Net annual increment	cu.m. o.b. / cu.m. o.b.	84%	97%	104%	106%	104%
- Removals per Area	cu.m. u.b. / ha / y.	4.7	5.0	5.3	5.4	5.3

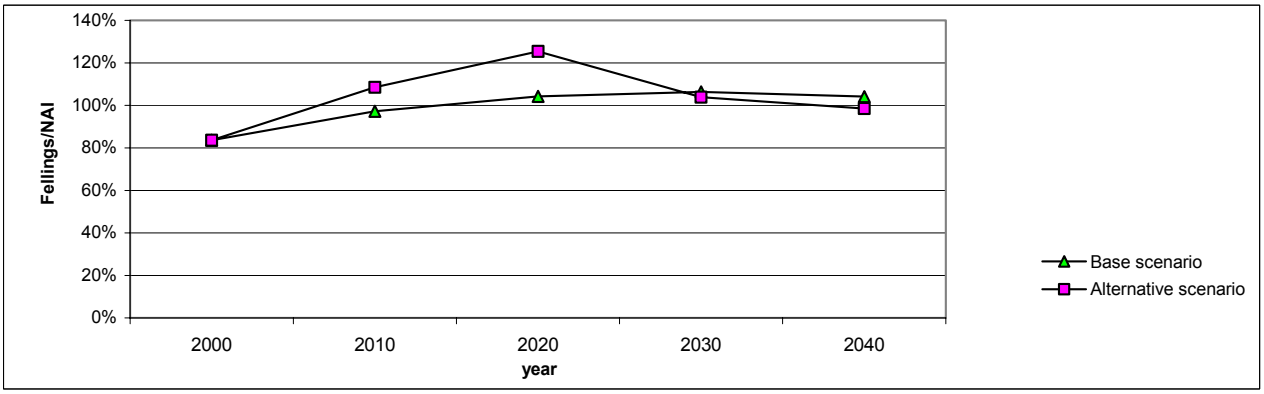




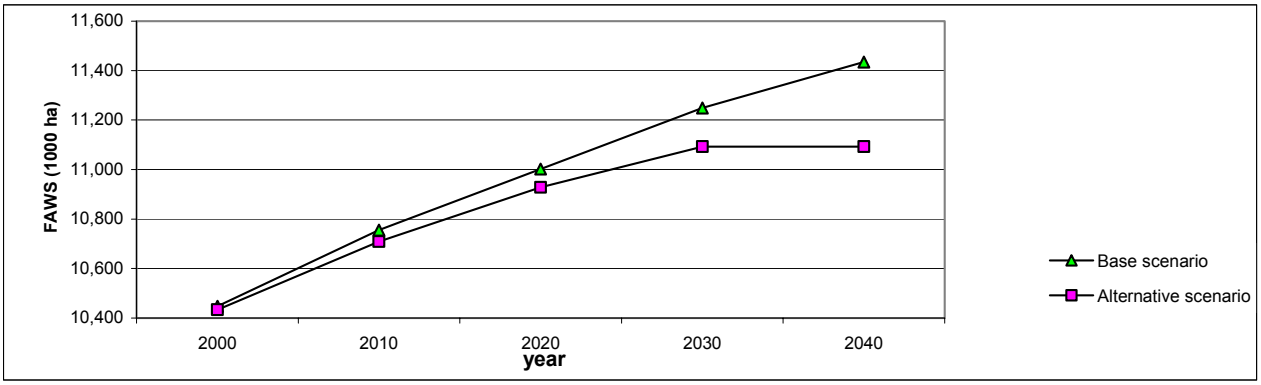

Growing stock per Area (cu.m. o.b. per ha)
80
70
60
50
40
30
20
10
0
2000
2010
2020
2030
2040
year
Base scenario
Alternative scenario

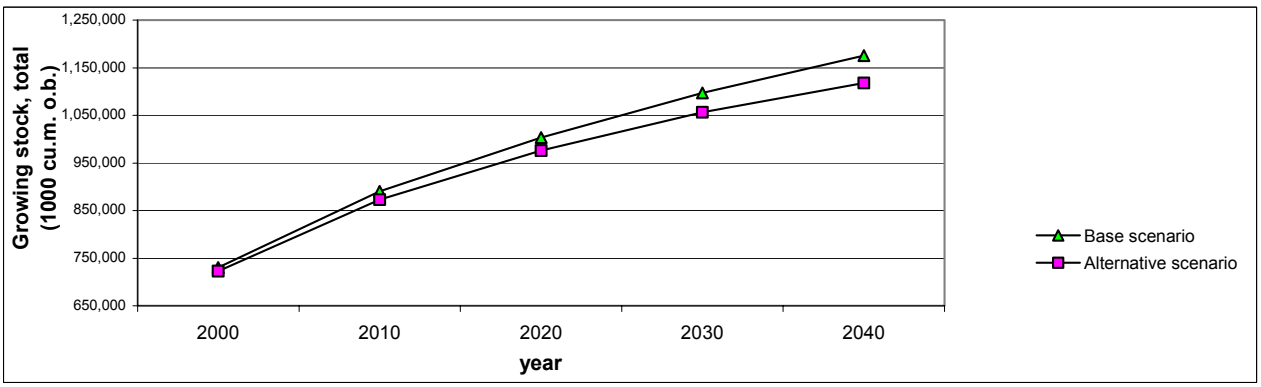

NAI, total (1000 cu.m. o.b.)
15,000
12,500
10,000
7,500
5,000
2,500
2000
2010
2020
2030
2040
year
Base scenario
Alternative scenario

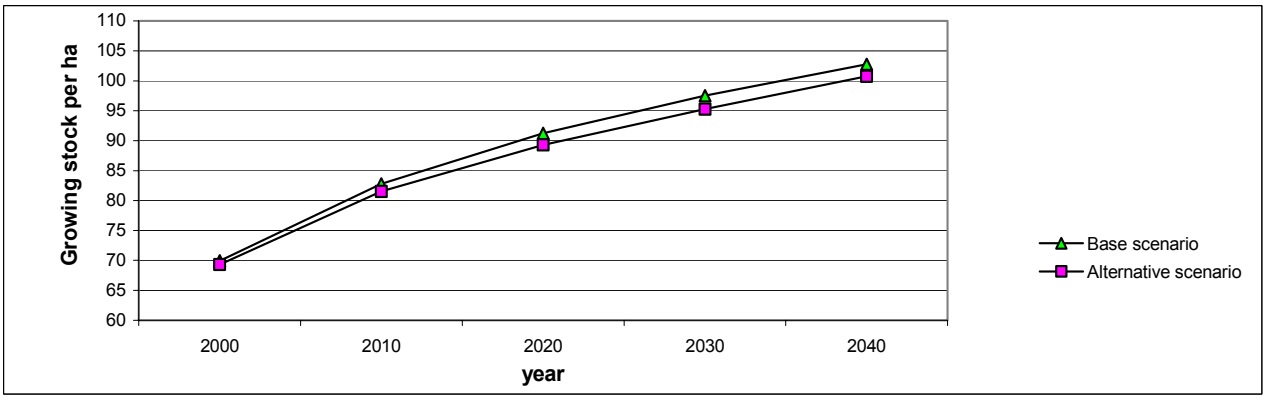

Removals, total (1000 cu.m. u.b.)
15,000
12,500
10,000
7,500
5,000
2,500
2000
2010
2020
2030
2040
year
Base scenario
Alternative scenario

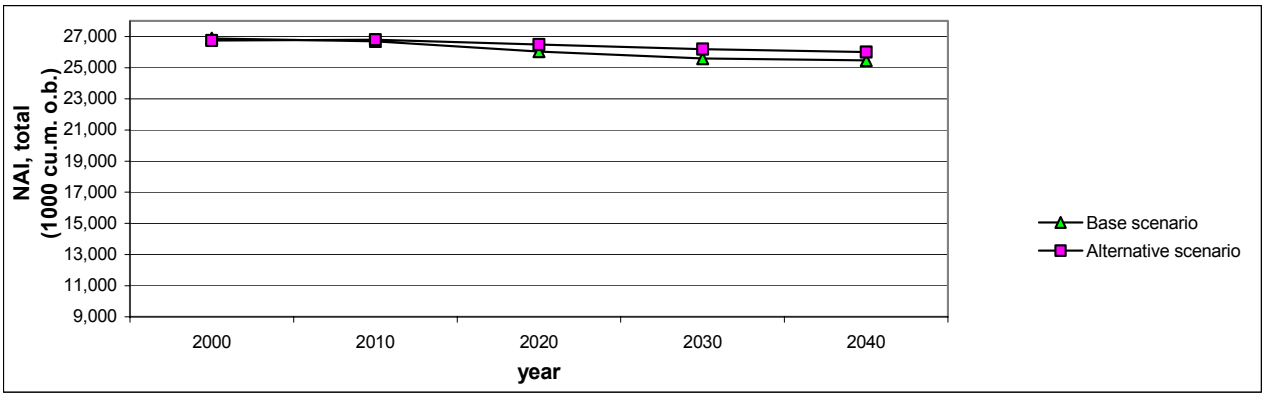

Fellings/NAI
140%
120%
100%
80%
60%
40%
20%
0%
2000
2010
2020
2030
2040
year
Base scenario
Alternative scenario

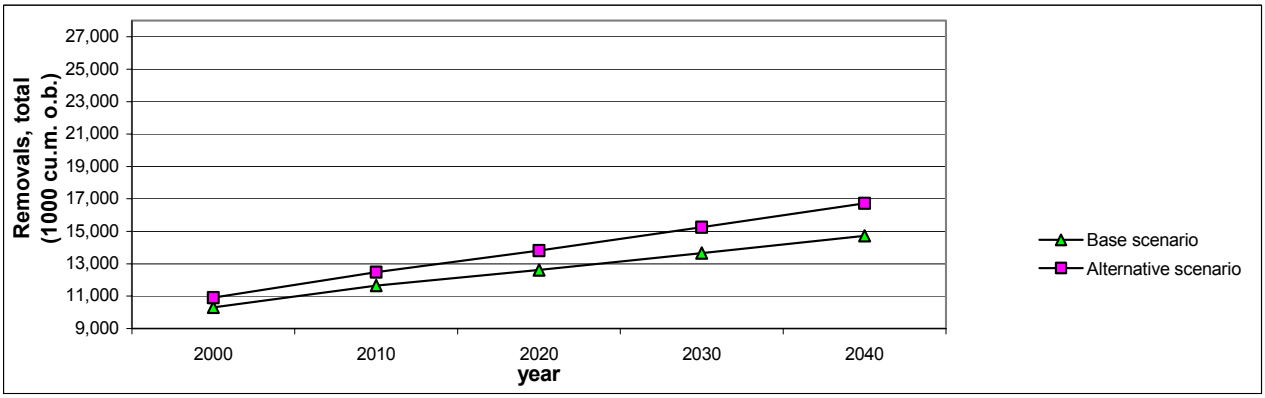
Spain	**Base scenario**					
	Unit	**2000**	**2010**	**2020**	**2030**	**2040**
Forest resource parameters						
Area of forest available for wood supply	1000 ha	10,447	10,756	11,003	11,249	11,434
- coniferous	*1000 ha*	*4,913*	*5,065*	*5,186*	*5,307*	*5,398*
- eucalypt plantations	*1000 ha*	*447*	*447*	*447*	*447*	*447*
- broadleaved without eucalypt plantations	*1000 ha*	*5,088*	*5,245*	*5,370*	*5,496*	*5,590*
- broadleaved	*1000 ha*	*5,534*	*5,691*	*5,817*	*5,942*	*6,036*
Growing stock, total	1000 cu.m. o.b.	730,578	890,481	1,003,616	1,097,138	1,175,290
- coniferous	*1000 cu.m. o.b.*	*495,240*	*616,121*	*707,882*	*790,507*	*863,164*
- broadleaved	*1000 cu.m. o.b.*	*235,338*	*274,360*	*295,733*	*306,631*	*312,126*
Net annual increment, total	1000 cu.m. o.b. / y.	26,886	26,684	26,035	25,582	25,469
- coniferous	*1000 cu.m. o.b. / y.*	*18,228*	*18,841*	*19,032*	*19,000*	*18,813*
- broadleaved	*1000 cu.m. o.b. / y.*	*8,658*	*7,843*	*7,003*	*6,583*	*6,657*
Fellings, total	1000 cu.m. o.b. / y.	12,579	14,215	15,391	16,654	17,952
- coniferous	*1000 cu.m. o.b. / y.*	*8,176*	*9,271*	*10,103*	*10,948*	*11,803*
- broadleaved	*1000 cu.m. o.b. / y.*	*4,403*	*4,943*	*5,288*	*5,706*	*6,149*
Removals, total	1000 cu.m. u.b. / y.	10,311	11,651	12,615	13,651	14,715
- coniferous	*1000 cu.m. u.b. / y.*	*6,702*	*7,600*	*8,281*	*8,974*	*9,675*
- broadleaved	*1000 cu.m. u.b. / y.*	*3,609*	*4,052*	*4,334*	*4,677*	*5,040*
Removals, total from final fellings	1000 cu.m. u.b. / y.	7,733	8,739	9,530	10,328	11,136
- coniferous	*1000 cu.m. u.b. / y.*	*5,026*	*5,700*	*6,211*	*6,730*	*7,256*
- broadleaved	*1000 cu.m. u.b. / y.*	*2,706*	*3,039*	*3,319*	*3,598*	*3,880*
Removals, total from thinnings	1000 cu.m. u.b. / y.	2,578	2,912	3,086	3,323	3,579
- coniferous	*1000 cu.m. u.b. / y.*	*1,676*	*1,900*	*2,070*	*2,243*	*2,419*
- broadleaved	*1000 cu.m. u.b. / y.*	*902*	*1,013*	*1,015*	*1,080*	*1,160*
Ratios						
- Growing stock per Area	cu.m. o.b. / ha	70	83	91	98	103
- Net annual increment per growing stock	cu.m. o.b. / cu.m. o.b.	3.7%	3.0%	2.6%	2.3%	2.2%
- Net annual increment per ha	cu.m. o.b. / ha / y.	2.6	2.5	2.4	2.3	2.2
- Fellings per Net annual increment	cu.m. o.b. / cu.m. o.b.	47%	53%	59%	65%	70%
- Removals per Area	cu.m. u.b. / ha / y.	1.0	1.1	1.1	1.2	1.3

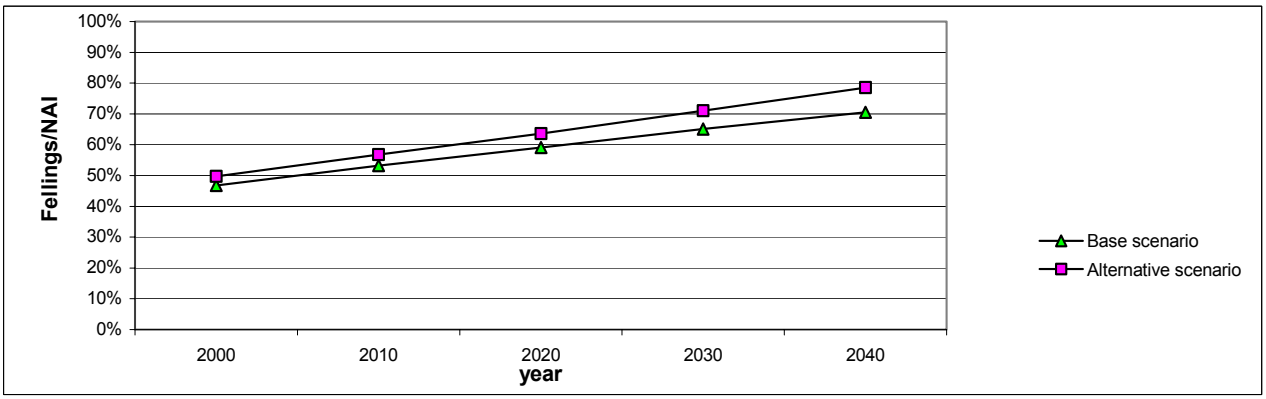




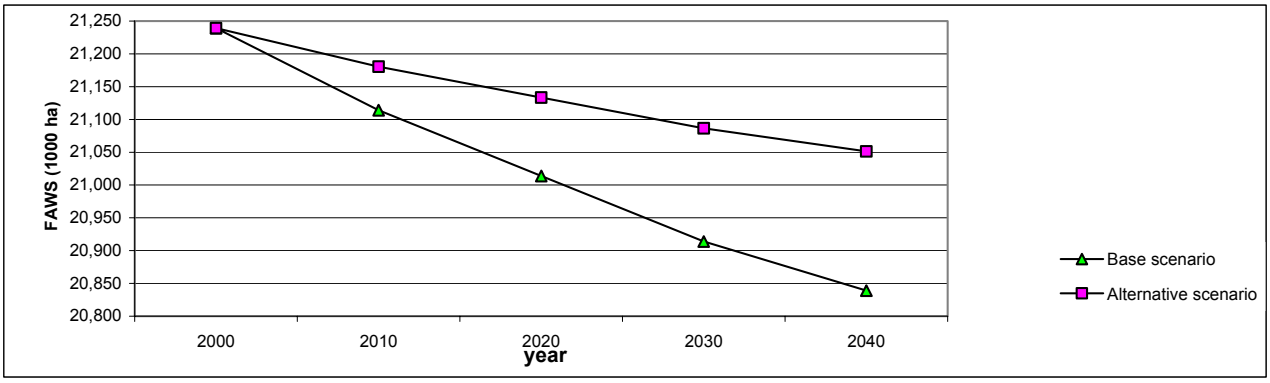

Growing stock per ha
110
105
100
95
90
85
80
75
70
65
60
2000
2010
2020
2030
2040
year
Base scenario
Alternative scenario

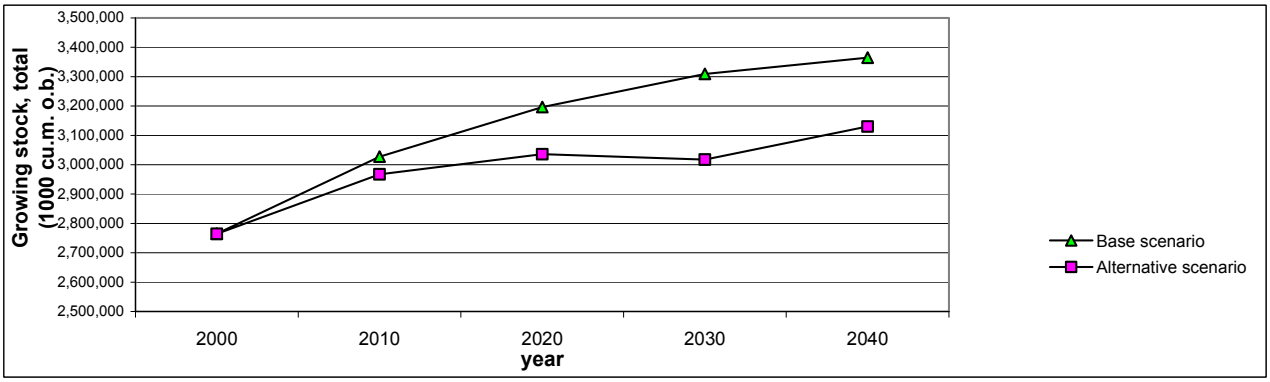

NAI, total (1000 cu.m. o.b.)
27,000
25,000
23,000
21,000
19,000
17,000
15,000
13,000
11,000
9,000
2000
2010
2020
2030
2040
year
Base scenario
Alternative scenario

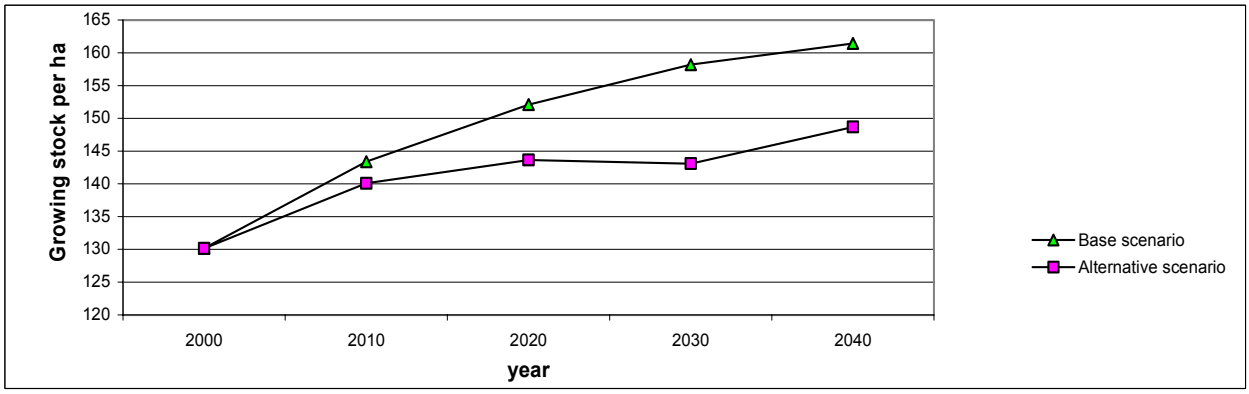

Removals, total (1000 cu.m. o.b.)
27,000
25,000
23,000
21,000
19,000
17,000
15,000
13,000
11,000
9,000
2000
2010
2020
2030
2040
year
Base scenario
Alternative scenario

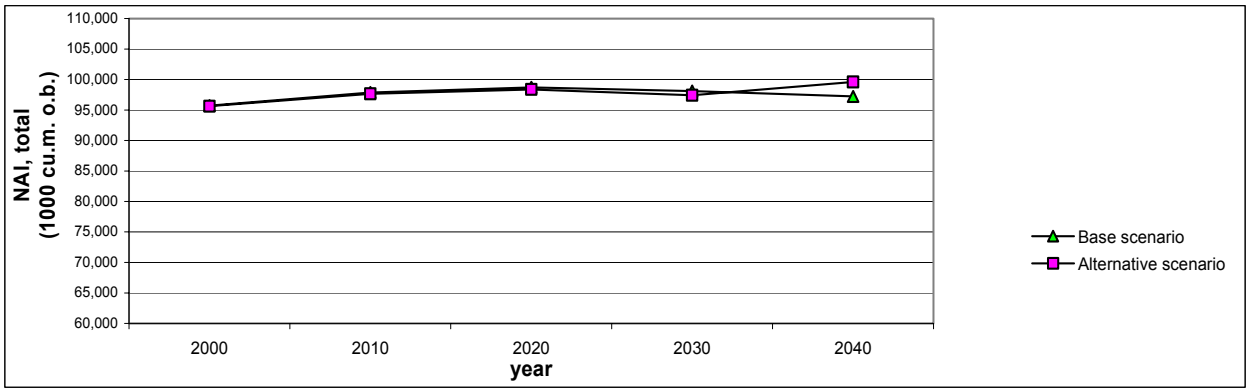

Fellings/NAI
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
2000
2010
2020
2030
2040
year
Base scenario
Alternative scenario

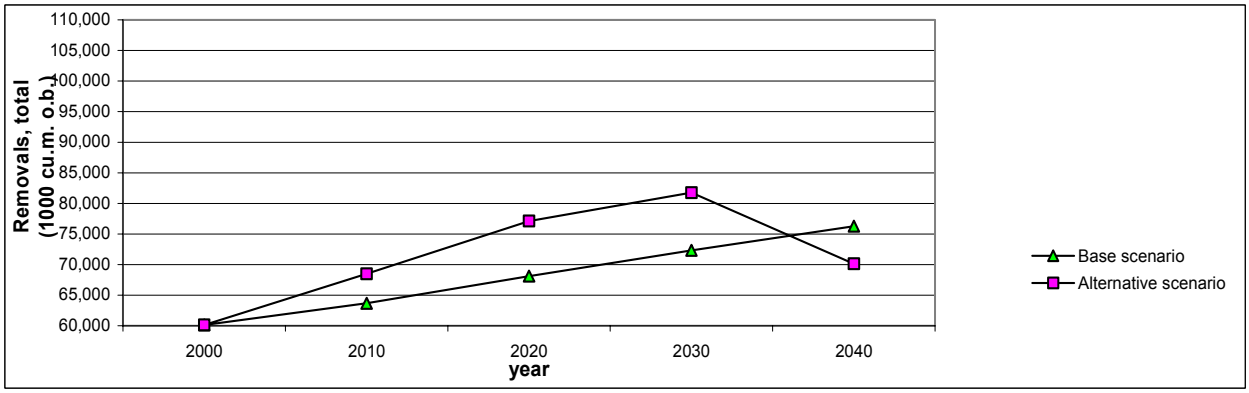
Sweden	**Base scenario**					
	Unit	**2000**	**2010**	**2020**	**2030**	**2040**
Forest resource parameters						
Area of forest available for wood supply	1000 ha	21,239	21,114	21,014	20,914	20,839
- coniferous	*1000 ha*	*17,041*	*16,949*	*16,876*	*16,803*	*16,749*
- broadleaved	*1000 ha*	*4,198*	*4,165*	*4,138*	*4,111*	*4,091*
Growing stock, total	1000 cu.m. o.b.	2,764,898	3,027,667	3,196,435	3,309,049	3,364,455
- coniferous	*1000 cu.m. o.b.*	*2,218,686*	*2,353,410*	*2,429,315*	*2,459,974*	*2,446,956*
- broadleaved	*1000 cu.m. o.b.*	*546,212*	*674,257*	*767,120*	*849,075*	*917,499*
Net annual increment, total	1000 cu.m. o.b. / y.	95,716	97,892	98,713	98,125	97,246
- coniferous	*1000 cu.m. o.b. / y.*	*74,808*	*77,797*	*78,811*	*78,723*	*78,634*
- broadleaved	*1000 cu.m. o.b. / y.*	*20,908*	*20,094*	*19,902*	*19,403*	*18,612*
Fellings, total	1000 cu.m. o.b. / y.	73,377	77,719	83,112	88,234	93,078
- coniferous	*1000 cu.m. o.b. / y.*	*63,802*	*67,579*	*72,267*	*76,730*	*80,927*
- broadleaved	*1000 cu.m. o.b. / y.*	*9,574*	*10,141*	*10,844*	*11,504*	*12,151*
Removals, total	1000 cu.m. u.b. / y.	60,145	63,704	68,124	72,323	76,294
- coniferous	*1000 cu.m. u.b. / y.*	*52,297*	*55,392*	*59,236*	*62,893*	*66,334*
- broadleaved	*1000 cu.m. u.b. / y.*	*7,848*	*8,312*	*8,889*	*9,430*	*9,960*
Removals, total from final fellings	1000 cu.m. u.b. / y.	42,494	45,009	48,130	51,056	53,745
- coniferous	*1000 cu.m. u.b. / y.*	*36,608*	*38,775*	*41,463*	*43,984*	*46,273*
- broadleaved	*1000 cu.m. u.b. / y.*	*5,886*	*6,234*	*6,666*	*7,072*	*7,471*
Removals, total from thinnings	1000 cu.m. u.b. / y.	17,651	18,696	19,994	21,267	22,549
- coniferous	*1000 cu.m. u.b. / y.*	*15,689*	*16,618*	*17,772*	*18,910*	*20,061*
- broadleaved	*1000 cu.m. u.b. / y.*	*1,962*	*2,078*	*2,222*	*2,357*	*2,489*
Ratios						
- Growing stock per Area	cu.m. o.b. / ha	130	143	152	158	161
- Net annual increment per growing stock	cu.m. o.b. / cu.m. o.b.	3.5%	3.2%	3.1%	3.0%	2.9%
- Net annual increment per ha	cu.m. o.b. / ha / y.	4.5	4.6	4.7	4.7	4.7
- Fellings per Net annual increment	cu.m. o.b. / cu.m. o.b.	77%	79%	84%	90%	96%
- Removals per Area	cu.m. u.b. / ha / y.	2.8	3.0	3.2	3.5	3.7

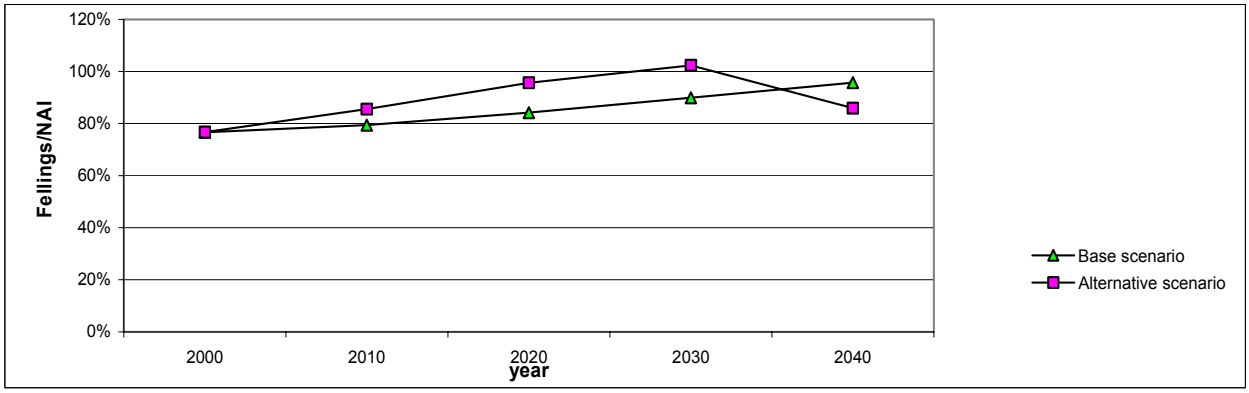




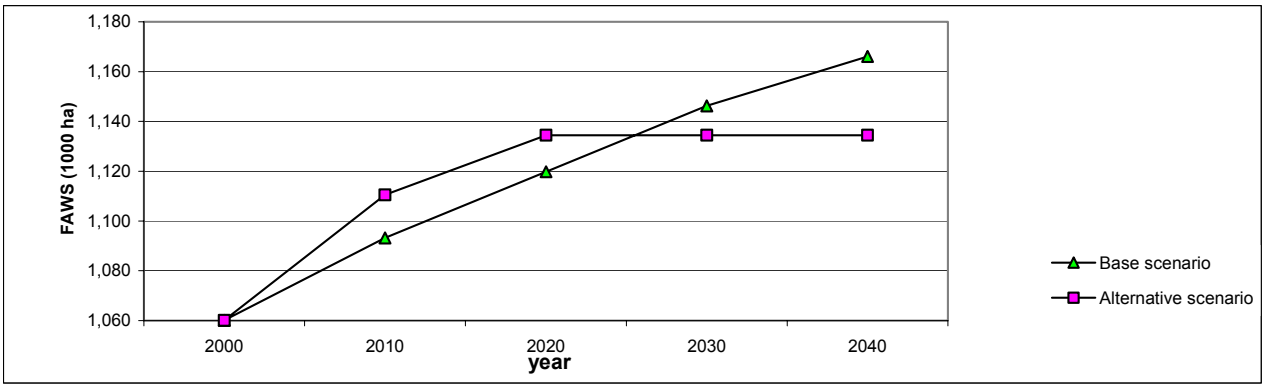

Growing stock per ha
165
160
155
150
145
140
135
130
125
120
2000
2010
2020
2030
2040
year
Base scenario
Alternative scenario

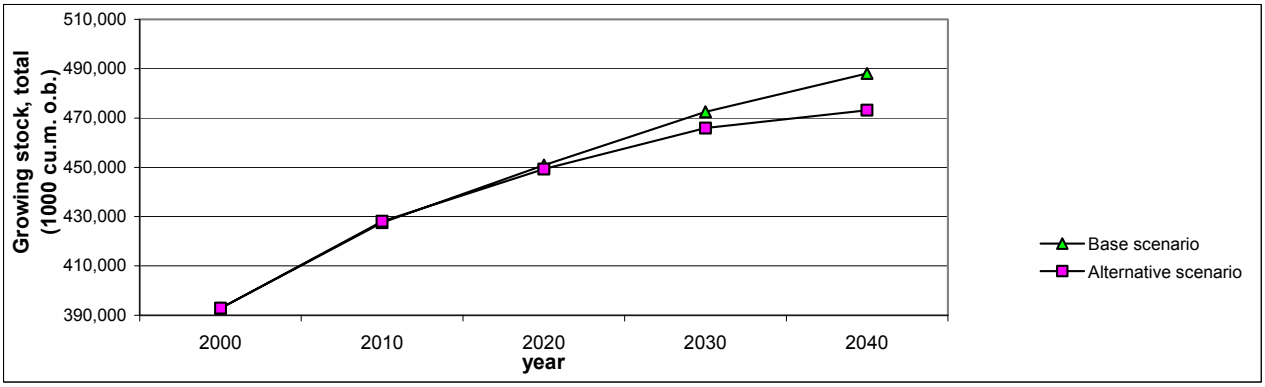

NAI, total
(1000 cu.m. o.b.)
110,000
105,000
100,000
95,000
90,000
85,000
80,000
75,000
70,000
65,000
60,000
2000
2010
2020
2030
2040
year
Base scenario
Alternative scenario

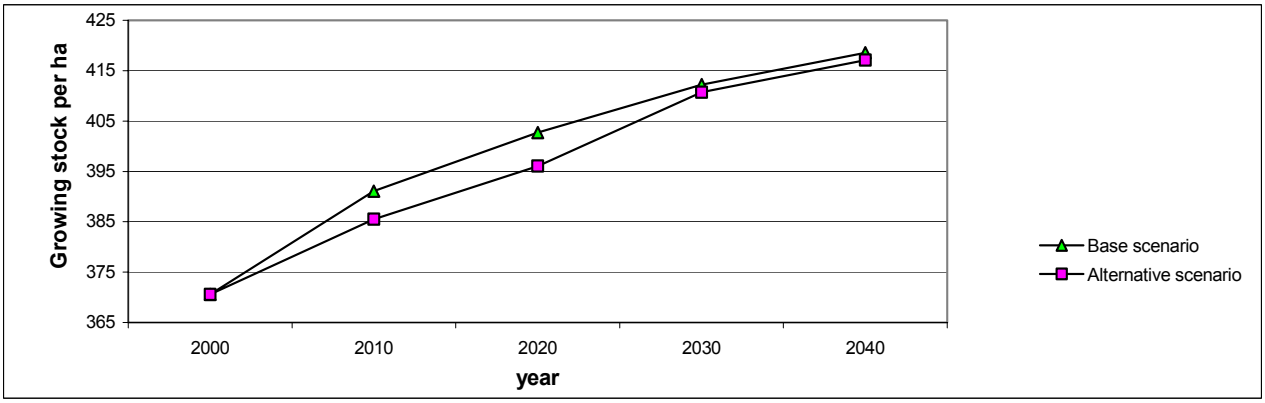

Removals, total
(1000 cu.m. o.b.)
110,000
105,000
100,000
95,000
90,000
85,000
80,000
75,000
70,000
65,000
60,000
2000
2010
2020
2030
2040
year
Base scenario
Alternative scenario

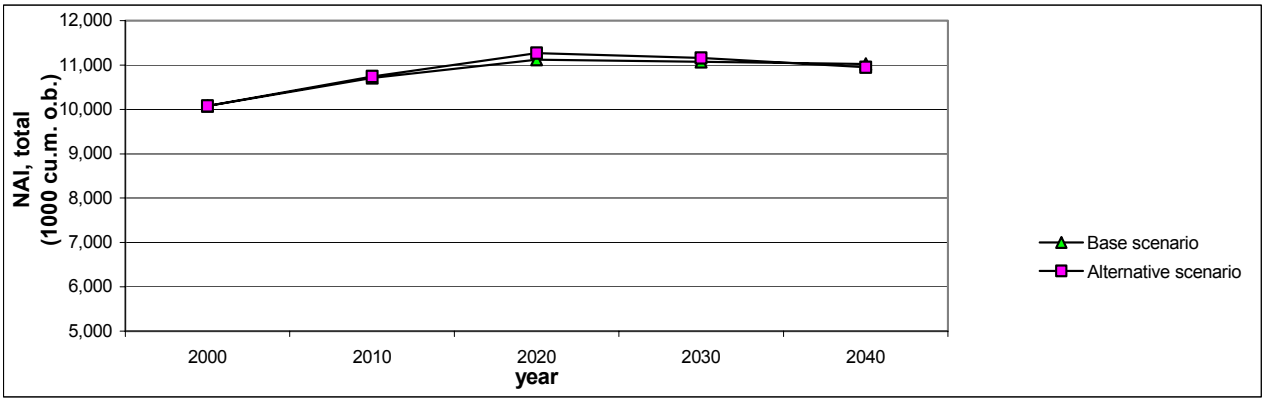

Fellings/NAI
120%
100%
80%
60%
40%
20%
0%
2000
2010
2020
2030
2040
year
Base scenario
Alternative scenario

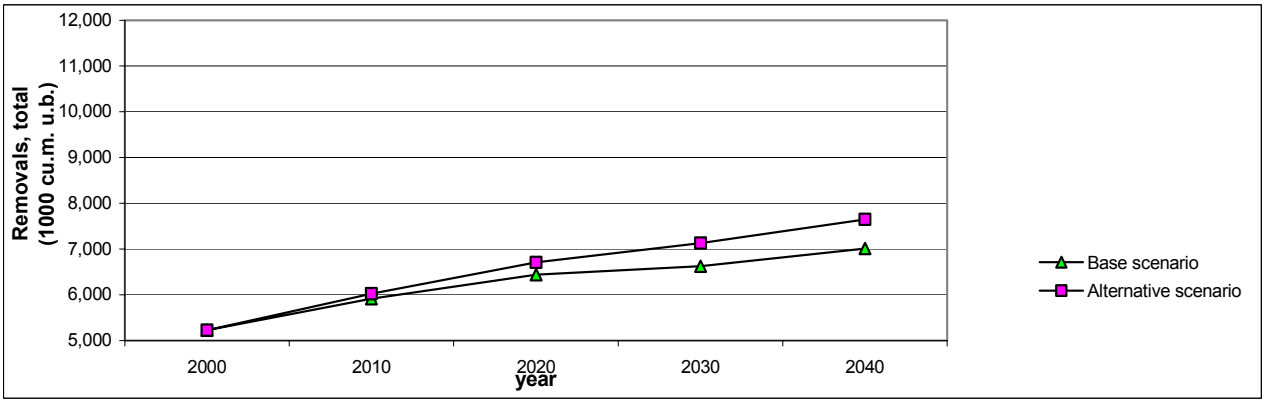
Switzerland	**Base scenario**					
	Unit	**2000**	**2010**	**2020**	**2030**	**2040**
Forest resource parameters						
Area of forest available for wood supply	1000 ha	1,060	1,093	1,120	1,146	1,166
- coniferous	*1000 ha*	*742*	*765*	*784*	*802*	*816*
- broadleaved	*1000 ha*	*318*	*328*	*336*	*344*	*350*
Growing stock, total	1000 cu.m. o.b.	392,836	427,561	450,930	472,502	488,053
- coniferous	*1000 cu.m. o.b.*	*305,399*	*330,463*	*347,935*	*365,677*	*378,787*
- broadleaved	*1000 cu.m. o.b.*	*87,437*	*97,098*	*102,995*	*106,824*	*109,266*
Net annual increment, total	1000 cu.m. o.b. / y.	10,078	10,713	11,125	11,071	11,025
- coniferous	*1000 cu.m. o.b. / y.*	*7,255*	*7,758*	*8,071*	*7,969*	*7,887*
- broadleaved	*1000 cu.m. o.b. / y.*	*2,823*	*2,955*	*3,054*	*3,103*	*3,139*
Fellings, total	1000 cu.m. o.b. / y.	7,146	8,098	8,808	9,061	9,590
- coniferous	*1000 cu.m. o.b. / y.*	*5,172*	*5,861*	*6,296*	*6,287*	*6,693*
- broadleaved	*1000 cu.m. o.b. / y.*	*1,974*	*2,237*	*2,513*	*2,774*	*2,897*
Removals, total	1000 cu.m. u.b. / y.	5,223	5,919	6,438	6,623	7,009
- coniferous	*1000 cu.m. u.b. / y.*	*3,780*	*4,284*	*4,602*	*4,595*	*4,892*
- broadleaved	*1000 cu.m. u.b. / y.*	*1,443*	*1,635*	*1,837*	*2,028*	*2,117*
Removals, total from final fellings	1000 cu.m. u.b. / y.	3,134	3,550	3,987	4,359	4,719
- coniferous	*1000 cu.m. u.b. / y.*	*2,268*	*2,569*	*2,885*	*3,154*	*3,415*
- broadleaved	*1000 cu.m. u.b. / y.*	*866*	*981*	*1,101*	*1,204*	*1,304*
Removals, total from thinnings	1000 cu.m. u.b. / y.	2,089	2,368	2,451	2,264	2,290
- coniferous	*1000 cu.m. u.b. / y.*	*1,512*	*1,714*	*1,716*	*1,441*	*1,477*
- broadleaved	*1000 cu.m. u.b. / y.*	*577*	*654*	*735*	*823*	*813*
Ratios						
- Growing stock per Area	cu.m. o.b. / ha	371	391	403	412	419
- Net annual increment per growing stock	cu.m. o.b. / cu.m. o.b.	2.6%	2.5%	2.5%	2.3%	2.3%
- Net annual increment per ha	cu.m. o.b. / ha / y.	9.5	9.8	9.9	9.7	9.5
- Fellings per Net annual increment	cu.m. o.b. / cu.m. o.b.	71%	76%	79%	82%	87%
- Removals per Area	cu.m. u.b. / ha / y.	4.9	5.4	5.7	5.8	6.0

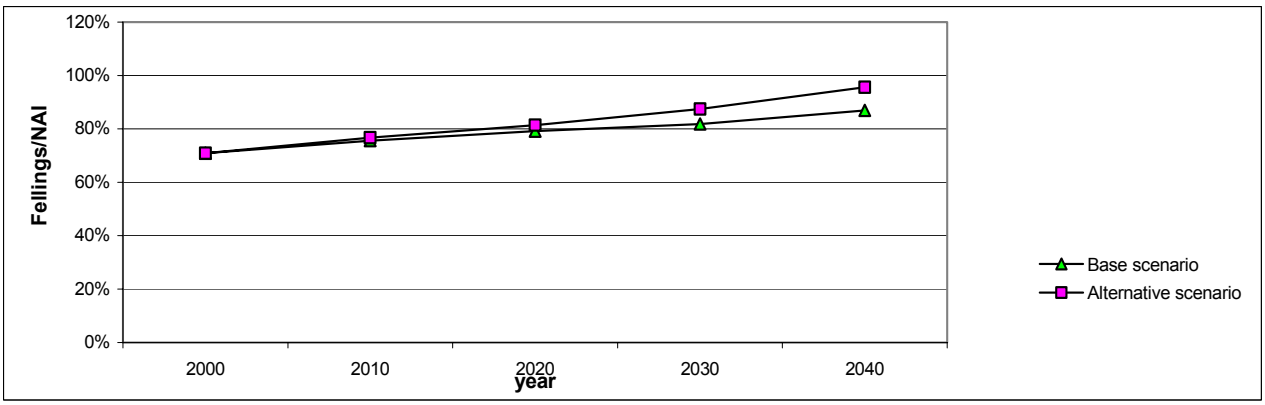




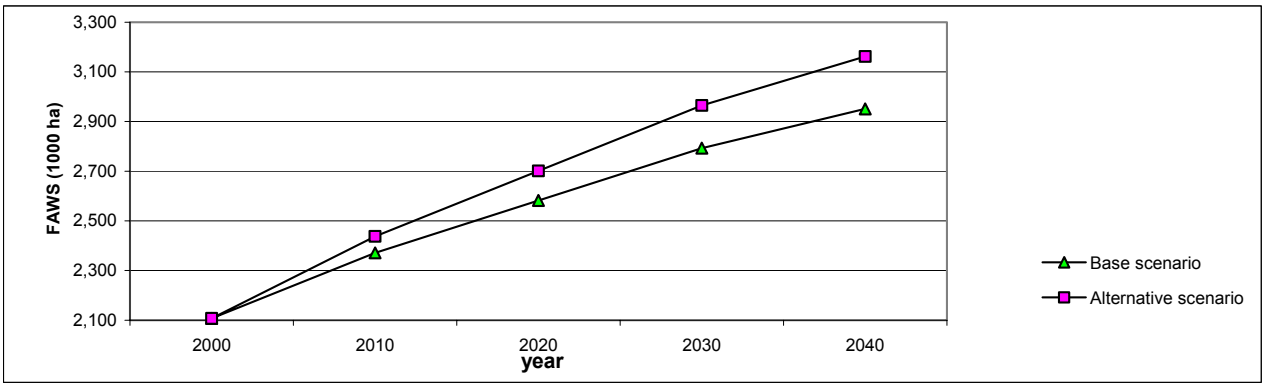

Growing stock per ha
425
415
405
395
385
375
365
2000
2010
2020
2030
2040
year
Base scenario
Alternative scenario

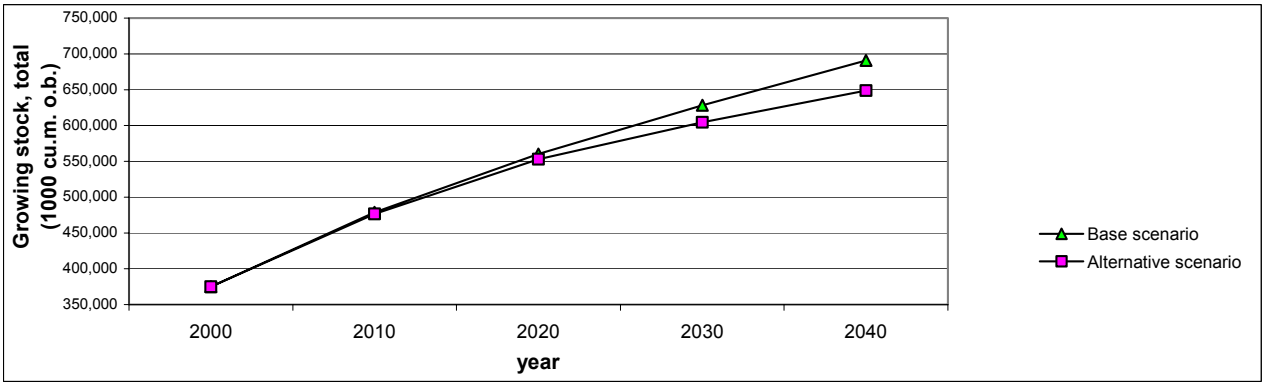

NAI, total (1000 cu.m. o.b.)
12,000
11,000
10,000
9,000
8,000
7,000
6,000
5,000
2000
2010
2020
2030
2040
year
Base scenario
Alternative scenario

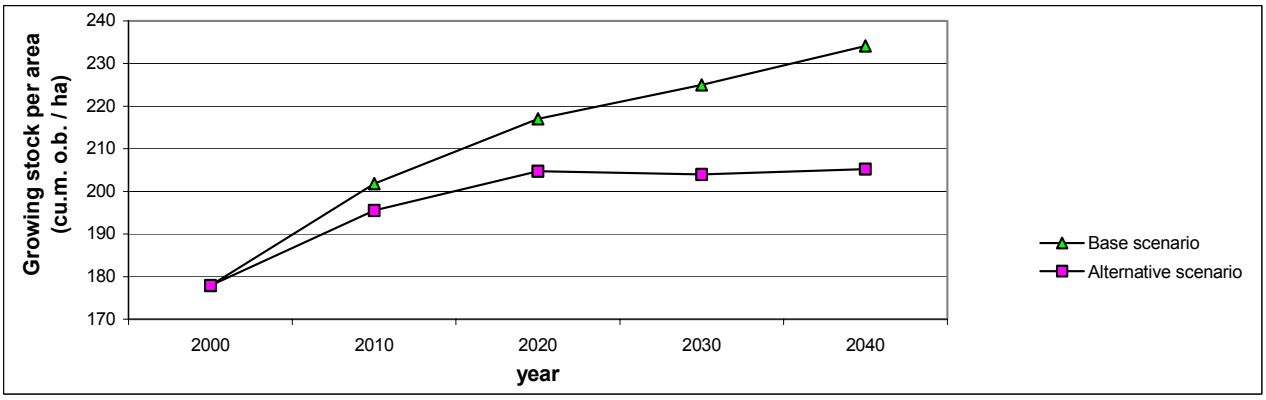

Removals, total (1000 cu.m. u.b.)
12,000
11,000
10,000
9,000
8,000
7,000
6,000
5,000
2000
2010
2020
2030
2040
year
Base scenario
Alternative scenario

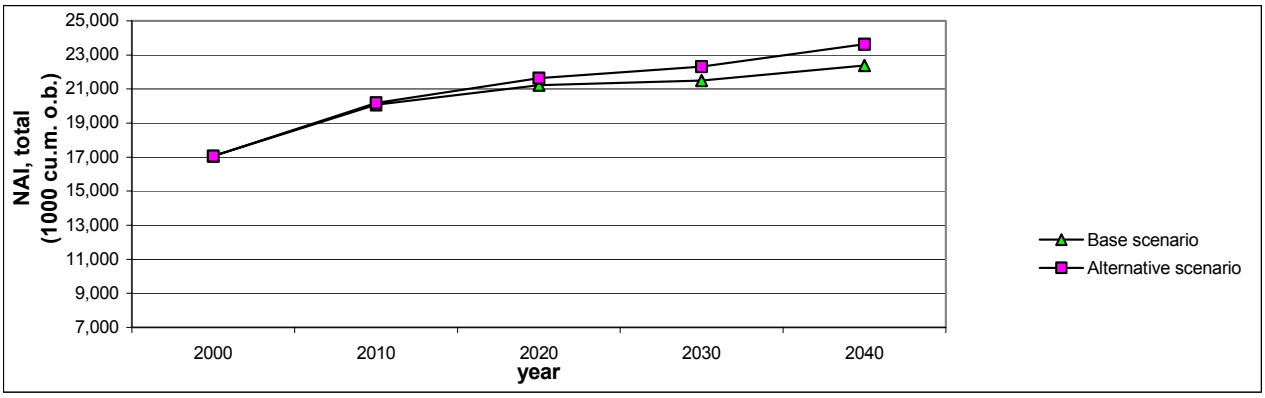

Fellings/NAI
120%
100%
80%
60%
40%
20%
0%
2000
2010
2020
2030
2040
year
Base scenario
Alternative scenario

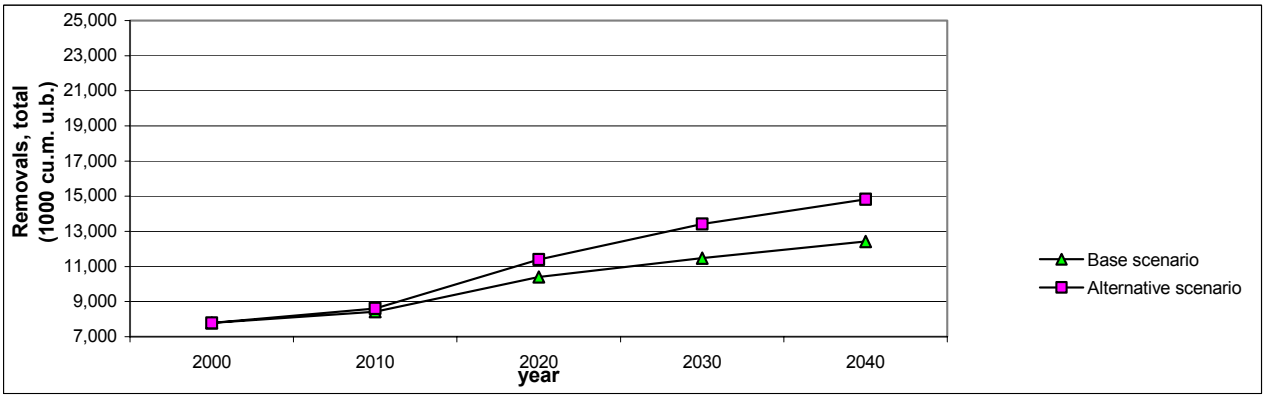
United Kingdom of Great Britain and Northern Ireland	**Base scenario**					
	Unit	**2000**	**2010**	**2020**	**2030**	**2040**
Forest resource parameters						
Area of forest available for wood supply	1000 ha	2,108	2,371	2,582	2,793	2,951
- coniferous	*1000 ha*	*1,455*	*1,637*	*1,782*	*1,928*	*2,037*
- broadleaved	*1000 ha*	*653*	*734*	*800*	*865*	*914*
Growing stock, total	1000 cu.m. o.b.	374,980	478,576	560,385	628,313	690,757
- coniferous	*1000 cu.m. o.b.*	*248,206*	*322,112*	*380,332*	*424,865*	*463,881*
- broadleaved	*1000 cu.m. o.b.*	*126,774*	*156,464*	*180,052*	*203,448*	*226,876*
Net annual increment, total	1000 cu.m. o.b. / y.	17,061	20,068	21,228	21,489	22,380
- coniferous	*1000 cu.m. o.b. / y.*	*13,138*	*16,147*	*17,145*	*17,272*	*17,975*
- broadleaved	*1000 cu.m. o.b. / y.*	*3,923*	*3,922*	*4,082*	*4,217*	*4,405*
Fellings, total	1000 cu.m. o.b. / y.	10,135	10,961	13,539	14,935	16,159
- coniferous	*1000 cu.m. o.b. / y.*	*8,855*	*9,401*	*11,812*	*13,049*	*14,115*
- broadleaved	*1000 cu.m. o.b. / y.*	*1,280*	*1,560*	*1,727*	*1,886*	*2,044*
Removals, total	1000 cu.m. u.b. / y.	7,788	8,423	10,404	11,476	12,417
- coniferous	*1000 cu.m. u.b. / y.*	*6,804*	*7,224*	*9,076*	*10,027*	*10,846*
- broadleaved	*1000 cu.m. u.b. / y.*	*984*	*1,199*	*1,327*	*1,449*	*1,571*
Removals, total from final fellings	1000 cu.m. u.b. / y.	5,452	5,597	7,248	8,030	8,705
- coniferous	*1000 cu.m. u.b. / y.*	*4,763*	*4,758*	*6,319*	*7,016*	*7,605*
- broadleaved	*1000 cu.m. u.b. / y.*	*689*	*839*	*929*	*1,014*	*1,100*
Removals, total from thinnings	1000 cu.m. u.b. / y.	2,336	2,826	3,156	3,446	3,712
- coniferous	*1000 cu.m. u.b. / y.*	*2,041*	*2,466*	*2,758*	*3,011*	*3,241*
- broadleaved	*1000 cu.m. u.b. / y.*	*295*	*360*	*398*	*435*	*471*
Ratios						
- Growing stock per Area	cu.m. o.b. / ha	178	202	217	225	234
- Net annual increment per growing stock	cu.m. o.b. / cu.m. o.b.	4.5%	4.2%	3.8%	3.4%	3.2%
- Net annual increment per ha	cu.m. o.b. / ha / y.	8.1	8.5	8.2	7.7	7.6
- Fellings per Net annual increment	cu.m. o.b. / cu.m. o.b.	59%	55%	64%	69%	72%
- Removals per Area	cu.m. u.b. / ha / y.	3.7	3.6	4.0	4.1	4.2

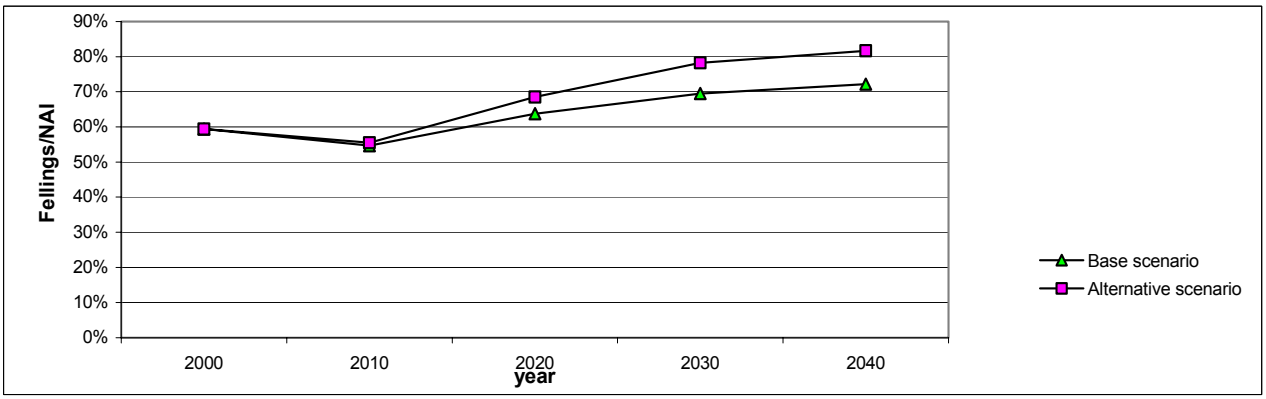




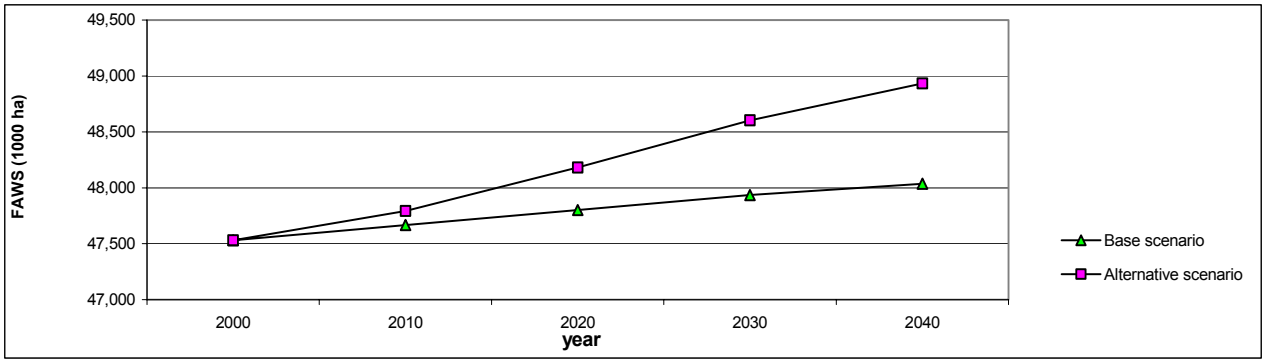

Growing stock per area (cu.m. o.b. / ha)
240
230
220
210
200
190
180
170
2000
2010
2020
2030
2040
year
Base scenario
Alternative scenario

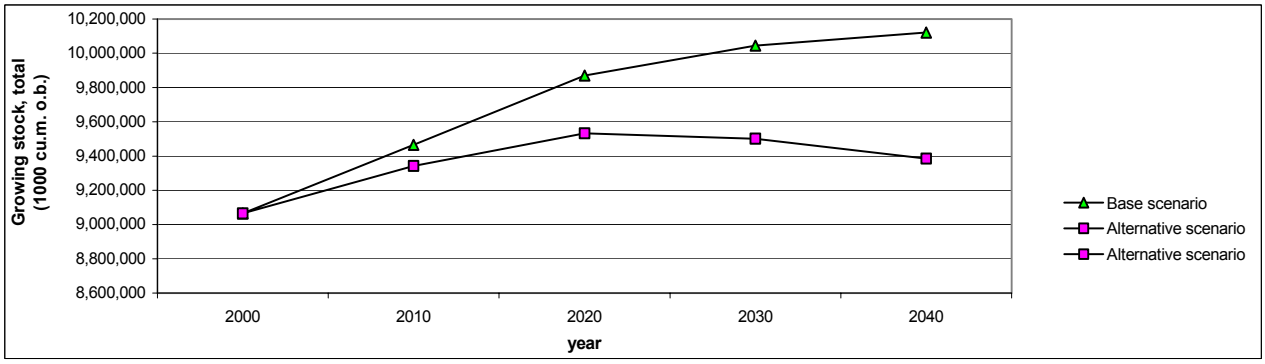

NAI, total (1000 cu.m. o.b.)
25,000
23,000
21,000
19,000
17,000
15,000
13,000
11,000
9,000
7,000
2000
2010
2020
2030
2040
year
Base scenario
Alternative scenario

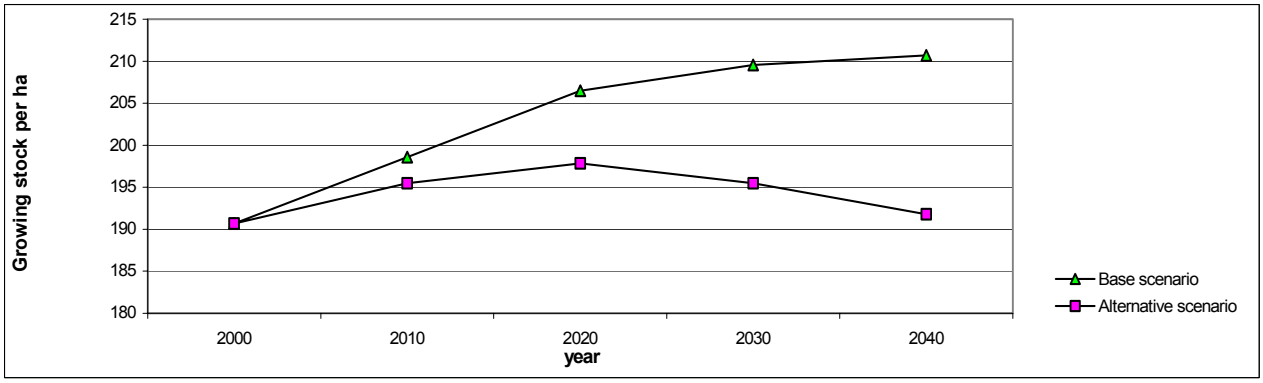

Removals, total (1000 cu.m. u.b.)
25,000
23,000
21,000
19,000
17,000
15,000
13,000
11,000
9,000
7,000
2000
2010
2020
2030
2040
year
Base scenario
Alternative scenario

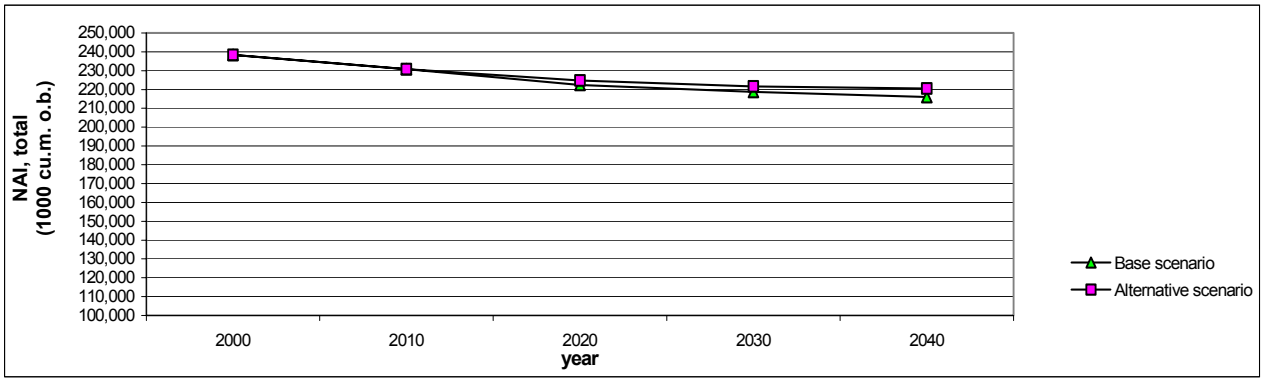

Fellings/NAI
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
2000
2010
2020
2030
2040
year
Base scenario
Alternative scenario

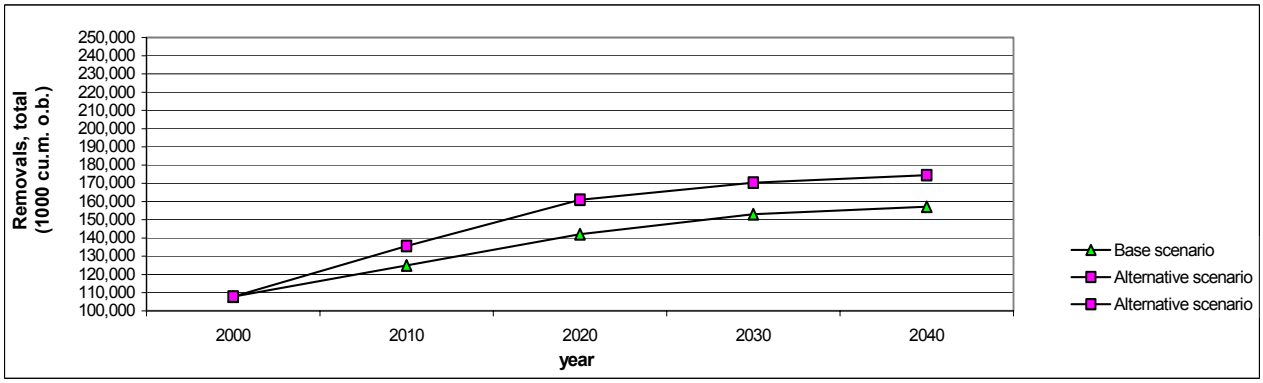
Central and Eastern European Countries	**Base scenario**					
	Unit	**2000**	**2010**	**2020**	**2030**	**2040**
Forest resource parameters						
Area of forest available for wood supply	1000 ha	47,533	47,667	47,801	47,936	48,037
- coniferous	*1000 ha*	24,598	24,747	24,895	25,044	25,156
- broadleaved	*1000 ha*	*22,935*	*22,920*	*22,906*	*22,892*	*22,881*
Growing stock, total	1000 cu.m. o.b.	9,064,296	9,465,420	9,870,518	10,045,311	10,120,571
- coniferous	*1000 cu.m. o.b.*	5,164,966	5,417,047	5,671,352	5,791,583	5,837,165
- broadleaved	*1000 cu.m. o.b.*	*3,899,330*	*4,048,372*	*4,199,166*	*4,253,728*	*4,283,406*
Net annual increment, total	1000 cu.m. o.b. / y.	238,292	230,791	222,396	218,730	215,915
- coniferous	*1000 cu.m. o.b. / y.*	143,738	140,354	136,499	136,164	135,153
- broadleaved	*1000 cu.m. o.b. / y.*	*94,553*	*90,437*	*85,897*	*82,566*	*80,762*
Fellings, total	1000 cu.m. o.b. / y.	144,308	167,208	190,260	204,916	210,321
- coniferous	*1000 cu.m. o.b. / y.*	87,864	101,601	115,377	125,989	131,430
- broadleaved	*1000 cu.m. o.b. / y.*	*56,445*	*65,607*	*74,882*	*78,927*	*78,891*
Removals, total	1000 cu.m. u.b. / y.	107,795	124,900	142,119	153,067	157,104
- coniferous	*1000 cu.m. u.b. / y.*	65,632	75,893	86,184	94,111	98,175
- broadleaved	*1000 cu.m. u.b. / y.*	*42,163*	*49,007*	*55,935*	*58,956*	*58,929*
Removals, total from final fellings	1000 cu.m. u.b. / y.	72,312	84,834	97,436	105,849	108,157
- coniferous	*1000 cu.m. u.b. / y.*	42,861	49,845	56,850	62,271	65,573
- broadleaved	*1000 cu.m. u.b. / y.*	*29,451*	*34,989*	*40,586*	*43,578*	*42,584*
Removals, total from thinnings	1000 cu.m. u.b. / y.	35,482	40,066	44,683	47,218	48,948
- coniferous	*1000 cu.m. u.b. / y.*	22,771	26,048	29,334	31,839	32,602
- broadleaved	*1000 cu.m. u.b. / y.*	*12,711*	*14,017*	*15,349*	*15,379*	*16,346*
Ratios						
- Growing stock per Area	cu.m. o.b. / ha	191	199	206	210	211
- Net annual increment per growing stock	cu.m. o.b. / cu.m. o.b.	2.6%	2.4%	2.3%	2.2%	2.1%
- Net annual increment per Area	cu.m. o.b. / ha / y.	5.0	4.8	4.7	4.6	4.5
- Fellings per Net annual increment	cu.m. o.b. / cu.m. o.b.	59%	72%	86%	94%	97%
- Removals per Area	cu.m. u.b. / ha / y.	2.3	2.6	3.0	3.2	3.3

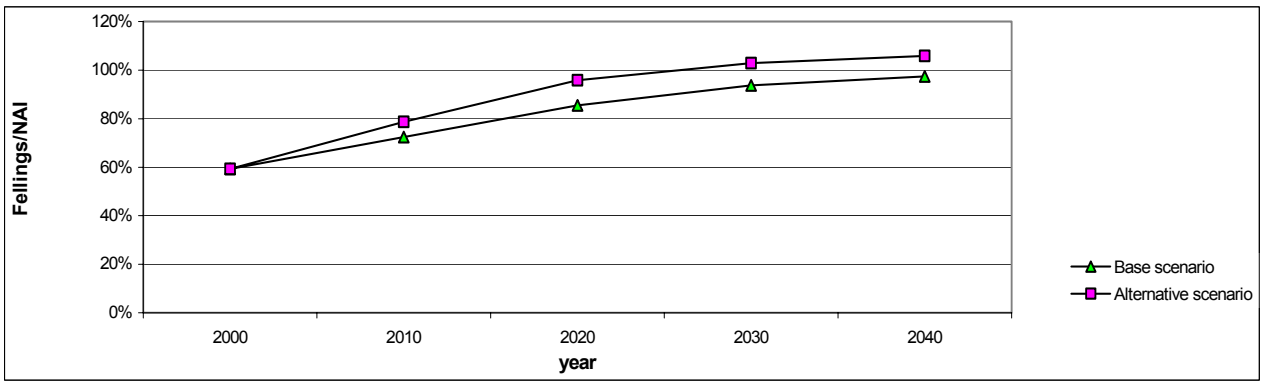




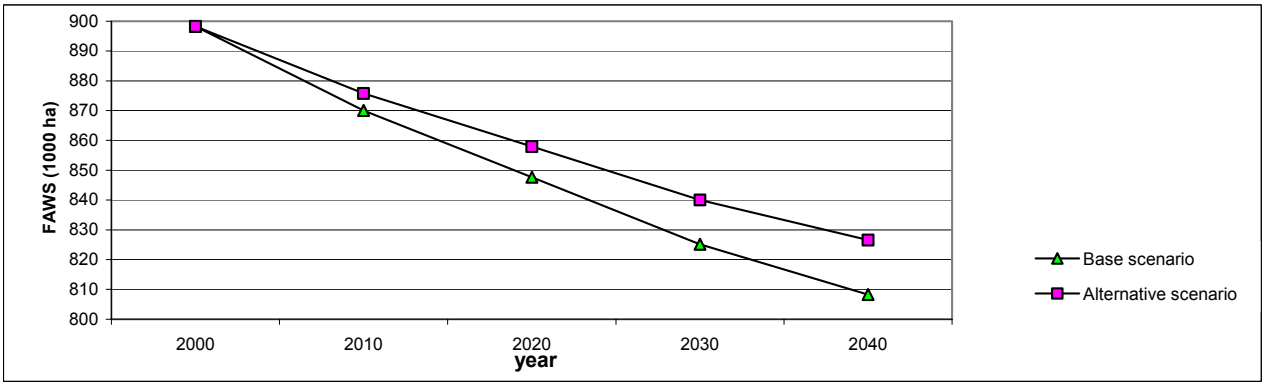

Growing stock per ha
215
210
205
200
195
190
185
180
2000
2010
2020
2030
2040
year
Base scenario
Alternative scenario

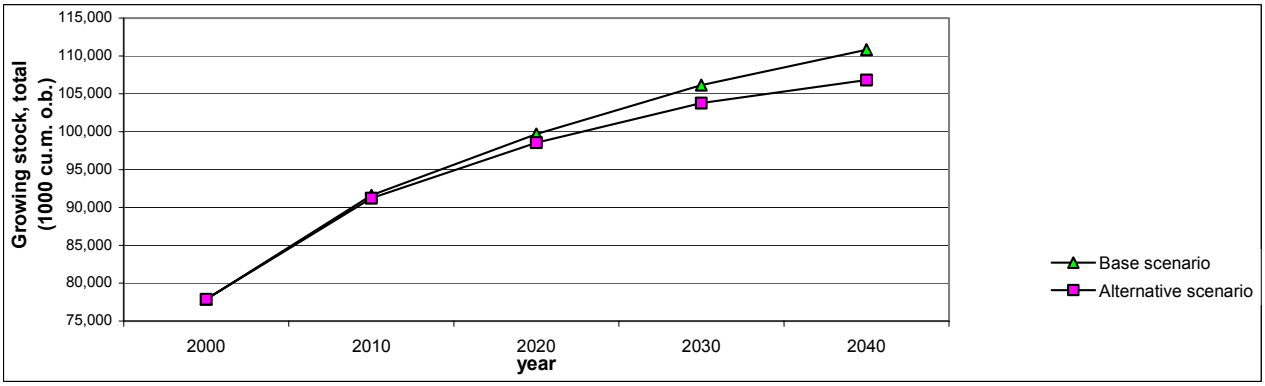

NAI, total
(1000 cu.m. o.b.)
250,000
240,000
230,000
220,000
210,000
200,000
190,000
180,000
170,000
160,000
150,000
140,000
130,000
120,000
110,000
100,000
2000
2010
2020
2030
2040
year
Base scenario
Alternative scenario

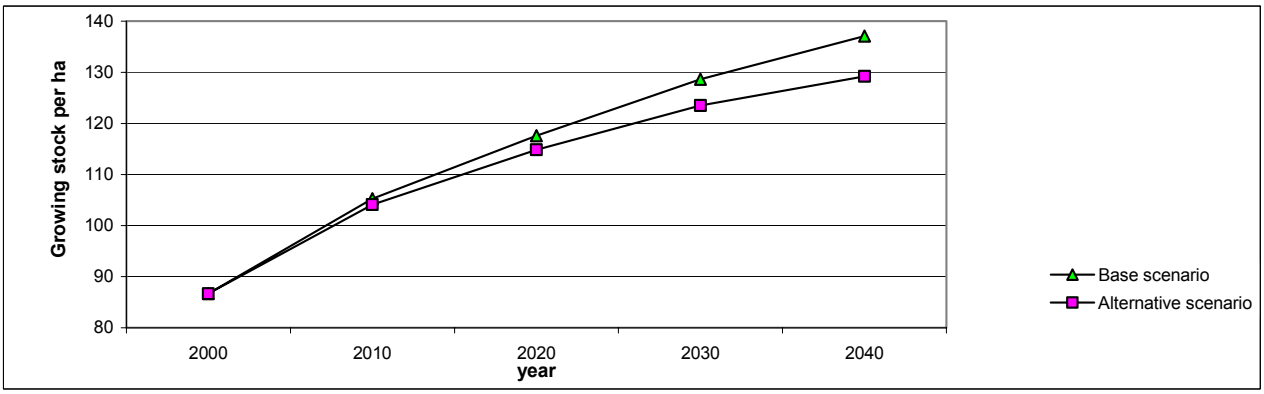

Removals, total
(1000 cu.m. o.b.)
250,000
240,000
230,000
220,000
210,000
200,000
190,000
180,000
170,000
160,000
150,000
140,000
130,000
120,000
110,000
100,000
2000
2010
2020
2030
2040
year
Base scenario
Alternative scenario
Alternative scenario

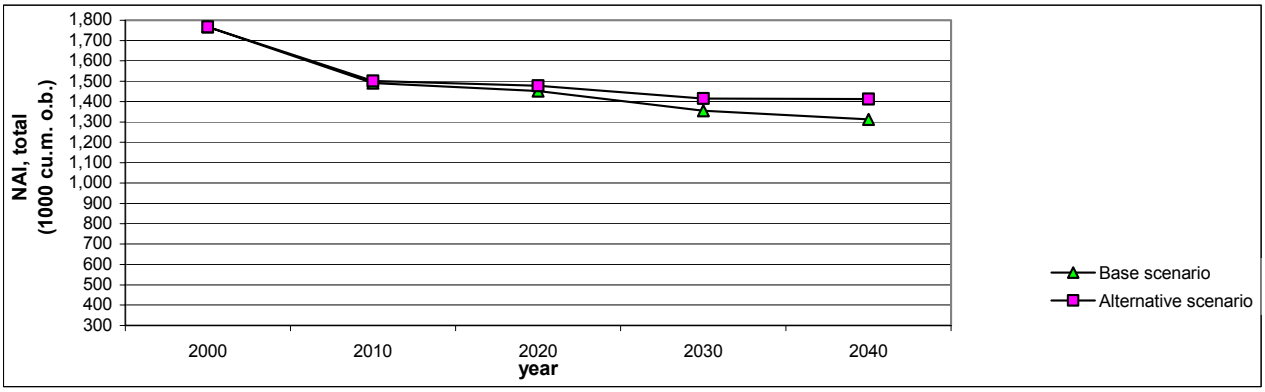

Fellings/NAI
120%
100%
80%
60%
40%
20%
0%
2000
2010
2020
2030
2040
year
Base scenario
Alternative scenario

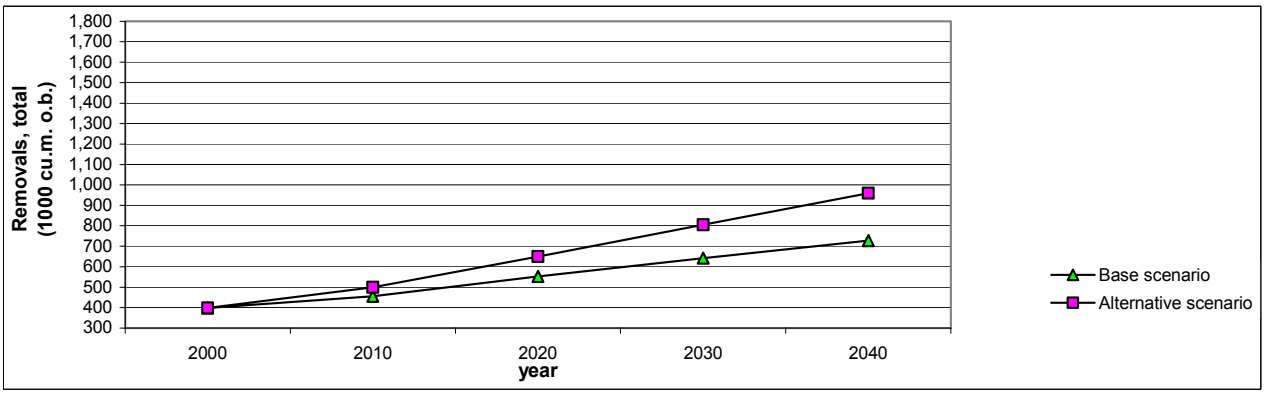
Albania	**Base scenario**					
	Unit	**2000**	**2010**	**2020**	**2030**	**2040**
Forest resource parameters						
Area of forest available for wood supply	1000 ha	898	870	848	825	808
- coniferous	*1000 ha*	*165*	*160*	*155*	*151*	*148*
- broadleaved	*1000 ha*	*734*	*711*	*692*	*674*	*660*
Growing stock, total	1000 cu.m. o.b.	77,879	91,587	99,674	106,139	110,832
- coniferous	*1000 cu.m. o.b.*	*15,762*	*18,045*	*19,641*	*20,954*	*21,956*
- broadleaved	*1002 cu.m. o.b.*	*62,117*	*73,542*	*80,033*	*85,185*	*88,876*
Net annual increment, total	1000 cu.m. o.b. / y.	1,768	1,491	1,452	1,355	1,312
- coniferous	*1000 cu.m. o.b. / y.*	*308*	*288*	*286*	*279*	*270*
- broadleaved	*1000 cu.m. o.b. / y.*	*1,460*	*1,203*	*1,166*	*1,076*	*1,043*
Fellings, total	1000 cu.m. o.b. / y.	477	545	662	769	871
- coniferous	*1000 cu.m. o.b. / y.*	*97*	*110*	*134*	*156*	*176*
- broadleaved	*1000 cu.m. o.b. / y.*	379	434	528	613	695
Removals, total	1000 cu.m. u.b. / y.	398	455	553	643	728
- coniferous	*1000 cu.m. u.b. / y.*	*81*	*92*	*112*	*130*	*147*
- broadleaved	*1000 cu.m. u.b. / y.*	*317*	*363*	*441*	*513*	*581*
Removals, total from final fellings	1000 cu.m. u.b. / y.	287	329	399	464	527
- coniferous	*1000 cu.m. u.b. / y.*	*55*	*62*	*75*	*87*	*99*
- broadleaved	*1000 cu.m. u.b. / y.*	*232*	*267*	*324*	*377*	*428*
Removals, total from thinnings	1000 cu.m. u.b. / y.	112	127	154	179	201
- coniferous	*1000 cu.m. u.b. / y.*	*27*	*30*	*37*	*43*	*48*
- broadleaved	*1000 cu.m. u.b. / y.*	*85*	*96*	*117*	*136*	*153*
Ratios						
- Growing stock per Area	cu.m. o.b. / ha	87	105	118	129	137
- Net annual increment per growing stock	cu.m. o.b. / cu.m. o.b.	2.3%	1.6%	1.5%	1.3%	1.2%
- Net annual increment per ha	cu.m. o.b. / ha / y.	2.0	1.7	1.7	1.6	1.6
- Fellings per Net annual increment	cu.m. o.b. / cu.m. o.b.	27%	37%	46%	57%	66%
- Removals per Area	cu.m. u.b. / ha / y.	0.4	0.5	0.7	0.8	0.9

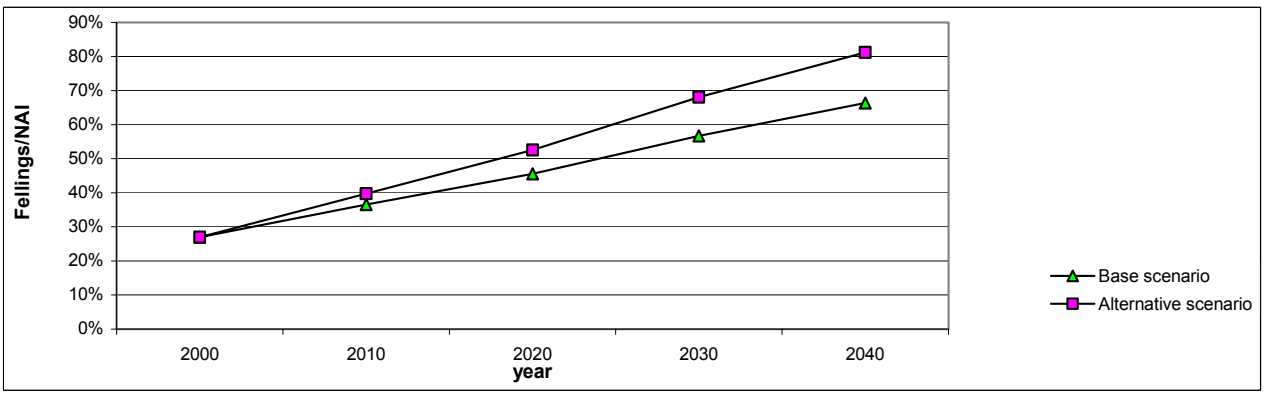




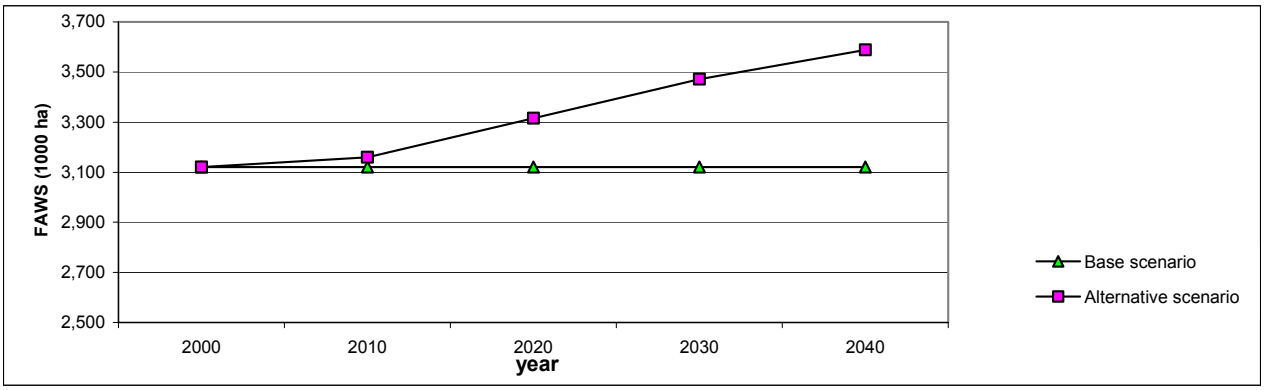

Growing stock per ha
140
130
120
110
100
90
80
2000
2010
2020
2030
2040
year
Base scenario
Alternative scenario

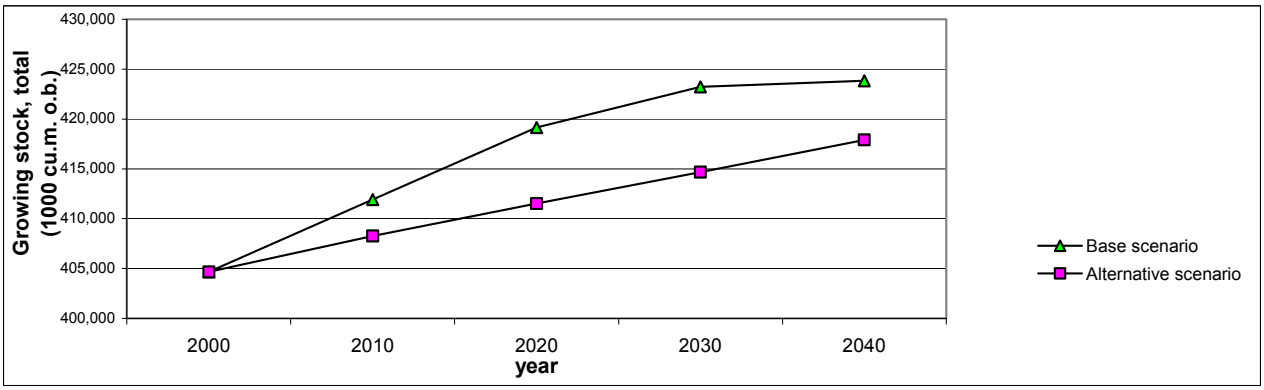

NAI, total (1000 cu.m. o.b.)
1,800
1,700
1,600
1,500
1,400
1,300
1,200
1,100
1,000
900
800
700
600
500
400
300
2000
2010
2020
2030
2040
year
Base scenario
Alternative scenario

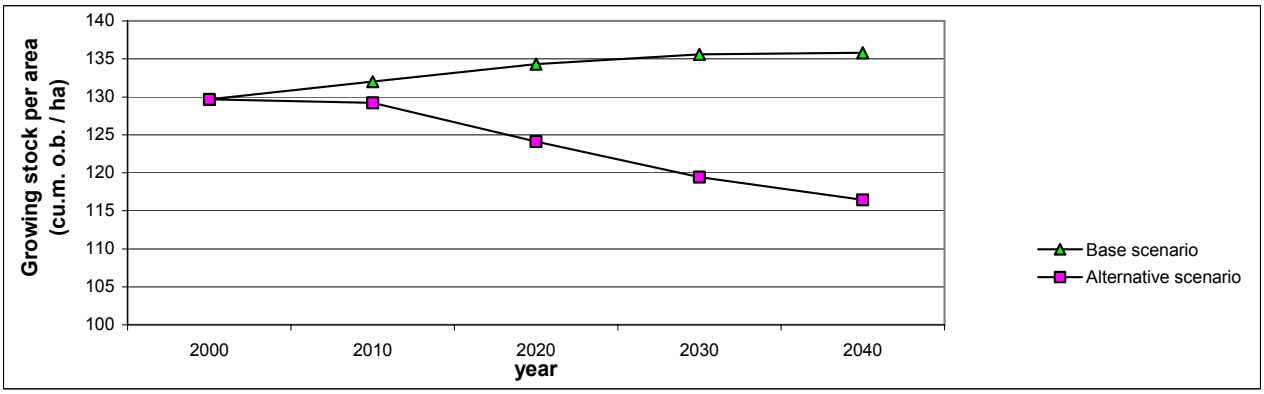

Removals, total (1000 cu.m. o.b.)
1,800
1,700
1,600
1,500
1,400
1,300
1,200
1,100
1,000
900
800
700
600
500
400
300
2000
2010
2020
2030
2040
year
Base scenario
Alternative scenario

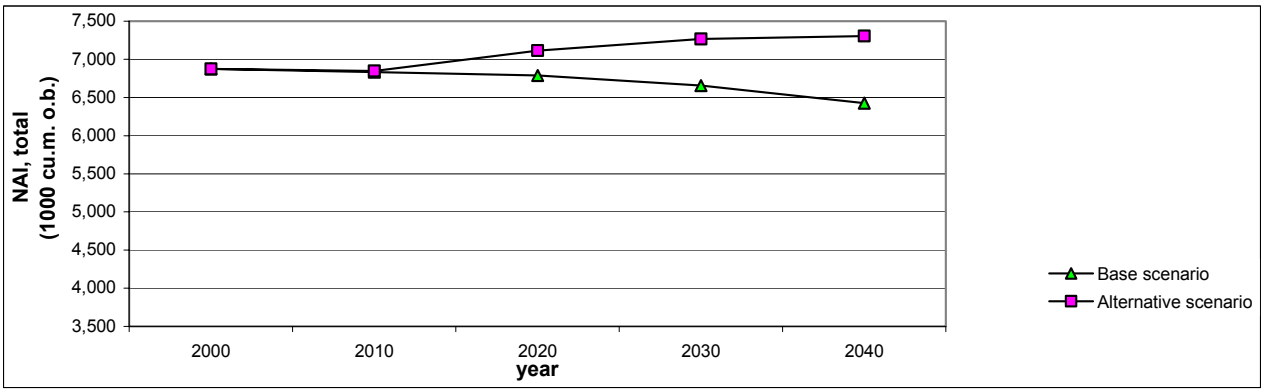

Fellings/NAI
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
2000
2010
2020
2030
2040
year
Base scenario
Alternative scenario

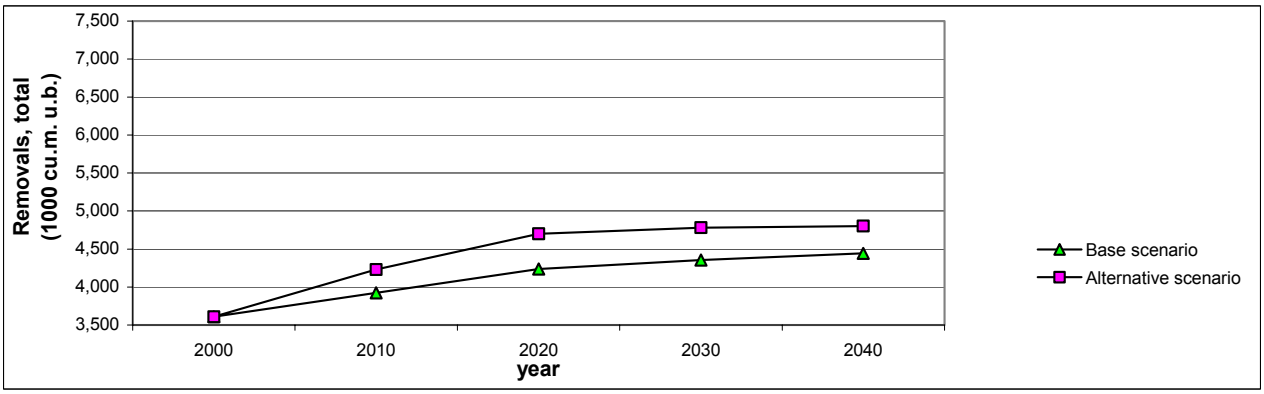
Bulgaria	**Base scenario**					
	Unit	**2000**	**2010**	**2020**	**2030**	**2040**
Forest resource parameters						
Area of forest available for wood supply	1000 ha	3,121	3,121	3,121	3,121	3,121
- coniferous	*1000 ha*	*954*	*954*	*954*	*954*	*954*
- broadleaved	*1000 ha*	*2,167*	*2,167*	*2,167*	*2,167*	*2,167*
Growing stock, total	1000 cu.m. o.b.	404,671	411,902	419,134	423,210	423,824
- coniferous	*1000 cu.m. o.b.*	*168,029*	*173,944*	*179,858*	*184,389*	*186,583*
- broadleaved	*1002 cu.m. o.b.*	*236,641*	*237,958*	*239,276*	*238,821*	*237,241*
Net annual increment, total	1000 cu.m. o.b. / y.	6,876	6,831	6,787	6,655	6,426
- coniferous	*1000 cu.m. o.b. / y.*	*3,224*	*3,229*	*3,234*	*3,153*	*2,962*
- broadleaved	*1000 cu.m. o.b. / y.*	*3,651*	*3,603*	*3,554*	*3,503*	*3,464*
Fellings, total	1000 cu.m. o.b. / y.	5,244	5,702	6,160	6,331	6,458
- coniferous	*1000 cu.m. o.b. / y.*	*2,277*	*2,475*	*2,674*	*2,748*	*2,804*
- broadleaved	*1000 cu.m. o.b. / y.*	2,968	3,227	3,486	3,583	3,655
Removals, total	1000 cu.m. u.b. / y.	3,608	3,923	4,238	4,356	4,444
- coniferous	*1000 cu.m. u.b. / y.*	*1,566*	*1,703*	*1,840*	*1,891*	*1,929*
- broadleaved	*1000 cu.m. u.b. / y.*	*2,042*	*2,220*	*2,398*	*2,465*	*2,515*
Removals, total from final fellings	1000 cu.m. u.b. / y.	2,623	2,852	3,081	3,166	3,230
- coniferous	*1000 cu.m. u.b. / y.*	*1,096*	*1,192*	*1,288*	*1,324*	*1,350*
- broadleaved	*1000 cu.m. u.b. / y.*	*1,526*	*1,660*	*1,793*	*1,843*	*1,880*
Removals, total from thinnings	1000 cu.m. u.b. / y.	985	1,071	1,157	1,189	1,213
- coniferous	*1000 cu.m. u.b. / y.*	*470*	*511*	*552*	*567*	*579*
- broadleaved	*1000 cu.m. u.b. / y.*	*515*	*560*	*605*	*622*	*635*
Ratios						
- Growing stock per Area	cu.m. o.b. / ha	130	132	134	136	136
- Net annual increment per growing stock	cu.m. o.b. / cu.m. o.b.	1.7%	1.7%	1.6%	1.6%	1.5%
- Net annual increment per ha	cu.m. o.b. / ha / y.	2.2	2.2	2.2	2.1	2.1
- Fellings per Net annual increment	cu.m. o.b. / cu.m. o.b.	76%	83%	91%	95%	101%
- Removals per Area	cu.m. u.b. / ha / y.	1.2	1.3	1.4	1.4	1.4

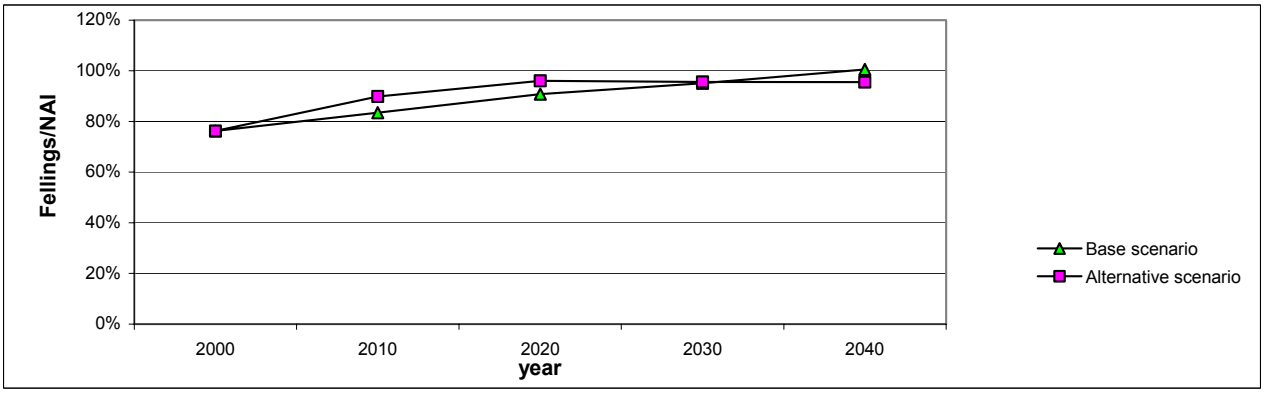




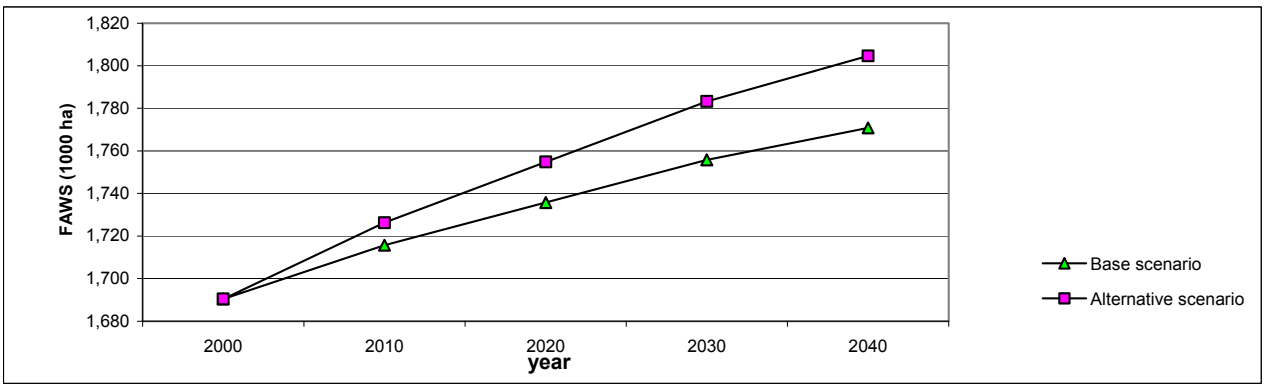

Growing stock per area (cu.m. o.b. / ha)
140
135
130
125
120
115
110
105
100
2000
2010
2020
2030
2040
year
Base scenario
Alternative scenario

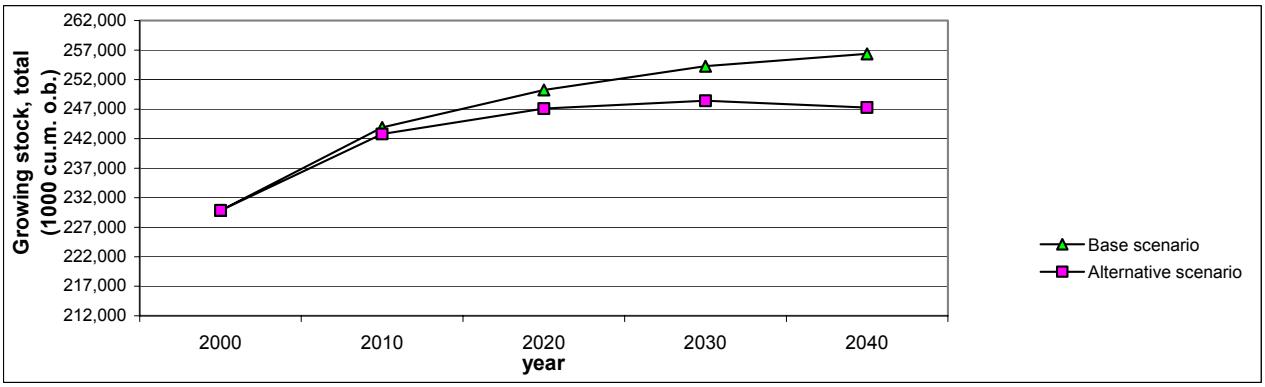

NAI, total (1000 cu.m. o.b.)
7,500
7,000
6,500
6,000
5,500
5,000
4,500
4,000
3,500
2000
2010
2020
2030
2040
year
Base scenario
Alternative scenario

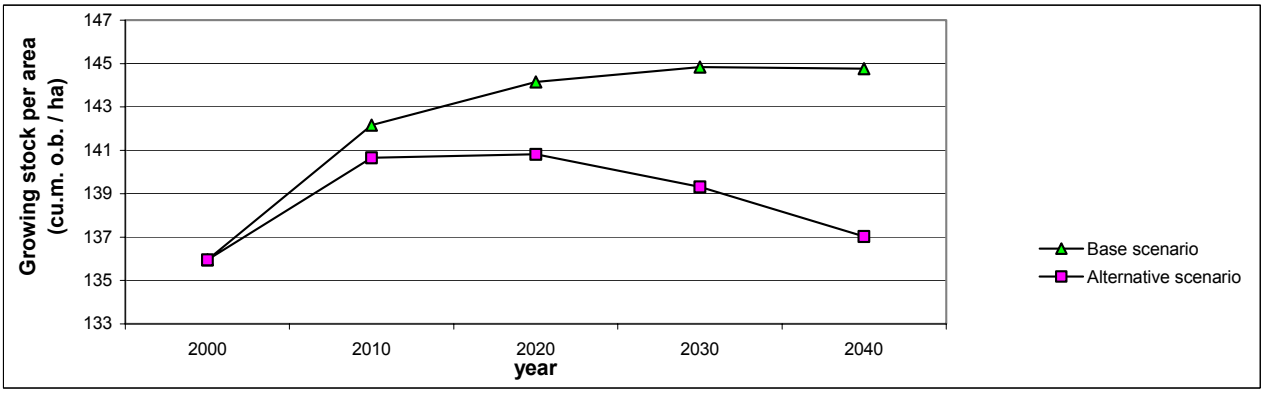

Removals, total (1000 cu.m. u.b.)
7,500
7,000
6,500
6,000
5,500
5,000
4,500
4,000
3,500
2000
2010
2020
2030
2040
year
Base scenario
Alternative scenario

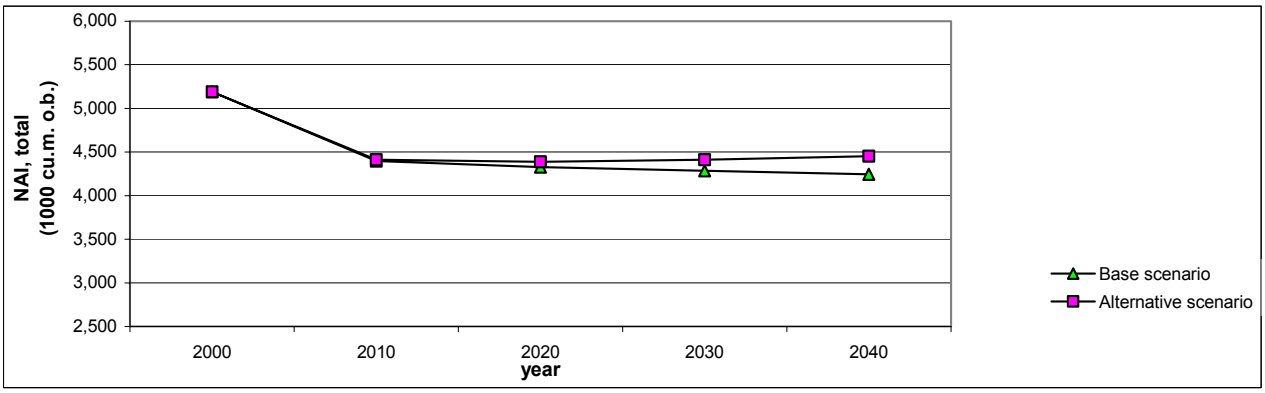

Fellings/NAI
120%
100%
80%
60%
40%
20%
0%
2000
2010
2020
2030
2040
year
Base scenario
Alternative scenario

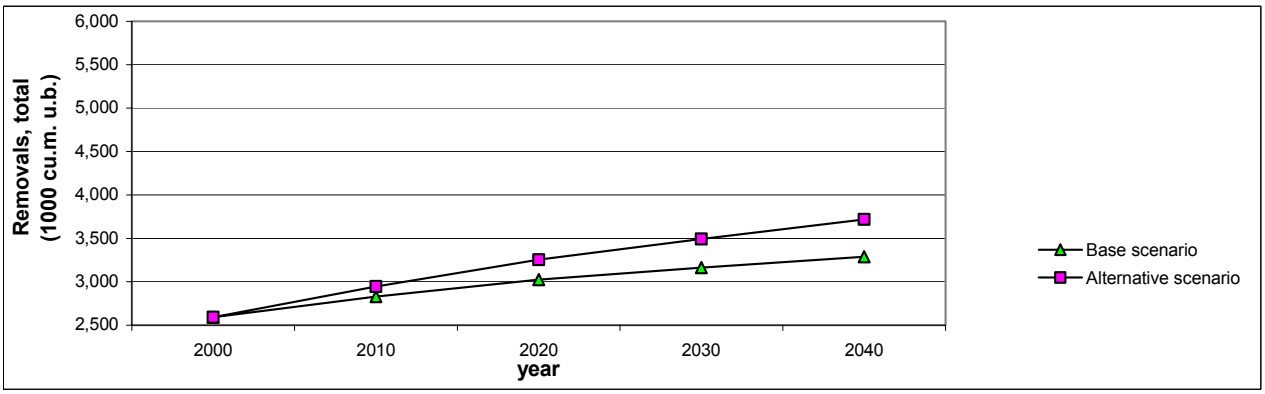
Croatia	**Base scenario**					
	Unit	**2000**	**2010**	**2020**	**2030**	**2040**
Forest resource parameters						
Area of forest available for wood supply	1000 ha	1,691	1,716	1,736	1,756	1,771
- coniferous	*1000 ha*	*77*	*78*	*79*	*80*	*80*
- broadleaved	*1000 ha*	*1,614*	*1,638*	*1,657*	*1,676*	*1,690*
Growing stock, total	1000 cu.m. o.b.	229,830	243,907	250,222	254,298	256,354
- coniferous	*1000 cu.m. o.b.*	*5,407*	*5,382*	*5,267*	*5,096*	*4,864*
- broadleaved	*1002 cu.m. o.b.*	*224,424*	*238,525*	*244,955*	*249,202*	*251,490*
Net annual increment, total	1000 cu.m. o.b. / y.	5,190	4,398	4,328	4,286	4,246
- coniferous	*1000 cu.m. o.b. / y.*	*132*	*135*	*137*	*139*	*139*
- broadleaved	*1000 cu.m. o.b. / y.*	*5,058*	*4,263*	*4,191*	*4,147*	*4,107*
Fellings, total	1000 cu.m. o.b. / y.	3,222	3,517	3,763	3,932	4,089
- coniferous	*1000 cu.m. o.b. / y.*	*128*	*141*	*151*	*157*	*164*
- broadleaved	*1000 cu.m. o.b. / y.*	3,094	3,376	3,612	3,774	3,925
Removals, total	1000 cu.m. u.b. / y.	2,591	2,829	3,026	3,162	3,289
- coniferous	*1000 cu.m. u.b. / y.*	*103*	*113*	*121*	*126*	*132*
- broadleaved	*1000 cu.m. u.b. / y.*	*2,489*	*2,716*	*2,905*	*3,036*	*3,157*
Removals, total from final fellings	1000 cu.m. u.b. / y.	2,000	2,184	2,336	2,441	2,539
- coniferous	*1000 cu.m. u.b. / y.*	*72*	*79*	*85*	*88*	*92*
- broadleaved	*1000 cu.m. u.b. / y.*	*1,929*	*2,105*	*2,252*	*2,353*	*2,447*
Removals, total from thinnings	1000 cu.m. u.b. / y.	591	645	690	721	750
- coniferous	*1000 cu.m. u.b. / y.*	*31*	*34*	*36*	*38*	*39*
- broadleaved	*1000 cu.m. u.b. / y.*	*560*	*611*	*654*	*683*	*710*
Ratios						
- Growing stock per Area	cu.m. o.b. / ha	136	142	144	145	145
- Net annual increment per growing stock	cu.m. o.b. / cu.m. o.b.	2.3%	1.8%	1.7%	1.7%	1.7%
- Net annual increment per ha	cu.m. o.b. / ha / y.	3.1	2.6	2.5	2.4	2.4
- Fellings per Net annual increment	cu.m. o.b. / cu.m. o.b.	62%	80%	87%	92%	96%
- Removals per Area	cu.m. u.b. / ha / y.	1.5	1.6	1.7	1.8	1.9

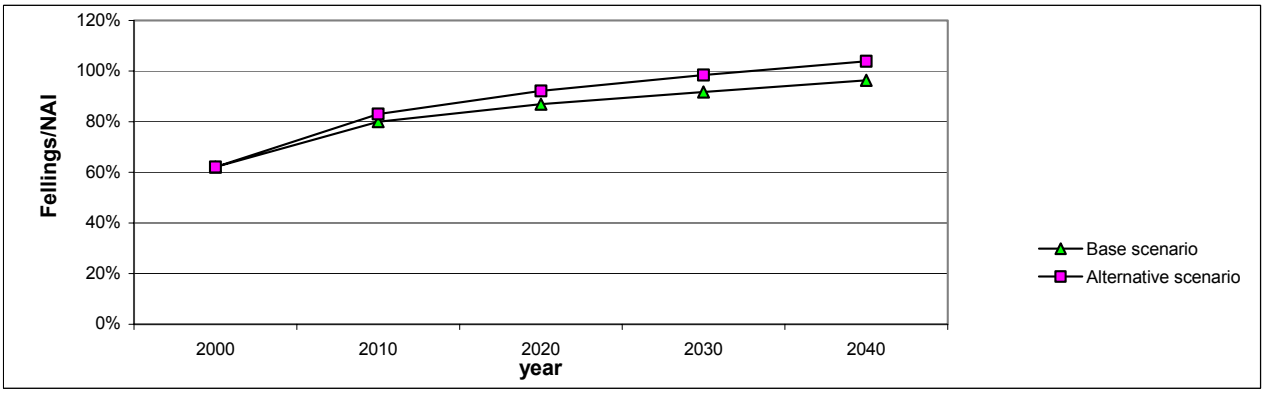




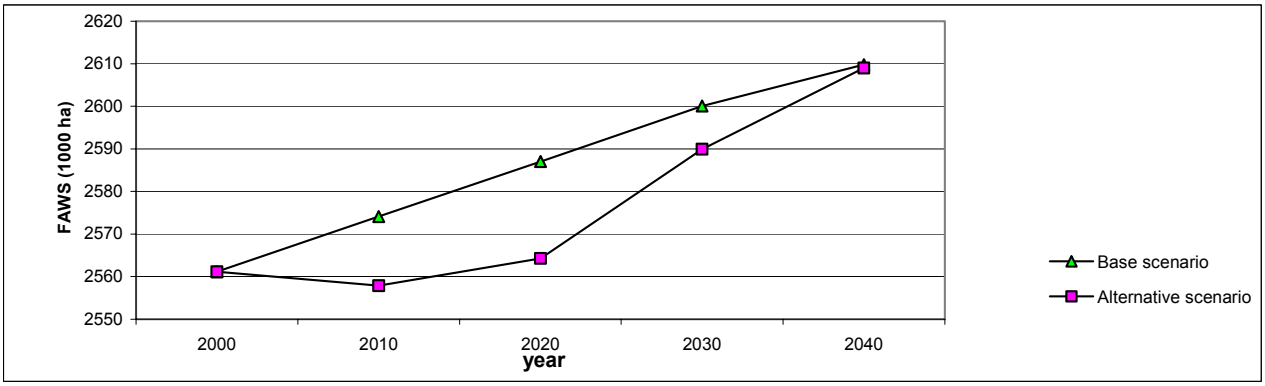

Growing stock per area (cu.m. o.b. / ha)
147
145
143
141
139
137
135
133
2000
2010
2020
2030
2040
year
Base scenario
Alternative scenario

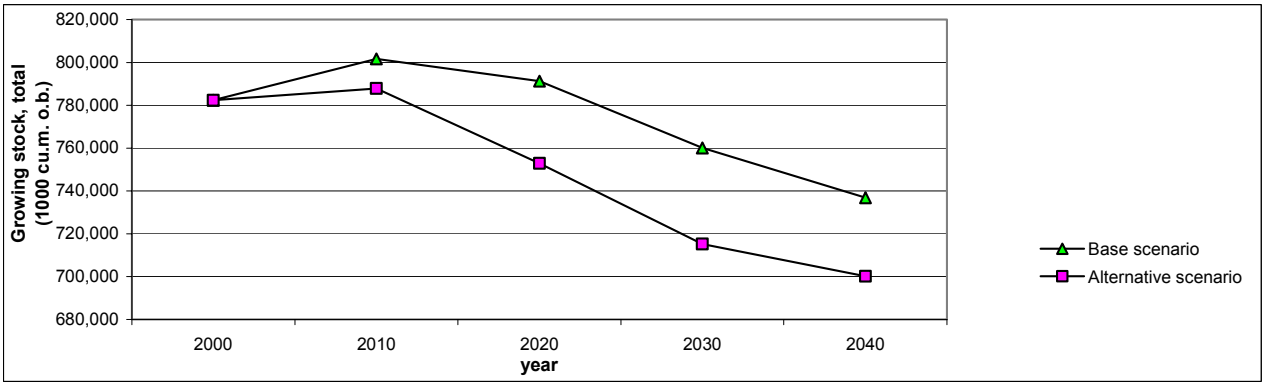

NAI, total (1000 cu.m. o.b.)
6,000
5,500
5,000
4,500
4,000
3,500
3,000
2,500
2000
2010
2020
2030
2040
year
Base scenario
Alternative scenario

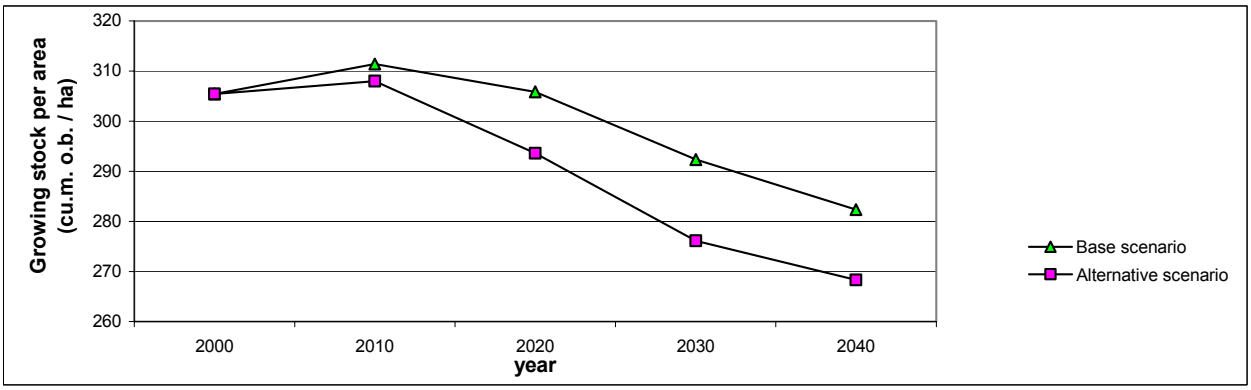

Removals, total (1000 cu.m. u.b.)
6,000
5,500
5,000
4,500
4,000
3,500
3,000
2,500
2000
2010
2020
2030
2040
year
Base scenario
Alternative scenario

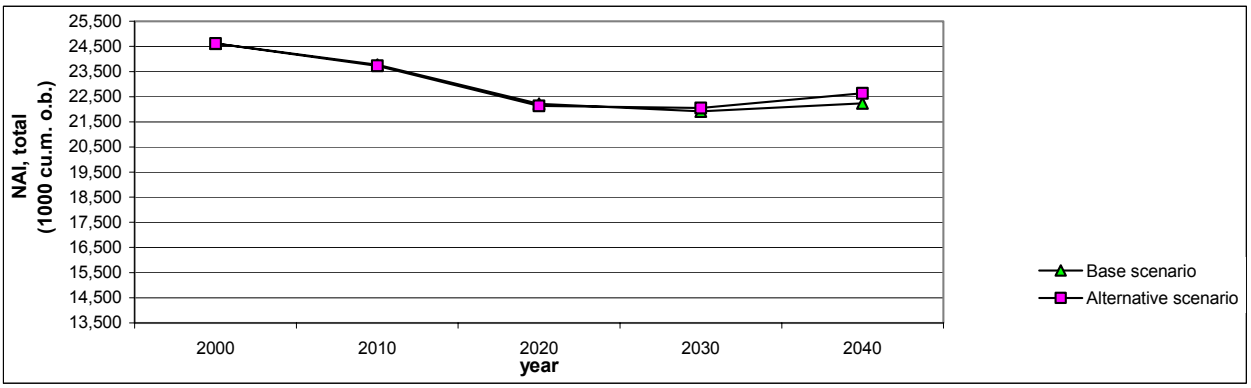

Fellings/NAI
120%
100%
80%
60%
40%
20%
0%
2000
2010
2020
2030
2040
year
Base scenario
Alternative scenario

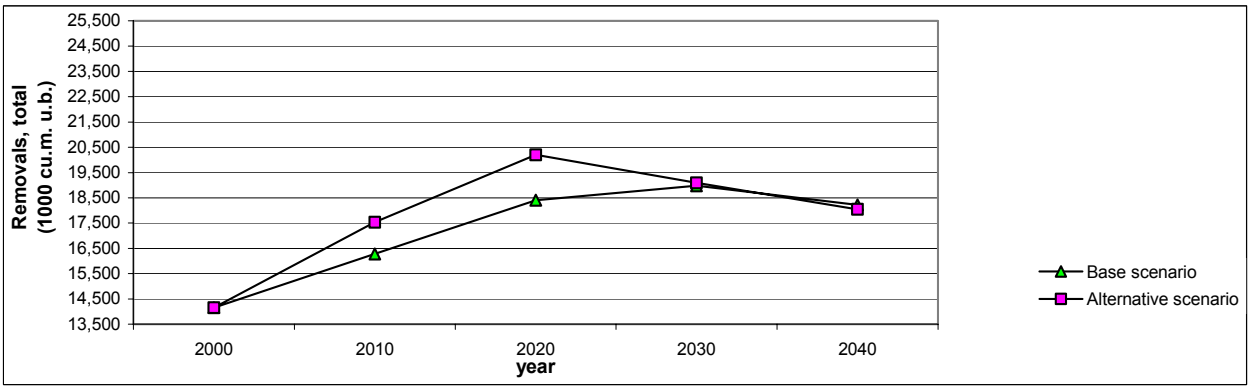
Czech Republic	**Base scenario**					
	Unit	**2000**	**2010**	**2020**	**2030**	**2040**
Forest resource parameters						
Area of forest available for wood supply	1000 ha	2561	2574	2587	2600	2610
- coniferous	*1000 ha*	*1,983*	*1,993*	*2,003*	*2,013*	*2,020*
- broadleaved	*1000 ha*	*578*	*581*	*584*	*587*	*589*
Growing stock, total	1000 cu.m. o.b.	782,306	801,654	791,309	760,115	736,887
- coniferous	*1000 cu.m. o.b.*	*636,058*	*637,481*	*606,949*	*558,781*	*520,960*
- broadleaved	*1000 cu.m. o.b.*	*146,248*	*164,173*	*184,360*	*201,334*	*215,927*
Net annual increment, total	1000 cu.m. o.b. / y.	24,612	23,768	22,211	21,912	22,238
- coniferous	*1000 cu.m. o.b. / y.*	*20,170*	*19,489*	*18,115*	*17,925*	*18,365*
- broadleaved	*1000 cu.m. o.b. / y.*	*4,442*	*4,279*	*4,096*	*3,987*	*3,872*
Fellings, total	1000 cu.m. o.b. / y.	18,711	21,518	24,325	25,087	24,079
- coniferous	*1000 cu.m. o.b. / y.*	*17,053*	*19,595*	*22,136*	*22,742*	*21,598*
- broadleaved	*1000 cu.m. o.b. / y.*	*1,658*	*1,923*	*2,189*	*2,345*	*2,481*
Removals, total	1000 cu.m. u.b. / y.	14,155	16,278	18,402	18,978	18,216
- coniferous	*1000 cu.m. u.b. / y.*	*12,901*	*14,823*	*16,746*	*17,204*	*16,339*
- broadleaved	*1000 cu.m. u.b. / y.*	*1,254*	*1,455*	*1,656*	*1,774*	*1,877*
Removals, total from final fellings	1000 cu.m. u.b. / y.	10,648	12,204	13,759	14,012	13,004
- coniferous	*1000 cu.m. u.b. / y.*	*9,708*	*11,112*	*12,517*	*12,682*	*11,596*
- broadleaved	*1000 cu.m. u.b. / y.*	*941*	*1,091*	*1,242*	*1,330*	*1,408*
Removals, total from thinnings	1000 cu.m. u.b. / y.	3,507	4,075	4,643	4,966	5,212
- coniferous	*1000 cu.m. u.b. / y.*	*3,193*	*3,711*	*4,229*	*4,523*	*4,743*
- broadleaved	*1000 cu.m. u.b. / y.*	*313*	*364*	*414*	*443*	*469*
Ratios						
- Growing stock per Area	cu.m. o.b. / ha	305	311	306	292	282
- Net annual increment per growing stock	cu.m. o.b. / cu.m. o.b.	3.1%	3.0%	2.8%	2.9%	3.0%
- Net annual increment per ha	cu.m. o.b. / ha / y.	9.6	9.2	8.6	8.4	8.5
- Fellings per Net annual increment	cu.m. o.b. / cu.m. o.b.	76%	91%	110%	114%	108%
- Removals per Area	cu.m. u.b. / ha / y.	5.5	6.3	7.1	7.3	7.0

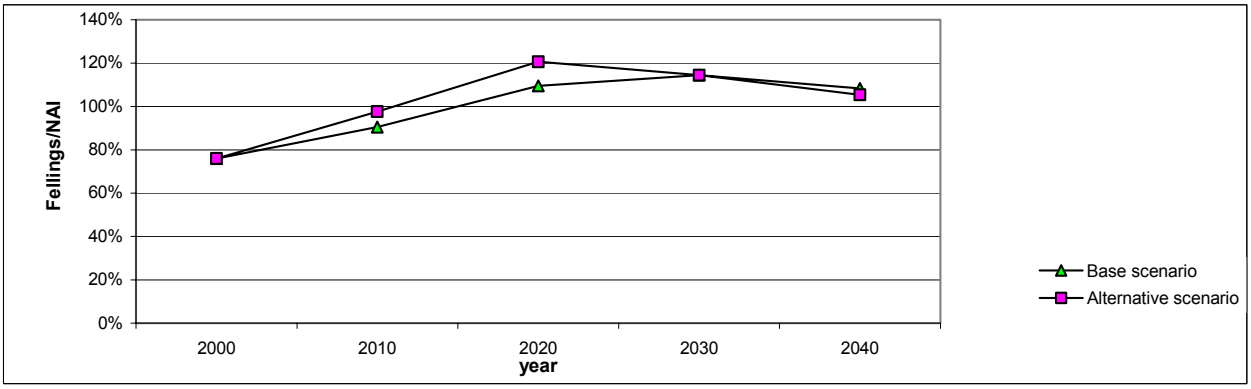




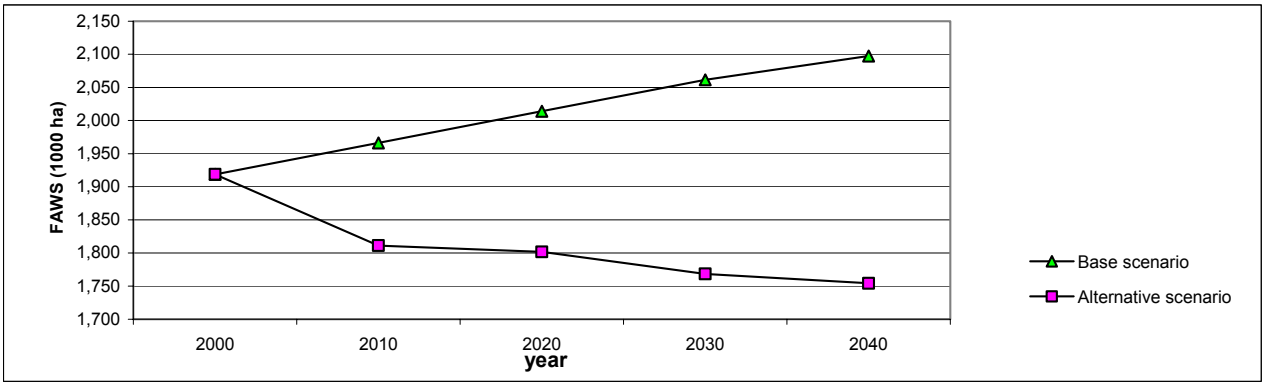

Growing stock per area
(cu.m. o.b. / ha)
320
310
300
290
280
270
260
2000
2010
2020
2030
2040
year
Base scenario
Alternative scenario

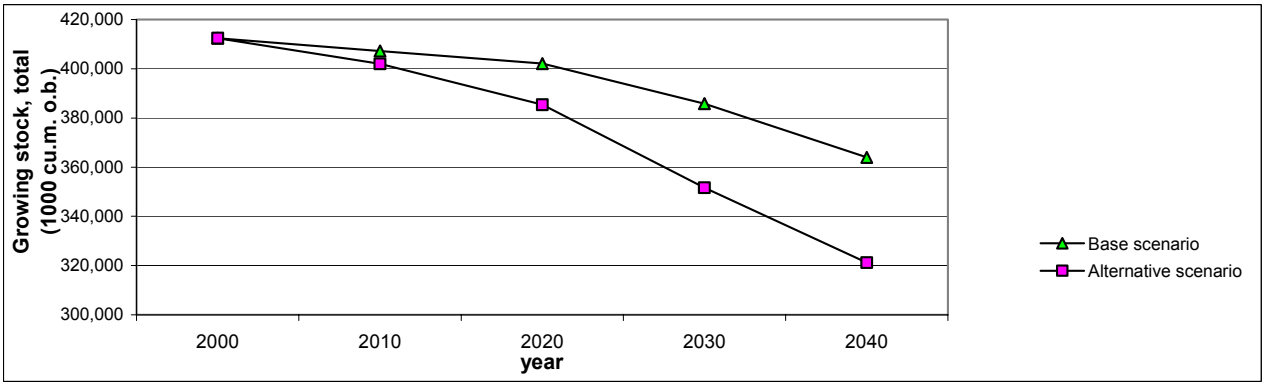

NAI, total
(1000 cu.m. o.b.)
25,500
24,500
23,500
22,500
21,500
20,500
19,500
18,500
17,500
16,500
15,500
14,500
13,500
2000
2010
2020
2030
2040
year
Base scenario
Alternative scenario

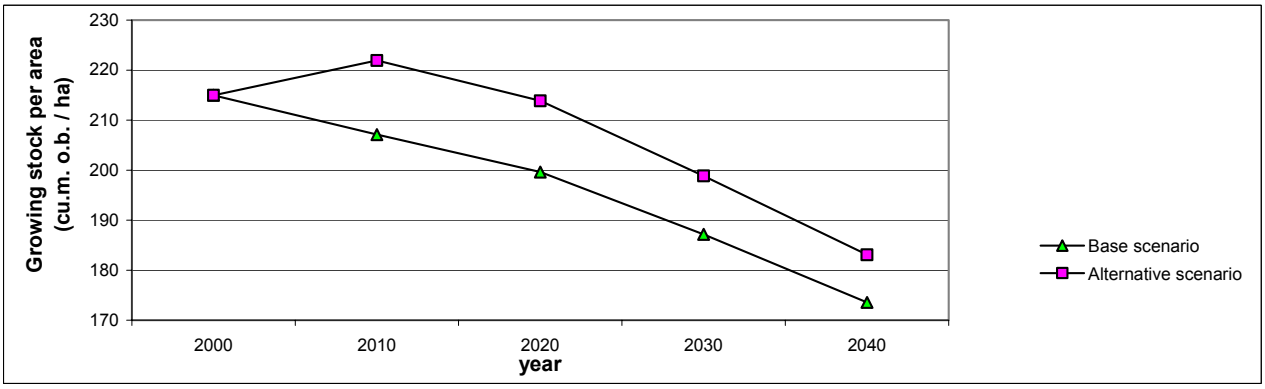

Removals, total
(1000 cu.m. u.b.)
25,500
24,500
23,500
22,500
21,500
20,500
19,500
18,500
17,500
16,500
15,500
14,500
13,500
2000
2010
2020
2030
2040
year
Base scenario
Alternative scenario

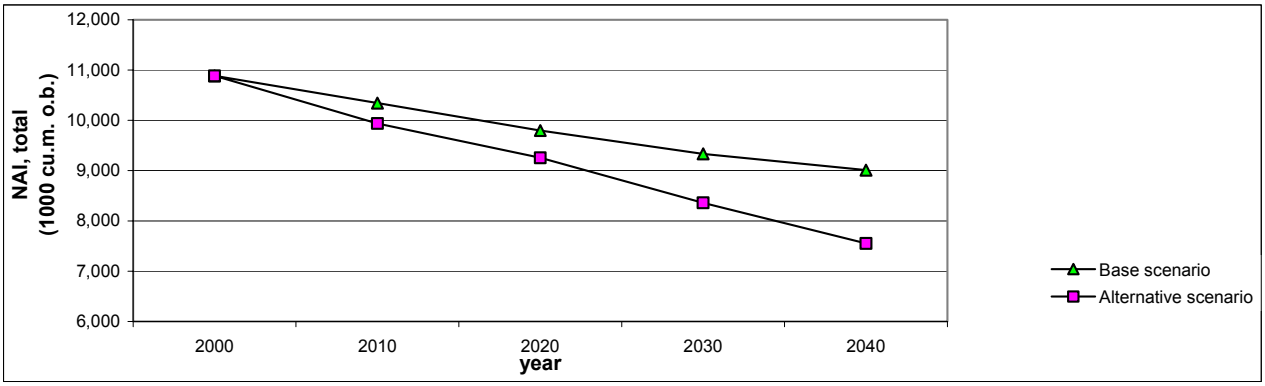

Fellings/NAI
140%
120%
100%
80%
60%
40%
20%
0%
2000
2010
2020
2030
2040
year
Base scenario
Alternative scenario

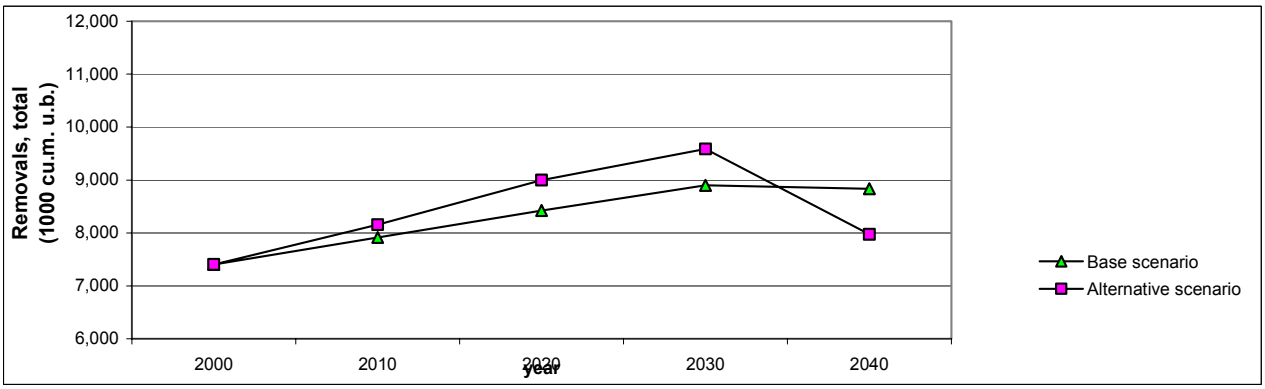
Estonia	**Base scenario**					
	Unit	**2000**	**2010**	**2020**	**2030**	**2040**
Forest resource parameters						
Area of forest available for wood supply	1000 ha	1,919	1,966	2,014	2,062	2,097
- coniferous	*1000 ha*	*961*	*984*	*1,008*	*1,032*	*1,050*
- broadleaved	*1000 ha*	*958*	*982*	*1,006*	*1,029*	*1,047*
Growing stock, total	1000 cu.m. o.b.	412,448	407,254	402,059	385,847	364,041
- coniferous	*1000 cu.m. o.b.*	*213,138*	*187,636*	*162,135*	*130,877*	*97,974*
- broadleaved	*1000 cu.m. o.b.*	*199,311*	*219,617*	*239,924*	*254,970*	*266,067*
Net annual increment, total	1000 cu.m. o.b. / y.	10,887	10,343	9,798	9,335	9,010
- coniferous	*1000 cu.m. o.b. / y.*	*5,457*	*5,360*	*5,263*	*5,150*	*5,035*
- broadleaved	*1000 cu.m. o.b. / y.*	*5,430*	*4,982*	*4,535*	*4,184*	*3,975*
Fellings, total	1000 cu.m. o.b. / y.	9,328	9,970	10,612	11,211	11,130
- coniferous	*1000 cu.m. o.b. / y.*	*6,995*	*7,478*	*7,960*	*8,411*	*8,182*
- broadleaved	*1000 cu.m. o.b. / y.*	*2,334*	*2,493*	*2,651*	*2,800*	*2,948*
Removals, total	1000 cu.m. u.b. / y.	7,403	7,913	8,422	8,898	8,833
- coniferous	*1000 cu.m. u.b. / y.*	*5,551*	*5,935*	*6,318*	*6,675*	*6,493*
- broadleaved	*1000 cu.m. u.b. / y.*	*1,852*	*1,978*	*2,104*	*2,222*	*2,340*
Removals, total from final fellings	1000 cu.m. u.b. / y.	5,556	5,935	6,313	6,663	6,650
- coniferous	*1000 cu.m. u.b. / y.*	*4,167*	*4,451*	*4,735*	*4,997*	*4,895*
- broadleaved	*1000 cu.m. u.b. / y.*	*1,389*	*1,484*	*1,578*	*1,667*	*1,755*
Removals, total from thinnings	1000 cu.m. u.b. / y.	1,847	1,978	2,109	2,234	2,183
- coniferous	*1000 cu.m. u.b. / y.*	*1,384*	*1,484*	*1,583*	*1,679*	*1,598*
- broadleaved	*1000 cu.m. u.b. / y.*	*463*	*495*	*526*	*556*	*585*
Ratios						
- Growing stock per Area	cu.m. o.b. / ha	215	207	200	187	174
- Net annual increment per growing stock	cu.m. o.b. / cu.m. o.b.	2.6%	2.5%	2.4%	2.4%	2.5%
- Net annual increment per ha	cu.m. o.b. / ha / y.	5.7	5.3	4.9	4.5	4.3
- Fellings per Net annual increment	cu.m. o.b. / cu.m. o.b.	86%	96%	108%	120%	124%
- Removals per Area	cu.m. u.b. / ha / y.	3.9	4.0	4.2	4.3	4.2

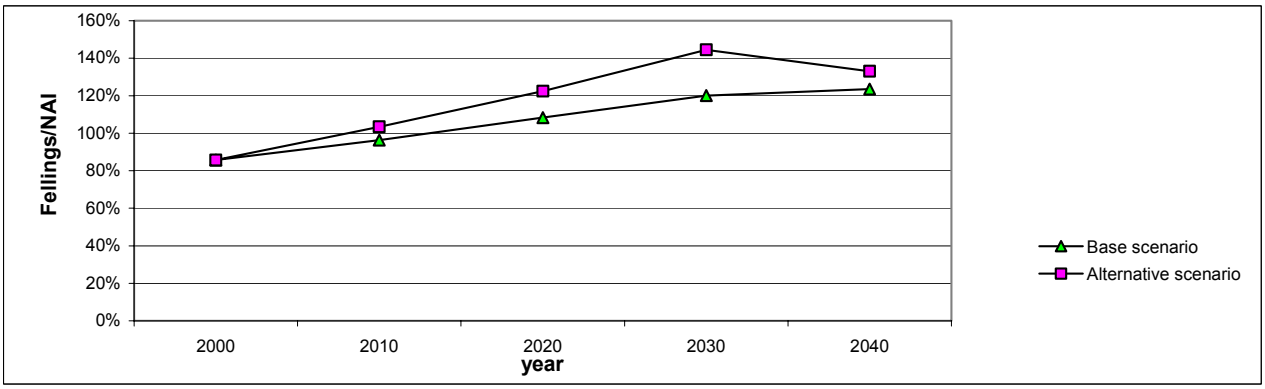




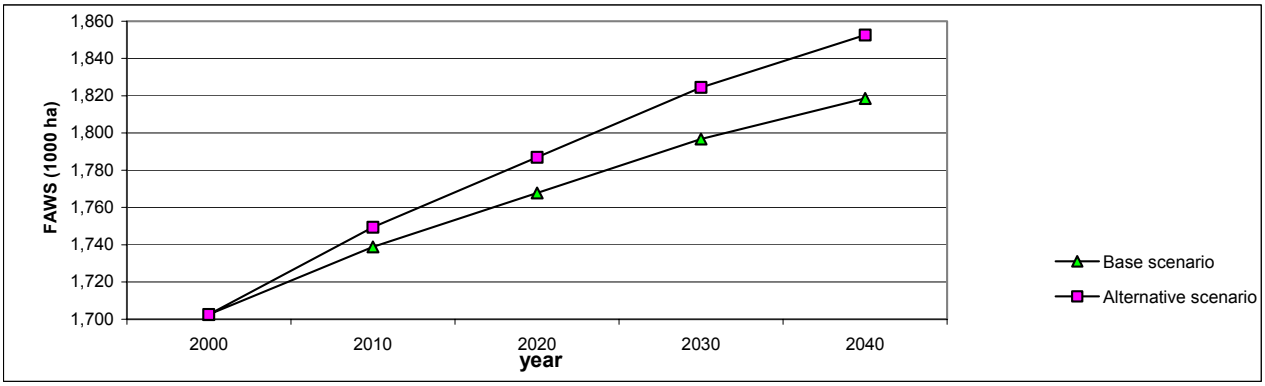

Growing stock per area (cu.m. o.b. / ha)
230
220
210
200
190
180
170
2000
2010
2020
2030
2040
year
Base scenario
Alternative scenario

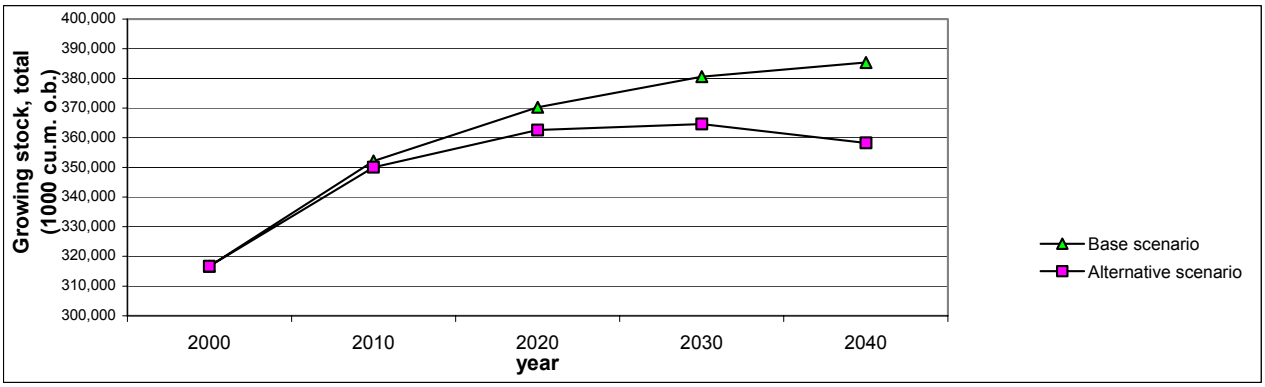

NAI, total (1000 cu.m. o.b.)
12,000
11,000
10,000
9,000
8,000
7,000
6,000
2000
2010
2020
2030
2040
year
Base scenario
Alternative scenario

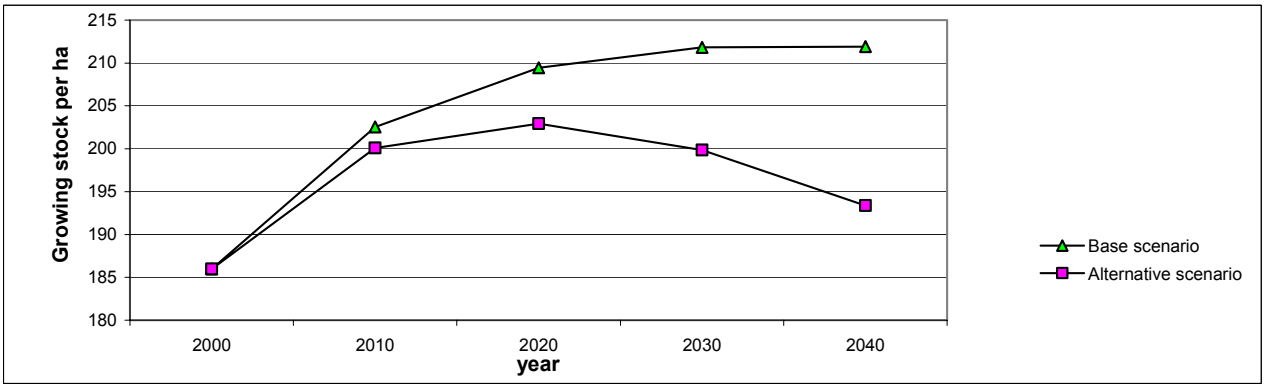

Removals, total (1000 cu.m. u.b.)
12,000
11,000
10,000
9,000
8,000
7,000
6,000
2000
2010
2020
2030
2040
year
Base scenario
Alternative scenario

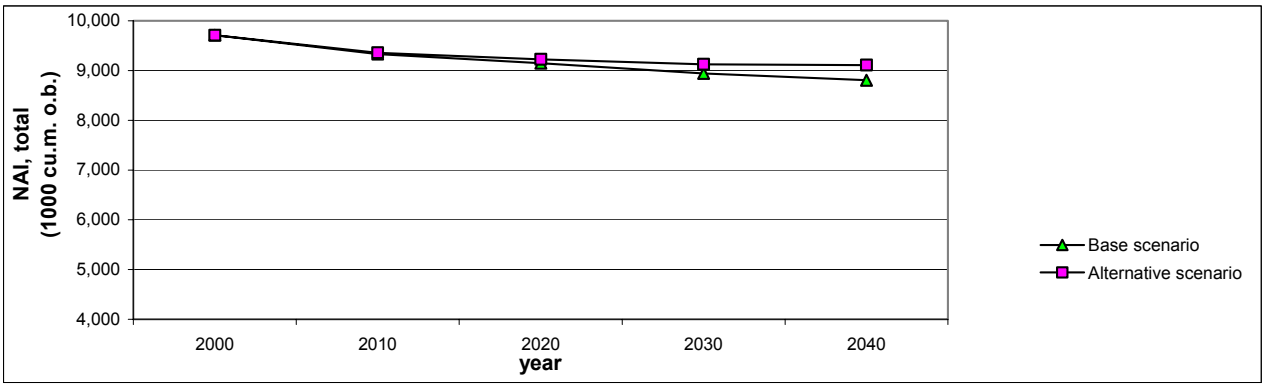

Fellings/NAI
160%
140%
120%
100%
80%
60%
40%
20%
0%
2000
2010
2020
2030
2040
year
Base scenario
Alternative scenario

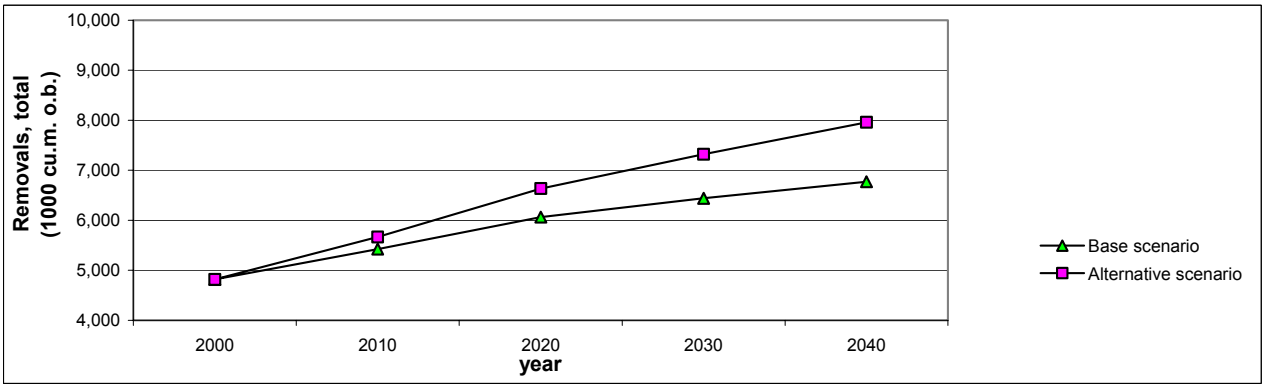
Hungary	**Base scenario**					
	Unit	**2000**	**2010**	**2020**	**2030**	**2040**
Forest resource parameters						
Area of forest available for wood supply	1000 ha	1,703	1,739	1,768	1,797	1,819
- coniferous	*1000 ha*	*236*	*241*	*245*	*249*	*252*
- broadleaved	*1000 ha*	*1,467*	*1,498*	*1,523*	*1,548*	*1,567*
Growing stock, total	1000 cu.m. o.b.	316,645	352,171	370,225	380,603	385,388
- coniferous	*1000 cu.m. o.b.*	*48,569*	*54,044*	*56,767*	*58,129*	*58,225*
- broadleaved	*1000 cu.m. o.b.*	*268,076*	*298,127*	*313,458*	*322,474*	*327,164*
Net annual increment, total	1000 cu.m. o.b. / y.	9,709	9,333	9,145	8,940	8,805
- coniferous	*1000 cu.m. o.b. / y.*	*1,409*	*1,282*	*1,235*	*1,170*	*1,097*
- broadleaved	*1000 cu.m. o.b. / y.*	*8,300*	*8,050*	*7,911*	*7,770*	*7,707*
Fellings, total	1000 cu.m. o.b. / y.	6,018	6,783	7,580	8,048	8,459
- coniferous	*1000 cu.m. o.b. / y.*	*795*	*896*	*1,002*	*1,064*	*1,118*
- broadleaved	*1000 cu.m. o.b. / y.*	*5,223*	*5,887*	*6,578*	*6,985*	*7,341*
Removals, total	1000 cu.m. u.b. / y.	4,815	5,426	6,064	6,439	6,767
- coniferous	*1000 cu.m. u.b. / y.*	*636*	*717*	*801*	*851*	*894*
- broadleaved	*1000 cu.m. u.b. / y.*	*4,179*	*4,709*	*5,263*	*5,588*	*5,873*
Removals, total from final fellings	1000 cu.m. u.b. / y.	3,579	4,034	4,508	4,786	5,031
- coniferous	*1000 cu.m. u.b. / y.*	*445*	*502*	*561*	*596*	*626*
- broadleaved	*1000 cu.m. u.b. / y.*	*3,134*	*3,532*	*3,947*	*4,191*	*4,405*
Removals, total from thinnings	1000 cu.m. u.b. / y.	1,236	1,392	1,556	1,652	1,736
- coniferous	*1000 cu.m. u.b. / y.*	*191*	*215*	*240*	*255*	*268*
- broadleaved	*1000 cu.m. u.b. / y.*	*1,045*	*1,177*	*1,316*	*1,397*	*1,468*
Ratios						
- Growing stock per Area	cu.m. o.b. / ha	186	203	209	212	212
- Net annual increment per growing stock	cu.m. o.b. / cu.m. o.b.	3.1%	2.6%	2.5%	2.3%	2.3%
- Net annual increment per ha	cu.m. o.b. / ha / y.	5.7	5.4	5.2	5.0	4.8
- Fellings per Net annual increment	cu.m. o.b. / cu.m. o.b.	62%	73%	83%	90%	96%
- Removals per Area	cu.m. u.b. / ha / y.	2.8	3.1	3.4	3.6	3.7

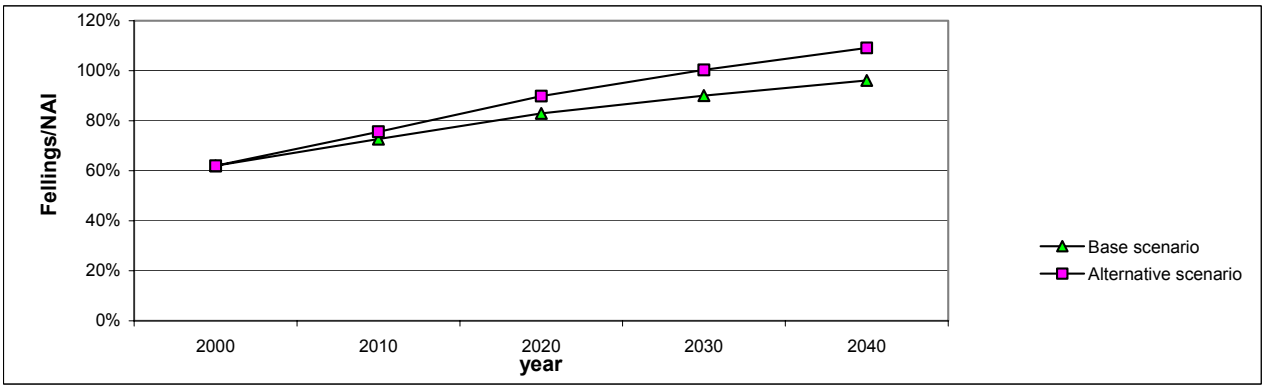




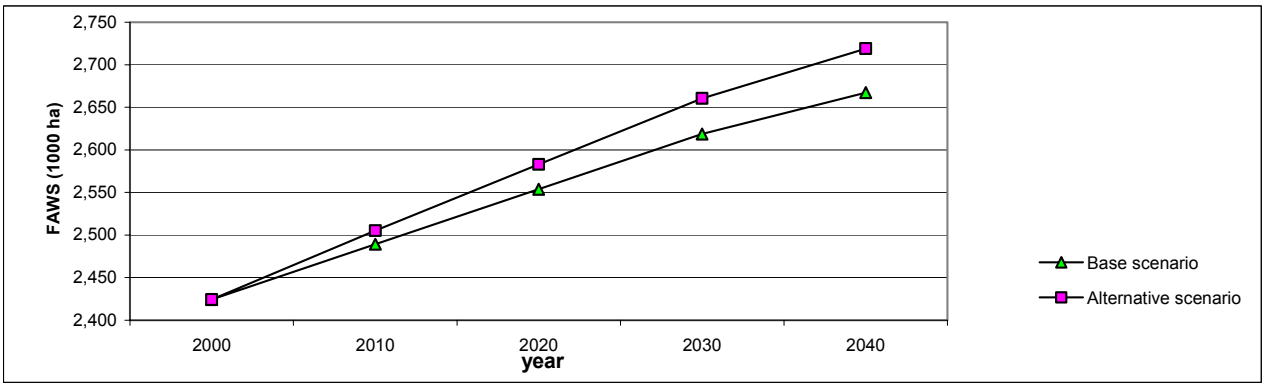

Growing stock per ha
215
210
205
200
195
190
185
180
2000
2010
2020
2030
2040
year
Base scenario
Alternative scenario

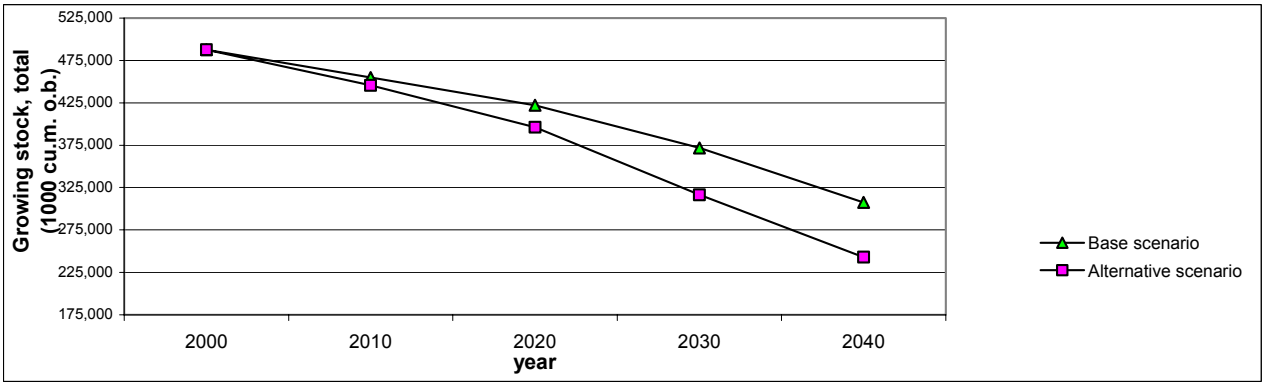

NAI, total
(1000 cu.m. o.b.)
10,000
9,000
8,000
7,000
6,000
5,000
4,000
2000
2010
2020
2030
2040
year
Base scenario
Alternative scenario

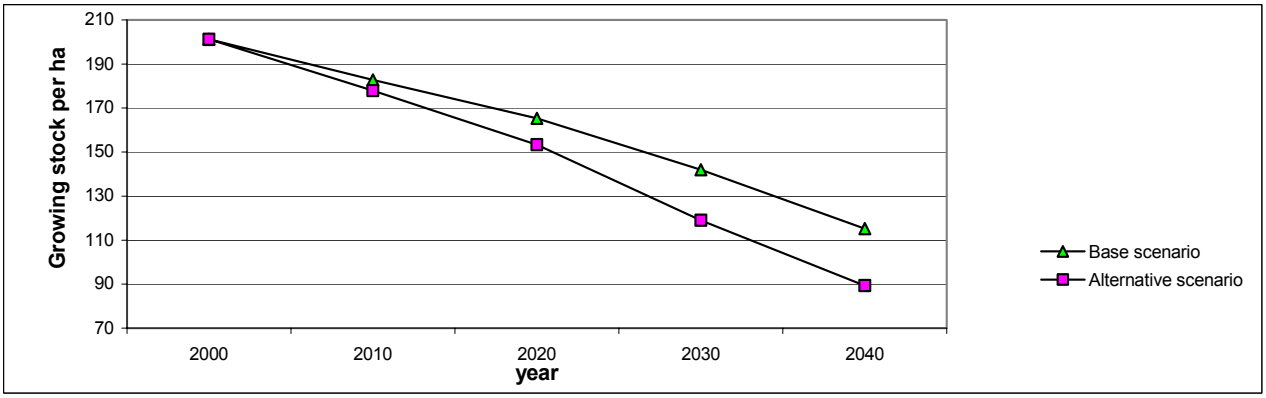

Removals, total
(1000 cu.m. o.b.)
10,000
9,000
8,000
7,000
6,000
5,000
4,000
2000
2010
2020
2030
2040
year
Base scenario
Alternative scenario

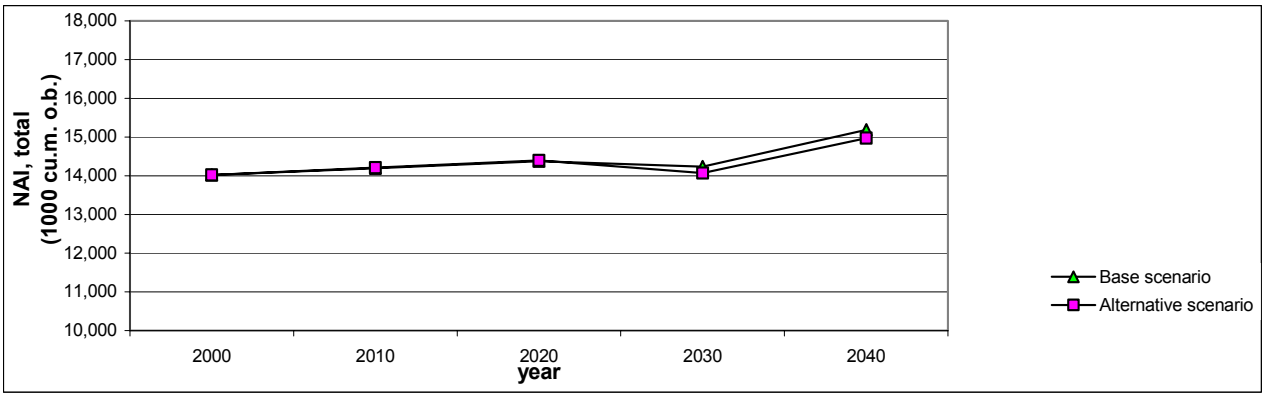

Fellings/NAI
120%
100%
80%
60%
40%
20%
0%
2000
2010
2020
2030
2040
year
Base scenario
Alternative scenario

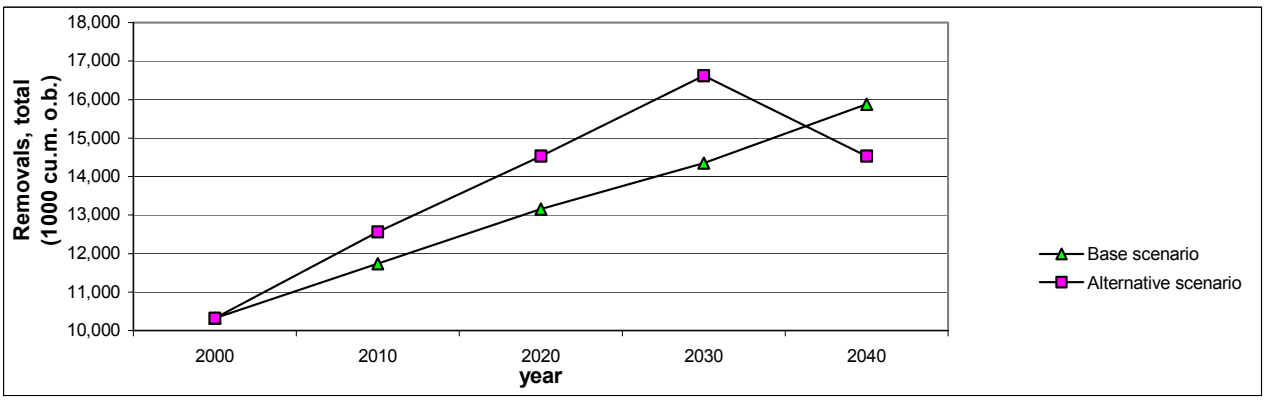
Latvia	**Base scenario**					
	Unit	**2000**	**2010**	**2020**	**2030**	**2040**
Forest resource parameters						
Area of forest available for wood supply	1000 ha	2,424	2,489	2,554	2,619	2,667
- coniferous	*1000 ha*	*1,393*	*1,430*	*1,467*	*1,504*	*1,532*
- broadleaved	*1000 ha*	*1,032*	*1,059*	*1,087*	*1,114*	*1,135*
Growing stock, total	1000 cu.m. o.b.	487,693	454,881	422,070	371,749	307,370
- coniferous	*1000 cu.m. o.b.*	*286,618*	*271,305*	*255,992*	*233,452*	*204,076*
- broadleaved	*1000 cu.m. o.b.*	*201,075*	*183,577*	*166,078*	*138,297*	*103,294*
Net annual increment, total	1000 cu.m. o.b. / y.	14,019	14,197	14,376	14,233	15,187
- coniferous	*1000 cu.m. o.b. / y.*	*7,738*	*8,329*	*8,919*	*9,040*	*9,568*
- broadleaved	*1000 cu.m. o.b. / y.*	*6,281*	*5,869*	*5,456*	*5,193*	*5,619*
Fellings, total	1000 cu.m. o.b. / y.	14,186	16,133	18,080	19,725	21,821
- coniferous	*1000 cu.m. o.b. / y.*	*7,851*	*9,246*	*10,642*	*11,519*	*12,583*
- broadleaved	*1000 cu.m. o.b. / y.*	*6,335*	*6,887*	*7,438*	*8,206*	*9,239*
Removals, total	1000 cu.m. u.b. / y.	10,321	11,737	13,154	14,351	15,876
- coniferous	*1000 cu.m. u.b. / y.*	*5,712*	*6,727*	*7,742*	*8,381*	*9,154*
- broadleaved	*1000 cu.m. u.b. / y.*	*4,609*	*5,010*	*5,412*	*5,970*	*6,721*
Removals, total from final fellings	1000 cu.m. u.b. / y.	7,222	8,809	10,396	11,719	12,974
- coniferous	*1000 cu.m. u.b. / y.*	*4,138*	*5,048*	*5,957*	*6,715*	*7,440*
- broadleaved	*1000 cu.m. u.b. / y.*	*3,084*	*3,761*	*4,439*	*5,004*	*5,535*
Removals, total from thinnings	1000 cu.m. u.b. / y.	3,099	2,928	2,758	2,632	2,901
- coniferous	*1000 cu.m. u.b. / y.*	*1,573*	*1,679*	*1,785*	*1,666*	*1,715*
- broadleaved	*1000 cu.m. u.b. / y.*	*1,525*	*1,249*	*973*	*966*	*1,187*
Ratios						
- Growing stock per Area	cu.m. o.b. / ha	201	183	165	142	115
- Net annual increment per growing stock	cu.m. o.b. / cu.m. o.b.	2.9%	3.1%	3.4%	3.8%	4.9%
- Net annual increment per ha	cu.m. o.b. / ha / y.	5.8	5.7	5.6	5.4	5.7
- Fellings per Net annual increment	cu.m. o.b. / cu.m. o.b.	101%	114%	126%	139%	144%
- Removals per Area	cu.m. u.b. / ha / y.	4.3	4.7	5.2	5.5	6.0

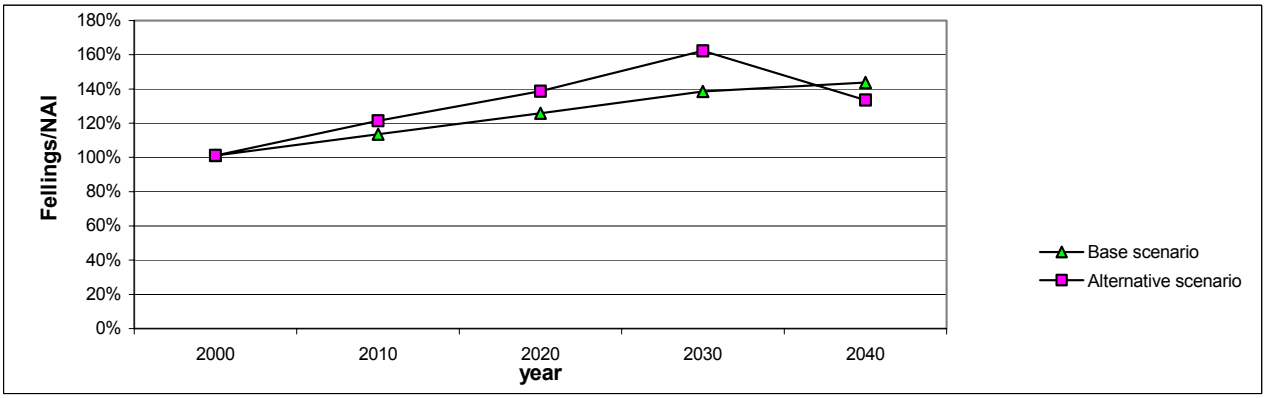




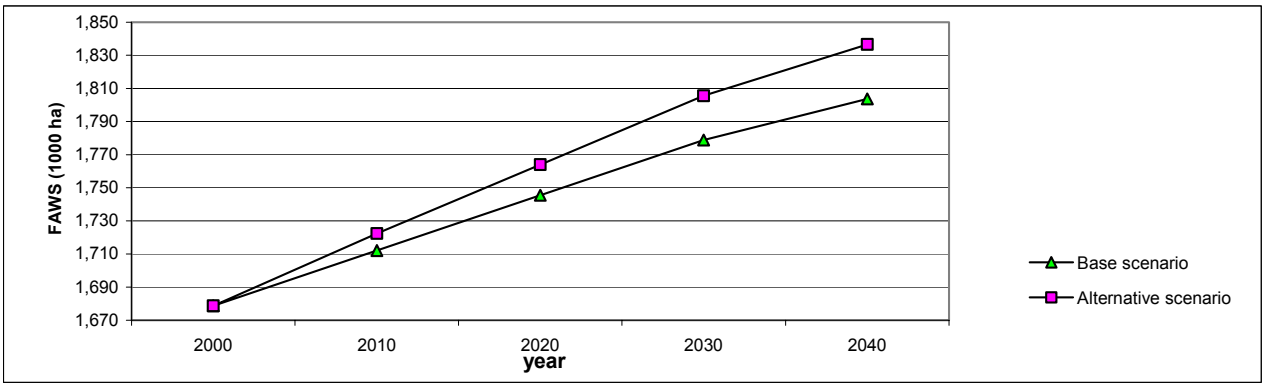

Growing stock per ha
210
190
170
150
130
110
90
70
2000
2010
2020
2030
2040
year
Base scenario
Alternative scenario

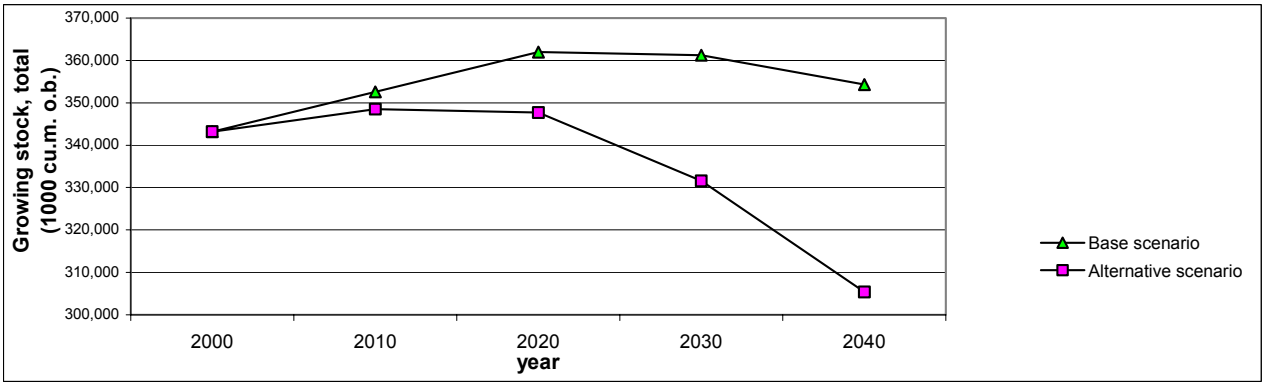

NAI, total (1000 cu.m. o.b.)
18,000
17,000
16,000
15,000
14,000
13,000
12,000
11,000
10,000
2000
2010
2020
2030
2040
year
Base scenario
Alternative scenario

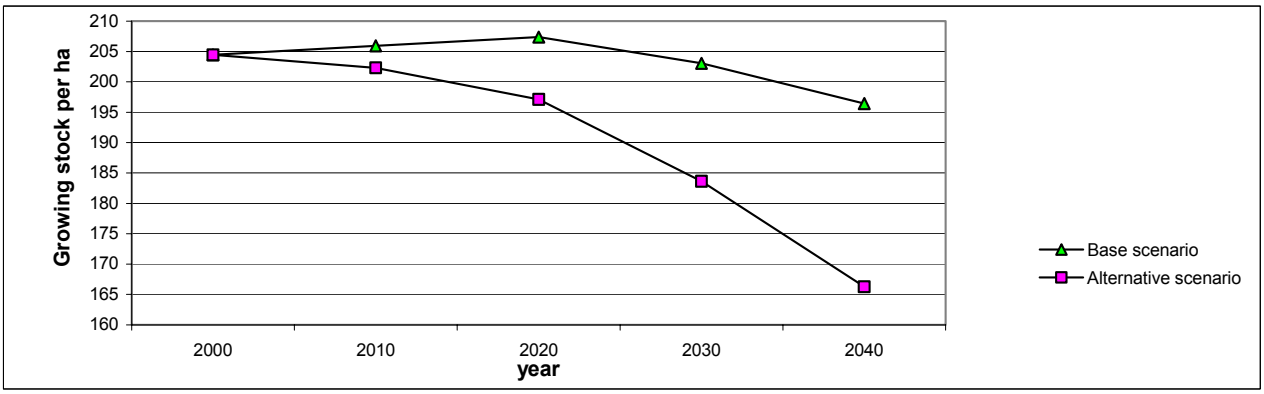

Removals, total (1000 cu.m. o.b.)
18,000
17,000
16,000
15,000
14,000
13,000
12,000
11,000
10,000
2000
2010
2020
2030
2040
year
Base scenario
Alternative scenario

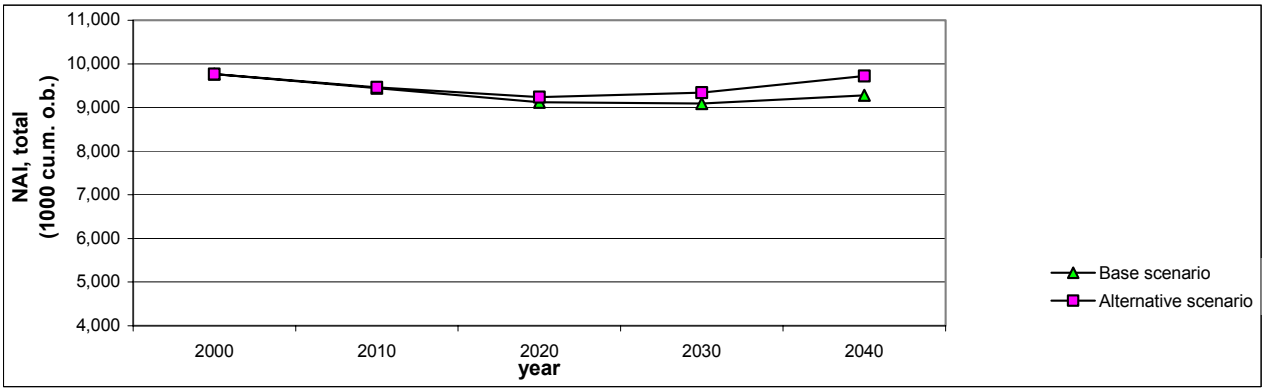

Fellings/NAI
180%
160%
140%
120%
100%
80%
60%
40%
20%
0%
2000
2010
2020
2030
2040
year
Base scenario
Alternative scenario

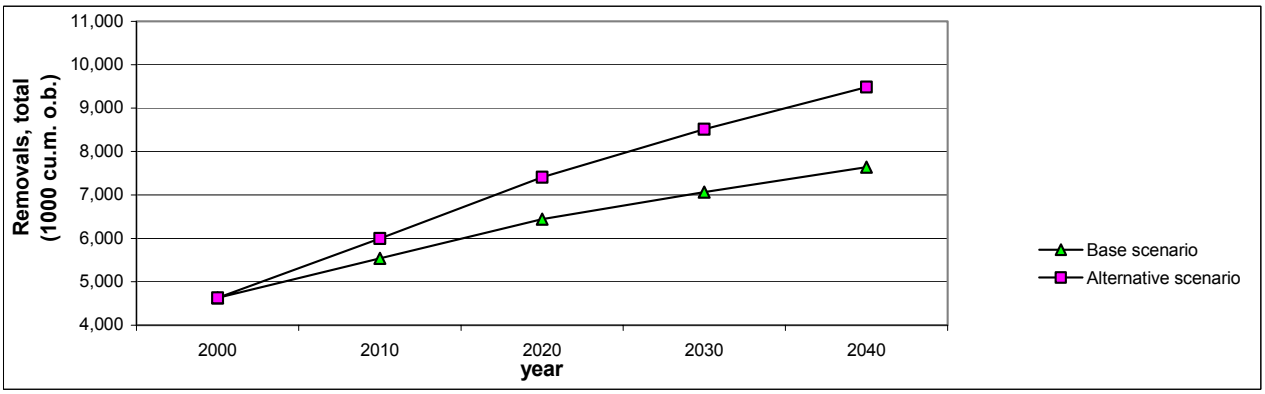
Lithuania	**Base scenario**					
	Unit	**2000**	**2010**	**2020**	**2030**	**2040**
Forest resource parameters						
Area of forest available for wood supply	1000 ha	1,679	1,712	1,745	1,779	1,804
- coniferous	*1000 ha*	*1,007*	*1,027*	*1,047*	*1,067*	*1,082*
- broadleaved	*1000 ha*	*672*	*685*	*698*	*712*	*722*
Growing stock, total	1000 cu.m. o.b.	343,215	352,578	361,942	361,227	354,282
- coniferous	*1000 cu.m. o.b.*	*223,389*	*226,703*	*230,017*	*227,420*	*220,661*
- broadleaved	*1000 cu.m. o.b.*	*119,826*	*125,875*	*131,925*	*133,807*	*133,622*
Net annual increment, total	1000 cu.m. o.b. / y.	9,764	9,442	9,120	9,093	9,280
- coniferous	*1000 cu.m. o.b. / y.*	*6,009*	*5,840*	*5,671*	*5,710*	*5,806*
- broadleaved	*1000 cu.m. o.b. / y.*	*3,756*	*3,602*	*3,449*	*3,383*	*3,474*
Fellings, total	1000 cu.m. o.b. / y.	6,129	7,326	8,524	9,349	10,111
- coniferous	*1000 cu.m. o.b. / y.*	*3,988*	*4,768*	*5,547*	*6,084*	*6,580*
- broadleaved	*1000 cu.m. o.b. / y.*	*2,140*	*2,559*	*2,977*	*3,265*	*3,531*
Removals, total	1000 cu.m. u.b. / y.	4,632	5,537	6,442	7,065	7,641
- coniferous	*1000 cu.m. u.b. / y.*	*3,014*	*3,603*	*4,192*	*4,598*	*4,973*
- broadleaved	*1000 cu.m. u.b. / y.*	*1,618*	*1,934*	*2,250*	*2,468*	*2,668*
Removals, total from final fellings	1000 cu.m. u.b. / y.	3,474	4,153	4,831	5,299	5,731
- coniferous	*1000 cu.m. u.b. / y.*	*2,261*	*2,702*	*3,144*	*3,448*	*3,730*
- broadleaved	*1000 cu.m. u.b. / y.*	*1,213*	*1,450*	*1,687*	*1,851*	*2,001*
Removals, total from thinnings	1000 cu.m. u.b. / y.	1,158	1,384	1,610	1,766	1,910
- coniferous	*1000 cu.m. u.b. / y.*	*754*	*901*	*1,048*	*1,149*	*1,243*
- broadleaved	*1000 cu.m. u.b. / y.*	*404*	*483*	*562*	*617*	*667*
Ratios						
- Growing stock per Area	cu.m. o.b. / ha	204	206	207	203	196
- Net annual increment per growing stock	cu.m. o.b. / cu.m. o.b.	2.8%	2.7%	2.5%	2.5%	2.6%
- Net annual increment per ha	cu.m. o.b. / ha / y.	5.8	5.5	5.2	5.1	5.1
- Fellings per Net annual increment	cu.m. o.b. / cu.m. o.b.	63%	78%	93%	103%	109%
- Removals per Area	cu.m. u.b. / ha / y.	2.8	3.2	3.7	4.0	4.2

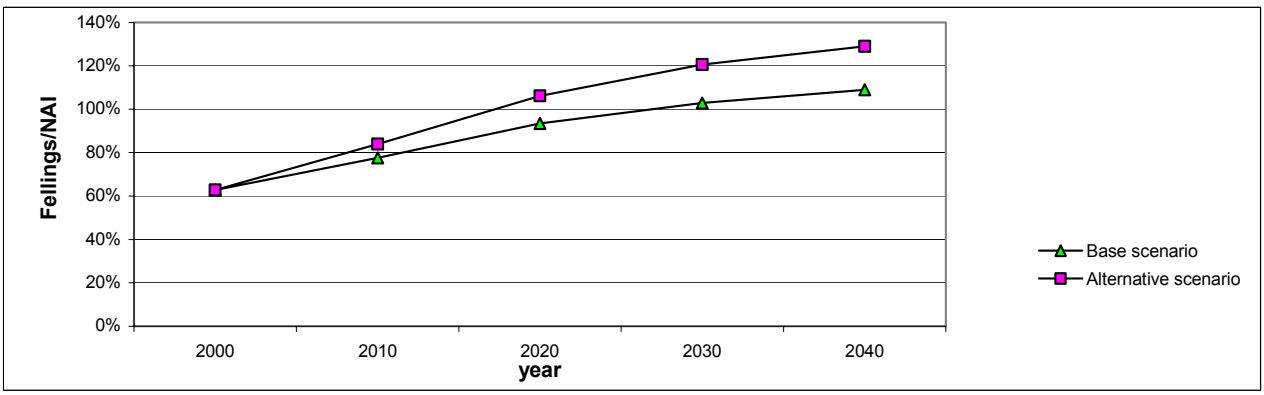




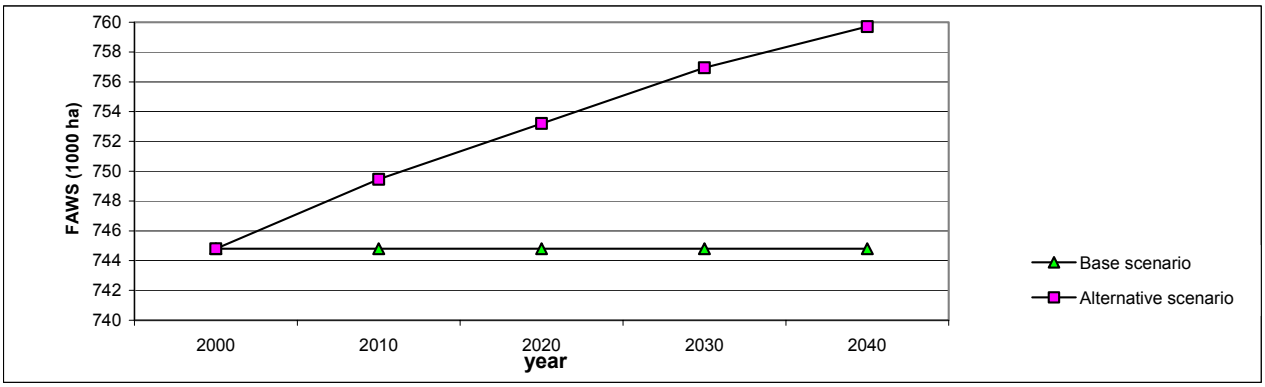

Growing stock per ha
210
205
200
195
190
185
180
175
170
165
160
2000
2010
2020
2030
2040
year
Base scenario
Alternative scenario

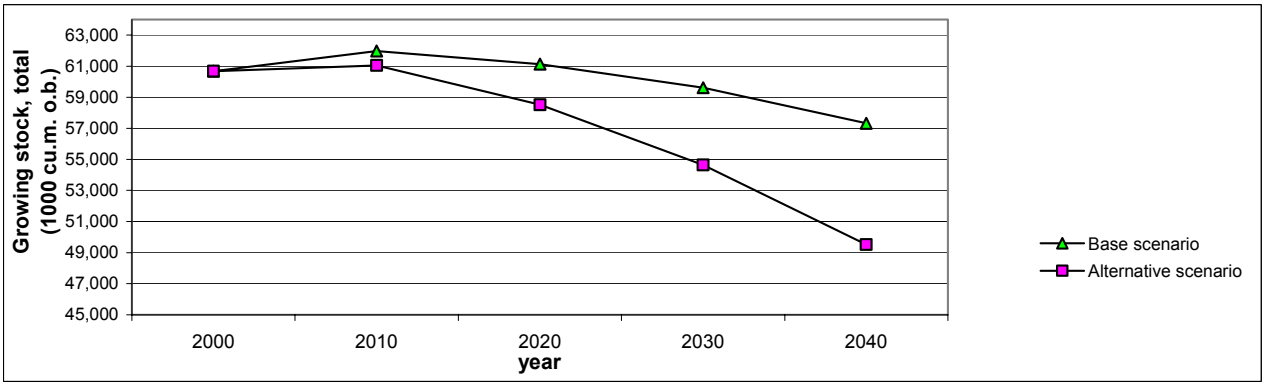

NAI, total
(1000 cu.m. o.b.)
11,000
10,000
9,000
8,000
7,000
6,000
5,000
4,000
2000
2010
2020
2030
2040
year
Base scenario
Alternative scenario

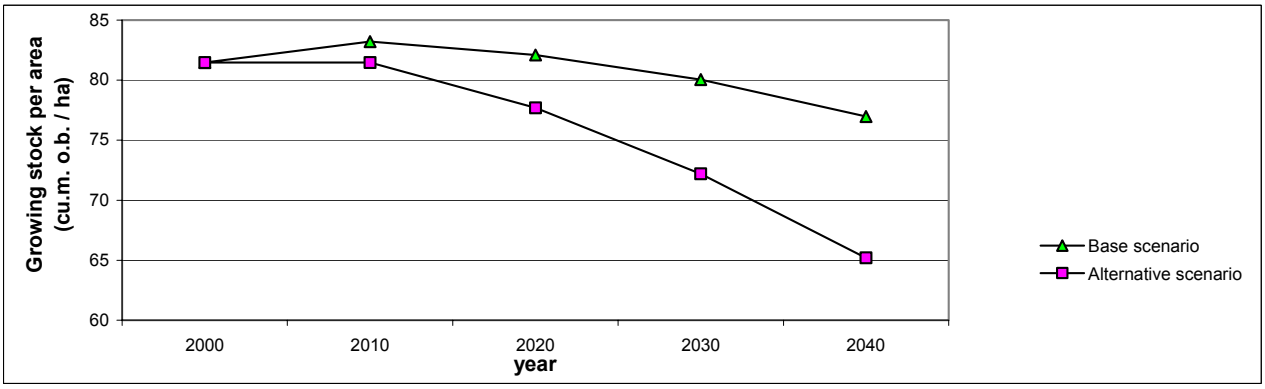

Removals, total
(1000 cu.m. o.b.)
11,000
10,000
9,000
8,000
7,000
6,000
5,000
4,000
2000
2010
2020
2030
2040
year
Base scenario
Alternative scenario

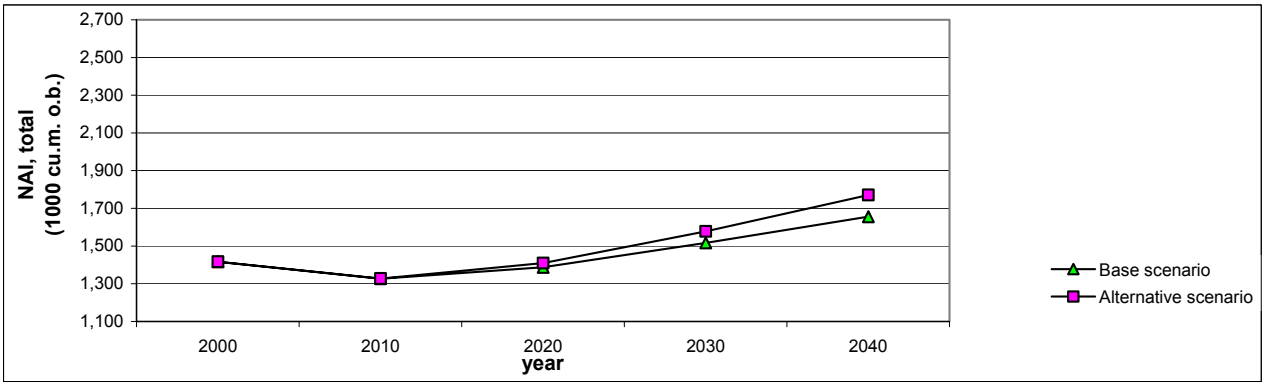

Fellings/NAI
140%
120%
100%
80%
60%
40%
20%
0%
2000
2010
2020
2030
2040
year
Base scenario
Alternative scenario

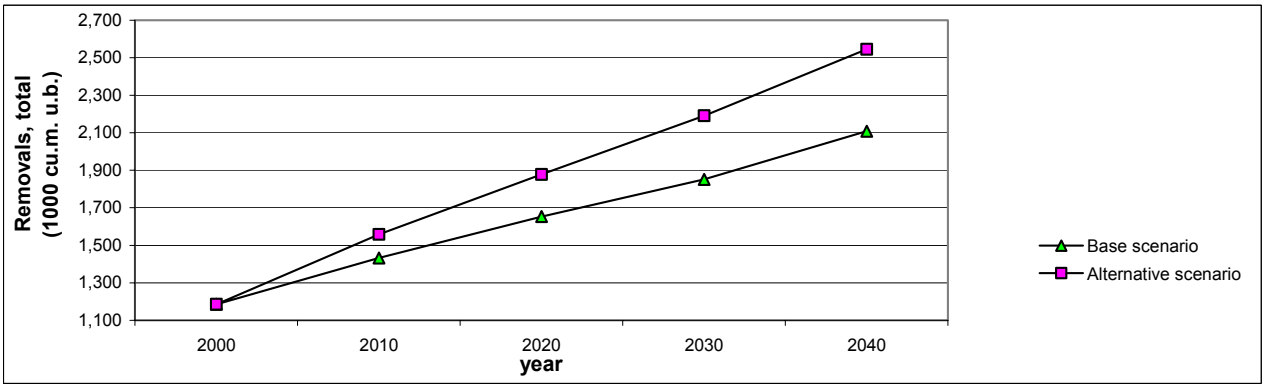
FYR Macedonia	**Base scenario**					
	Unit	**2000**	**2010**	**2020**	**2030**	**2040**
Forest resource parameters						
Area of forest available for wood supply	1000 ha	745	745	745	745	745
- coniferous	*1000 ha*	*33*	*33*	*33*	*33*	*33*
- broadleaved	*1000 ha*	*712*	*712*	*712*	*712*	*712*
Growing stock, total	1000 cu.m. o.b.	60,674	61,980	61,140	59,621	57,321
- coniferous	*1000 cu.m. o.b.*	*2,152*	*2,285*	*2,358*	*2,632*	*2,652*
- broadleaved	*1002 cu.m. o.b.*	*58,522*	*59,695*	*58,782*	*56,989*	*54,669*
Net annual increment, total	1000 cu.m. o.b. / y.	1,417	1,327	1,388	1,517	1,655
- coniferous	*1000 cu.m. o.b. / y.*	*64*	*68*	*70*	*71*	*71*
- broadleaved	*1000 cu.m. o.b. / y.*	*1,353*	*1,259*	*1,318*	*1,446*	*1,584*
Fellings, total	1000 cu.m. o.b. / y.	1,076	1,301	1,502	1,681	1,915
- coniferous	*1000 cu.m. o.b. / y.*	*50*	*60*	*60*	*42*	*80*
- broadleaved	*1000 cu.m. o.b. / y.*	1,027	1,241	1,442	1,639	1,835
Removals, total	1000 cu.m. u.b. / y.	1,185	1,433	1,654	1,851	2,108
- coniferous	*1000 cu.m. u.b. / y.*	*55*	*66*	*66*	*46*	*88*
- broadleaved	*1000 cu.m. u.b. / y.*	*1,130*	*1,367*	*1,587*	*1,804*	*2,021*
Removals, total from final fellings	1000 cu.m. u.b. / y.	1,111	1,344	1,550	1,733	1,976
- coniferous	*1000 cu.m. u.b. / y.*	*38*	*46*	*43*	*20*	*58*
- broadleaved	*1000 cu.m. u.b. / y.*	*1,073*	*1,297*	*1,507*	*1,713*	*1,918*
Removals, total from thinnings	1000 cu.m. u.b. / y.	74	89	104	118	132
- coniferous	*1000 cu.m. u.b. / y.*	*17*	*20*	*23*	*26*	*29*
- broadleaved	*1000 cu.m. u.b. / y.*	*57*	*69*	*81*	*92*	*102*
Ratios						
- Growing stock per Area	cu.m. o.b. / ha	81	83	82	80	77
- Net annual increment per growing stock	cu.m. o.b. / cu.m. o.b.	2.3%	2.1%	2.3%	2.5%	2.9%
- Net annual increment per ha	cu.m. o.b. / ha / y.	1.9	1.8	1.9	2.0	2.2
- Fellings per Net annual increment	cu.m. o.b. / cu.m. o.b.	76%	98%	108%	111%	116%
- Removals per Area	cu.m. u.b. / ha / y.	1.6	1.9	2.2	2.5	2.8

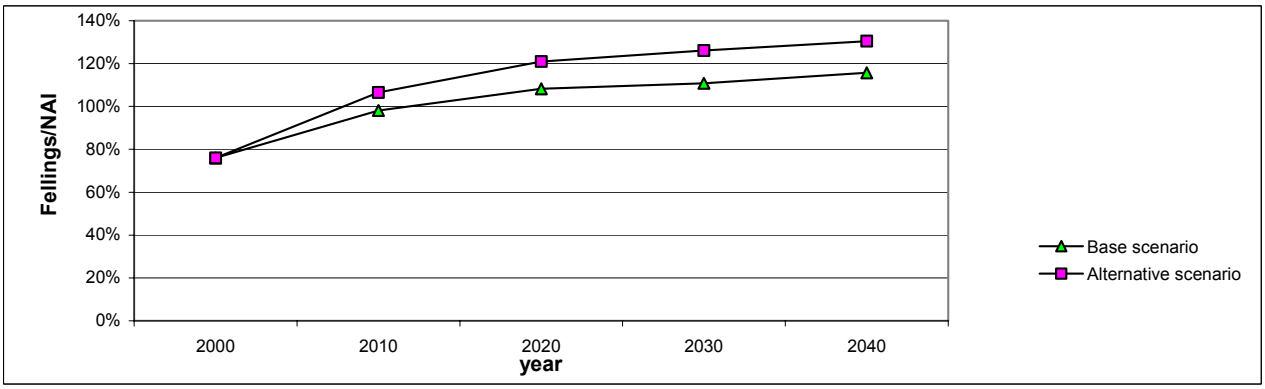




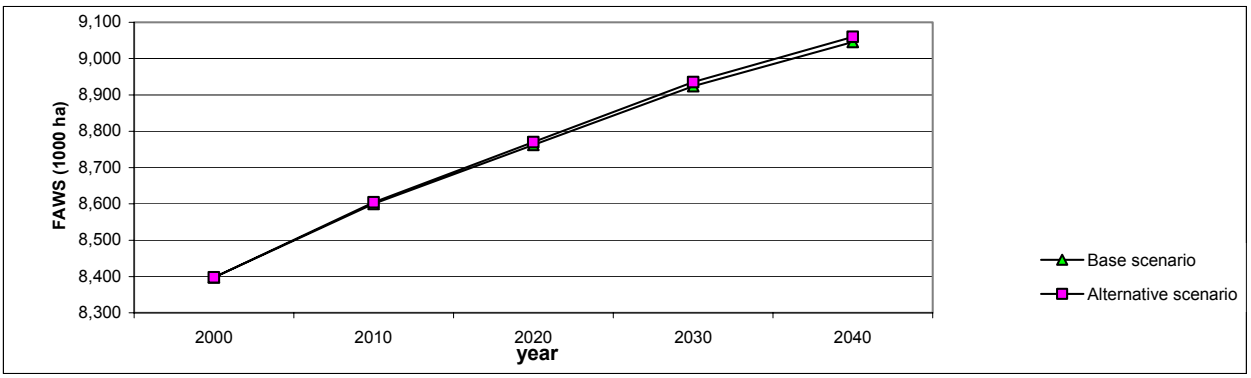

Growing stock per area (cu.m. o.b. / ha)
85
80
75
70
65
60
2000
2010
2020
2030
2040
year
Base scenario
Alternative scenario

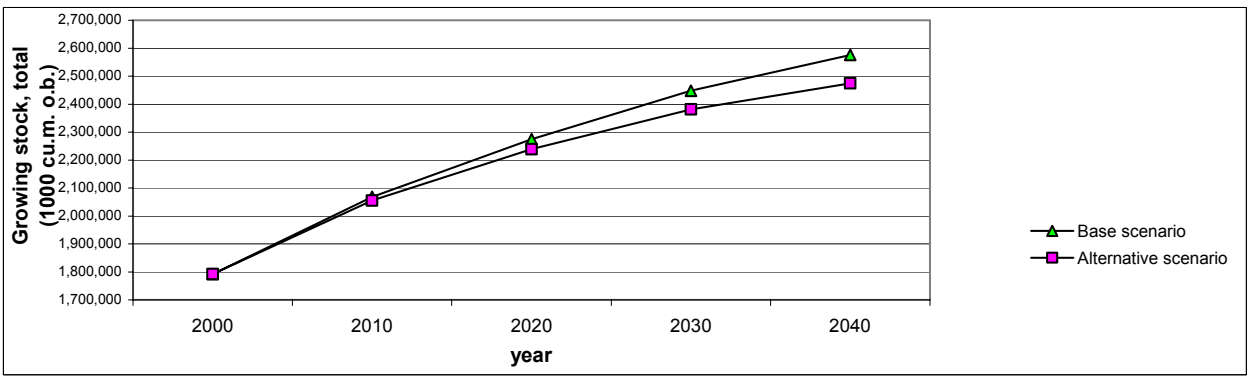

NAI, total (1000 cu.m. o.b.)
2,700
2,500
2,300
2,100
1,900
1,700
1,500
1,300
1,100
2000
2010
2020
2030
2040
year
Base scenario
Alternative scenario

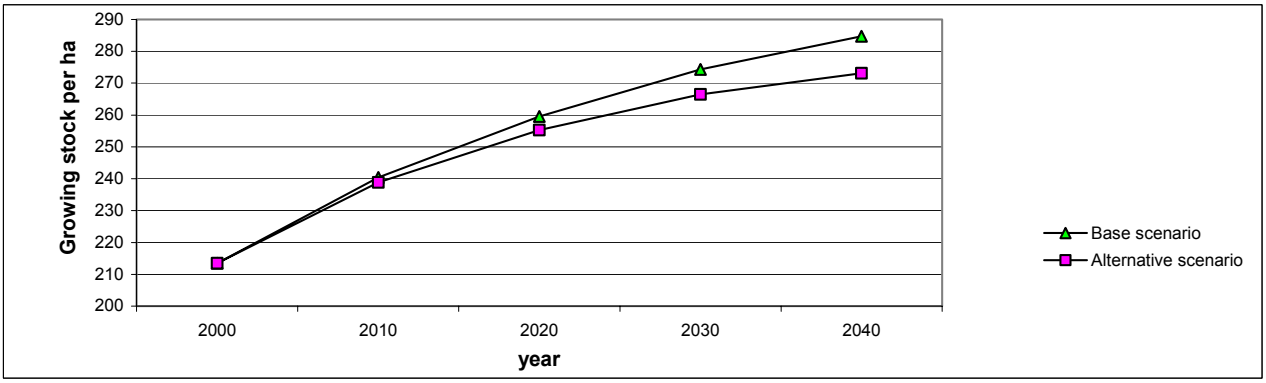

Removals, total (1000 cu.m. u.b.)
2,700
2,500
2,300
2,100
1,900
1,700
1,500
1,300
1,100
2000
2010
2020
2030
2040
year
Base scenario
Alternative scenario

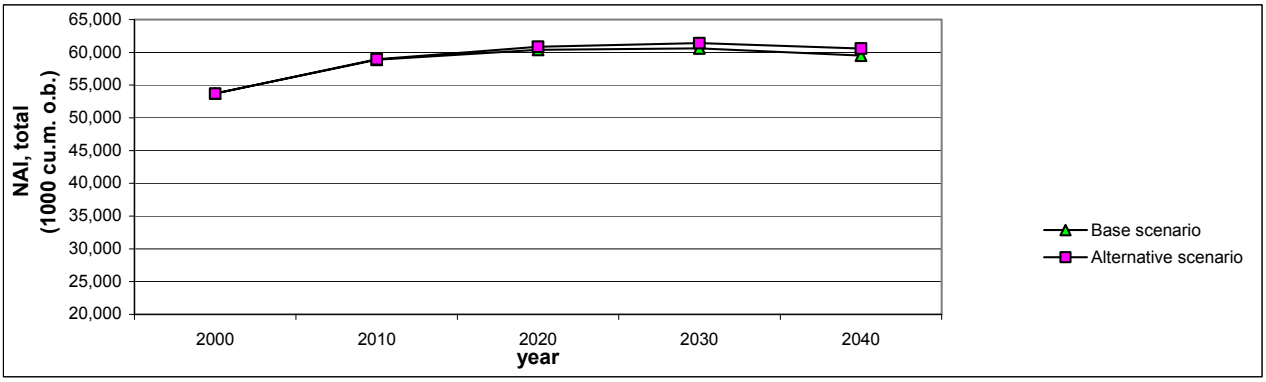

Fellings/NAI
140%
120%
100%
80%
60%
40%
20%
0%
2000
2010
2020
2030
2040
year
Base scenario
Alternative scenario

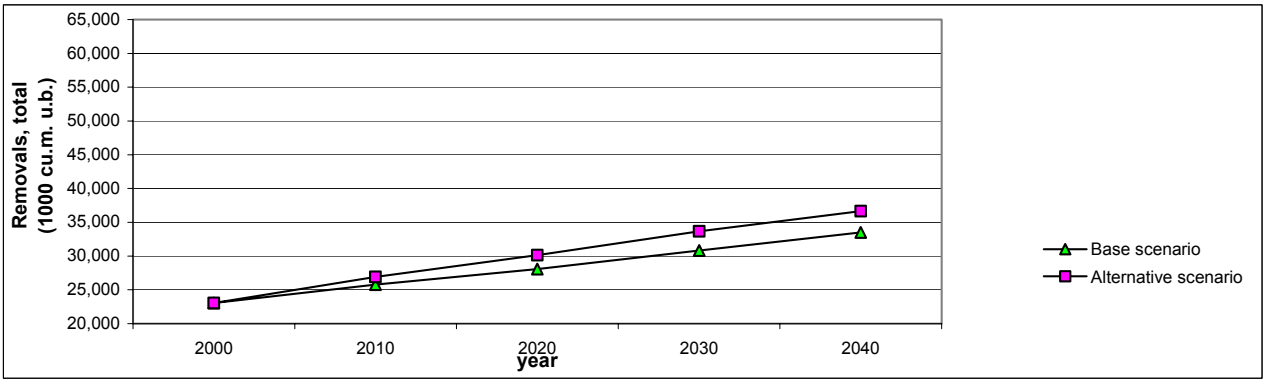
Poland	**Base scenario**					
	Unit	**2000**	**2010**	**2020**	**2030**	**2040**
Forest resource parameters						
Area of forest available for wood supply	1000 ha	8,397	8,600	8,762	8,925	9,046
- coniferous	*1000 ha*	*6,497*	*6,653*	*6,777*	*6,902*	*6,996*
- broadleaved	*1000 ha*	*1,901*	*1,948*	*1,985*	*2,022*	*2,050*
Growing stock, total	1000 cu.m. o.b.	1,792,424	2,067,684	2,274,619	2,448,160	2,575,723
- coniferous	*1000 cu.m. o.b.*	*1,408,463*	*1,648,182*	*1,828,204*	*1,982,312*	*2,098,390*
- broadleaved	*1000 cu.m. o.b.*	*383,962*	*419,502*	*446,415*	*465,848*	*477,333*
Net annual increment, total	1000 cu.m. o.b. / y.	53,727	58,872	60,395	60,626	59,502
- coniferous	*1000 cu.m. o.b. / y.*	*43,462*	*47,167*	*48,187*	*48,350*	*47,292*
- broadleaved	*1000 cu.m. o.b. / y.*	*10,264*	*11,705*	*12,207*	*12,276*	*12,210*
Fellings, total	1000 cu.m. o.b. / y.	33,118	37,022	40,299	44,255	48,074
- coniferous	*1000 cu.m. o.b. / y.*	*25,203*	*28,174*	*30,669*	*33,692*	*36,863*
- broadleaved	*1000 cu.m. o.b. / y.*	*7,915*	*8,848*	*9,630*	*10,563*	*11,211*
Removals, total	1000 cu.m. u.b. / y.	23,073	25,793	28,075	30,831	33,492
- coniferous	*1000 cu.m. u.b. / y.*	*17,558*	*19,628*	*21,366*	*23,472*	*25,682*
- broadleaved	*1000 cu.m. u.b. / y.*	*5,514*	*6,164*	*6,709*	*7,359*	*7,810*
Removals, total from final fellings	1000 cu.m. u.b. / y.	11,536	12,896	14,035	15,409	16,830
- coniferous	*1000 cu.m. u.b. / y.*	*8,779*	*9,814*	*10,681*	*11,726*	*12,808*
- broadleaved	*1000 cu.m. u.b. / y.*	*2,757*	*3,082*	*3,354*	*3,683*	*4,022*
Removals, total from thinnings	1000 cu.m. u.b. / y.	11,536	12,896	14,041	15,422	16,662
- coniferous	*1000 cu.m. u.b. / y.*	*8,779*	*9,814*	*10,686*	*11,746*	*12,874*
- broadleaved	*1000 cu.m. u.b. / y.*	*2,757*	*3,082*	*3,355*	*3,676*	*3,788*
Ratios						
- Growing stock per Area	cu.m. o.b. / ha	213	240	260	274	285
- Net annual increment per growing stock	cu.m. o.b. / cu.m. o.b.	3.0%	2.8%	2.7%	2.5%	2.3%
- Net annual increment per ha	cu.m. o.b. / ha / y.	6.4	6.8	6.9	6.8	6.6
- Fellings per Net annual increment	cu.m. o.b. / cu.m. o.b.	62%	63%	67%	73%	81%
- Removals per Area	cu.m. u.b. / ha / y.	2.7	3.0	3.2	3.5	3.7

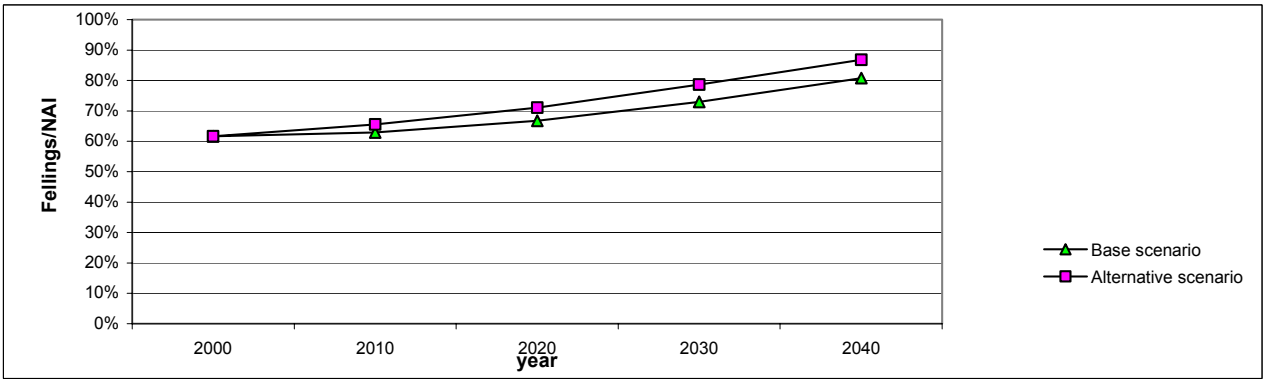




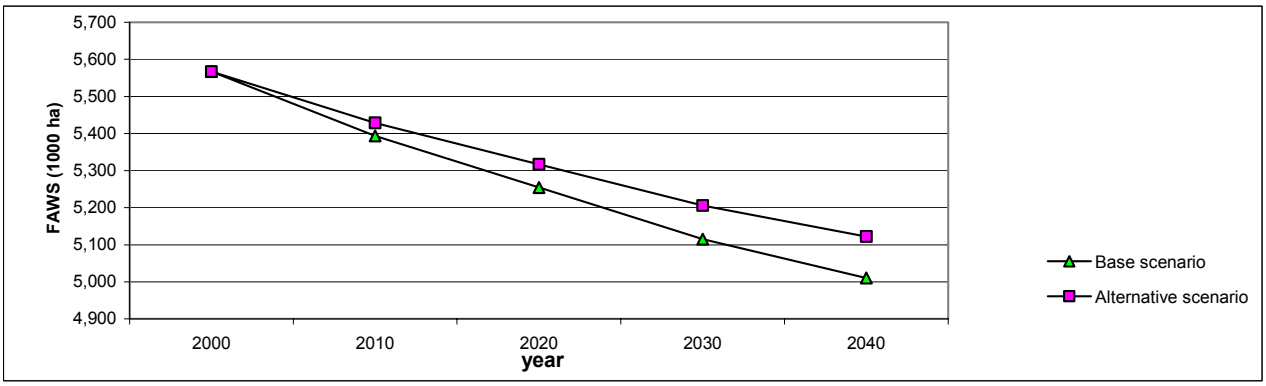

Growing stock per ha
290
280
270
260
250
240
230
220
210
200
2000
2010
2020
2030
2040
year
Base scenario
Alternative scenario

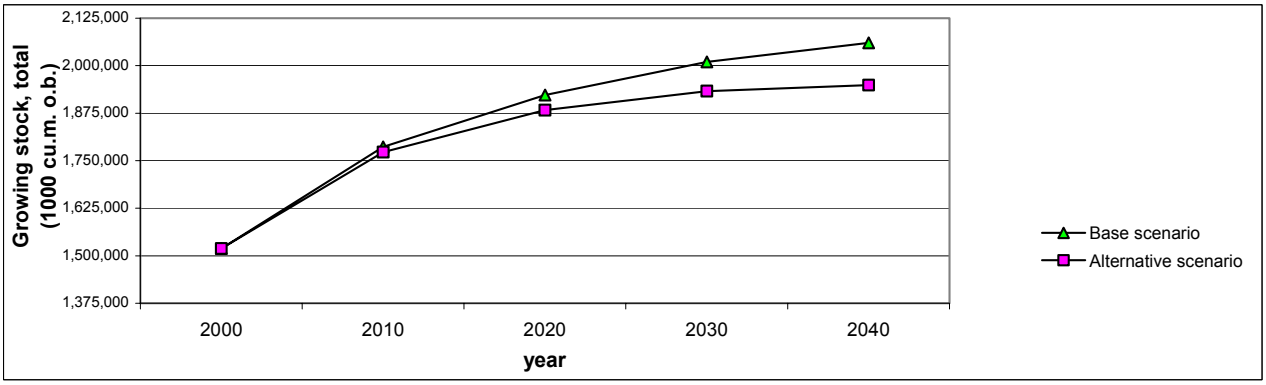

NAI, total
(1000 cu.m. o.b.)
65,000
60,000
55,000
50,000
45,000
40,000
35,000
30,000
25,000
20,000
2000
2010
2020
2030
2040
year
Base scenario
Alternative scenario

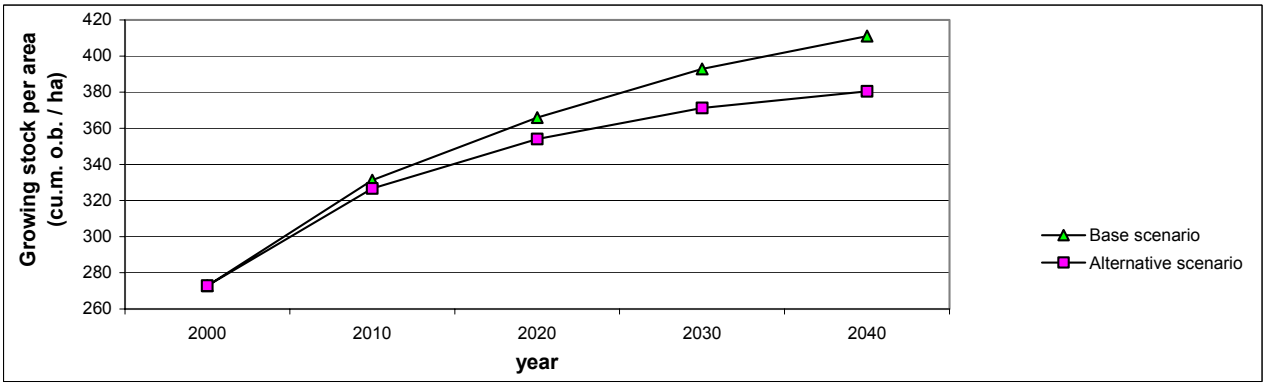

Removals, total
(1000 cu.m. u.b.)
65,000
60,000
55,000
50,000
45,000
40,000
35,000
30,000
25,000
20,000
2000
2010
2020
2030
2040
year
Base scenario
Alternative scenario

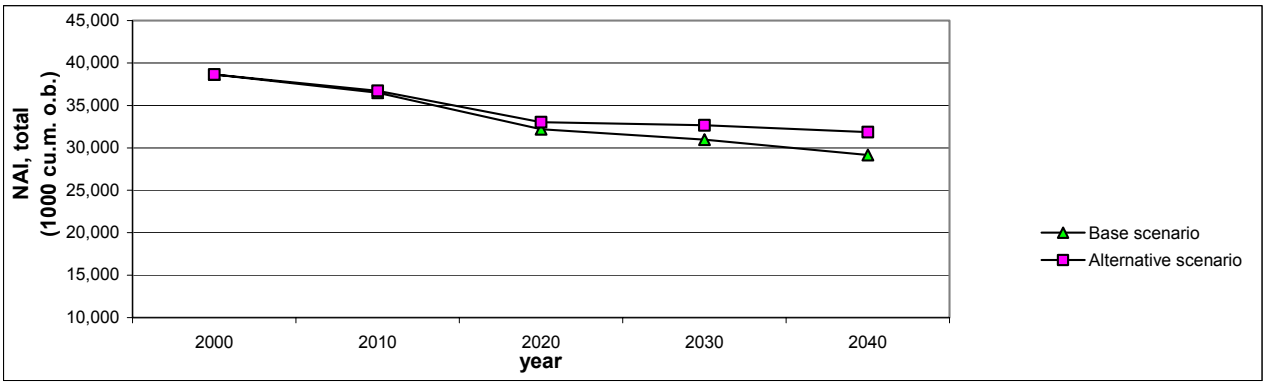

Fellings/NAI
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
2000
2010
2020
2030
2040
year
Base scenario
Alternative scenario

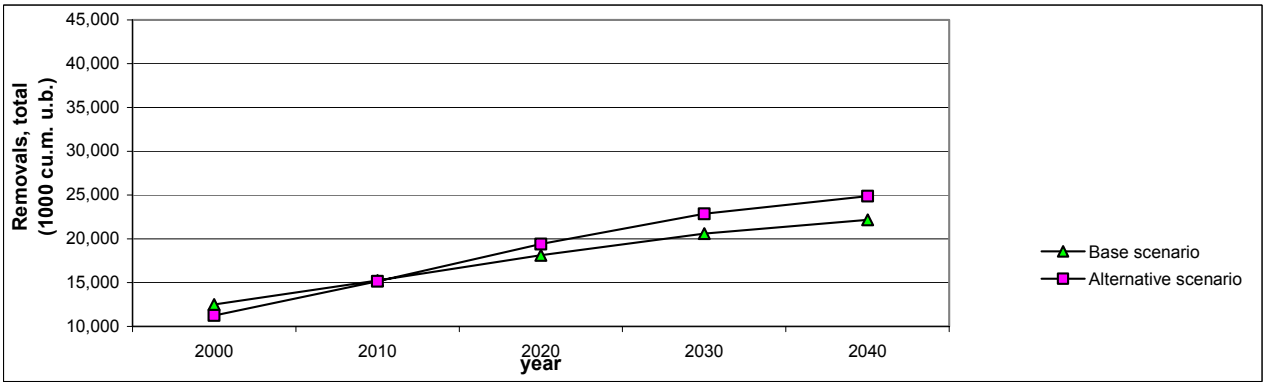
Romania	**Base scenario**					
	Unit	**2000**	**2010**	**2020**	**2030**	**2040**
Forest resource parameters						
Area of forest available for wood supply	1000 ha	5,567	5,394	5,254	5,115	5,011
- coniferous	*1000 ha*	*1,663*	*1,611*	*1,569*	*1,528*	*1,497*
- broadleaved	*1000 ha*	*3,905*	*3,783*	*3,685*	*3,587*	*3,514*
Growing stock, total	1000 cu.m. o.b.	1,518,900	1,786,457	1,922,817	2,009,486	2,059,633
- coniferous	*1000 cu.m. o.b.*	*622,885*	*736,342*	*793,752*	*835,908*	*863,613*
- broadleaved	*1002 cu.m. o.b.*	*896,015*	*1,050,114*	*1,129,065*	*1,173,577*	*1,196,020*
Net annual increment, total	1000 cu.m. o.b. / y.	38,632	36,507	32,187	30,969	29,152
- coniferous	*1000 cu.m. o.b. / y.*	*15,747*	*14,659*	*12,421*	*12,604*	*11,890*
- broadleaved	*1000 cu.m. o.b. / y.*	*22,885*	*21,848*	*19,766*	*18,365*	*17,261*
Fellings, total	1000 cu.m. o.b. / y.	14,045	17,117	20,377	23,157	24,923
- coniferous	*1000 cu.m. o.b. / y.*	*5,164*	*6,293*	*7,492*	*8,514*	*9,601*
- broadleaved	*1000 cu.m. o.b. / y.*	8,881	10,824	12,885	14,644	15,323
Removals, total	1000 cu.m. u.b. / y.	12,500	15,234	18,135	20,610	22,182
- coniferous	*1000 cu.m. u.b. / y.*	*4,596*	*5,601*	*6,667*	*7,577*	*8,545*
- broadleaved	*1000 cu.m. u.b. / y.*	*7,904*	*9,633*	*11,468*	*13,033*	*13,637*
Removals, total from final fellings	1000 cu.m. u.b. / y.	8,923	10,875	12,946	14,713	15,513
- coniferous	*1000 cu.m. u.b. / y.*	*2,987*	*3,641*	*4,334*	*4,925*	*5,498*
- broadleaved	*1000 cu.m. u.b. / y.*	*5,936*	*7,235*	*8,613*	*9,788*	*10,015*
Removals, total from thinnings	1000 cu.m. u.b. / y.	3,577	4,359	5,189	5,897	6,669
- coniferous	*1000 cu.m. u.b. / y.*	*1,608*	*1,960*	*2,334*	*2,652*	*3,047*
- broadleaved	*1000 cu.m. u.b. / y.*	*1,968*	*2,399*	*2,855*	*3,245*	*3,622*
Ratios						
- Growing stock per Area	cu.m. o.b. / ha	273	331	366	393	411
- Net annual increment per growing stock	cu.m. o.b. / cu.m. o.b.	2.5%	2.0%	1.7%	1.5%	1.4%
- Net annual increment per ha	cu.m. o.b. / ha / y.	6.9	6.8	6.1	6.1	5.8
- Fellings per Net annual increment	cu.m. o.b. / cu.m. o.b.	36%	47%	63%	75%	85%
- Removals per Area	cu.m. u.b. / ha / y.	2.2	2.8	3.5	4.0	4.4

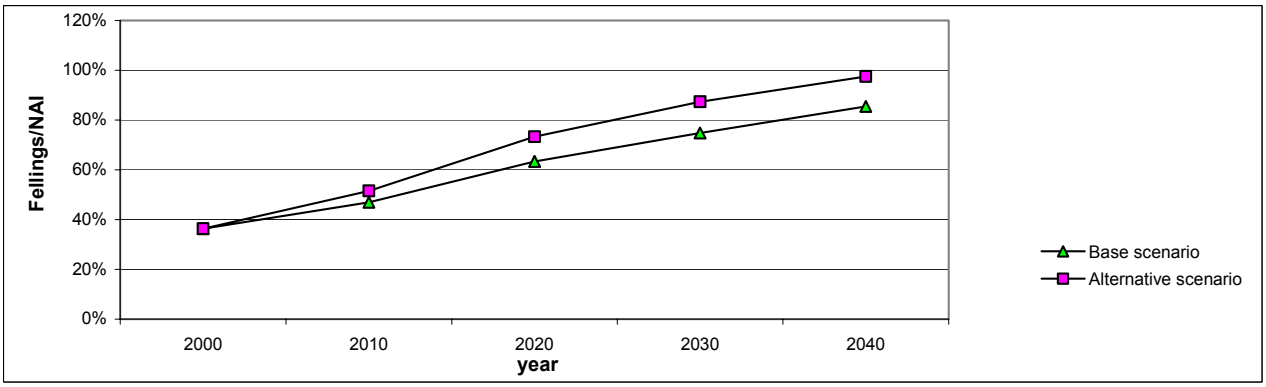




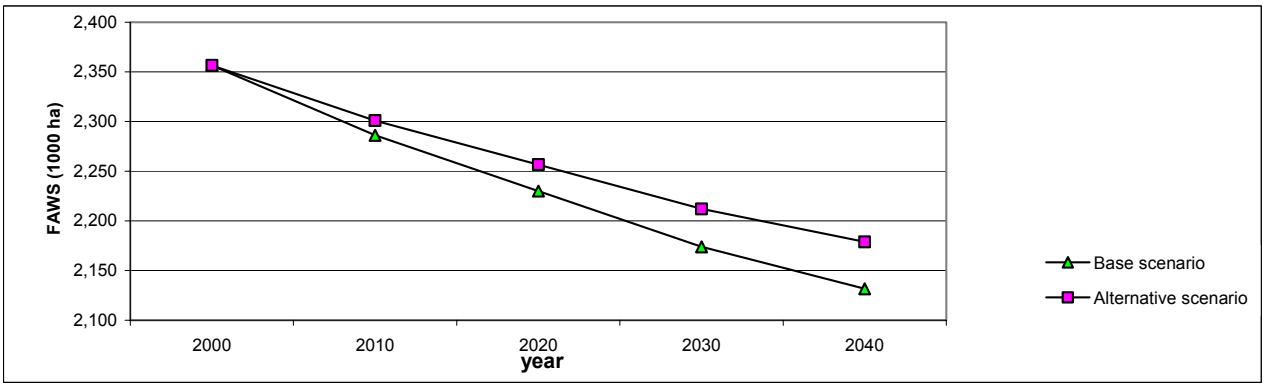

Growing stock per area (cu.m. o.b. / ha)
420
400
380
360
340
320
300
280
260
2000
2010
2020
2030
2040
year
Base scenario
Alternative scenario

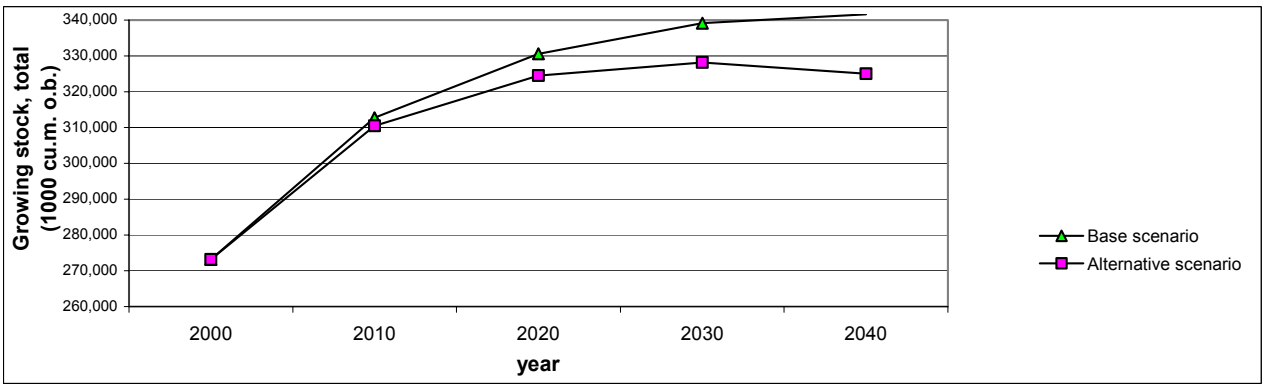

NAI, total (1000 cu.m. o.b.)
45,000
40,000
35,000
30,000
25,000
20,000
15,000
10,000
2000
2010
2020
2030
2040
year
Base scenario
Alternative scenario

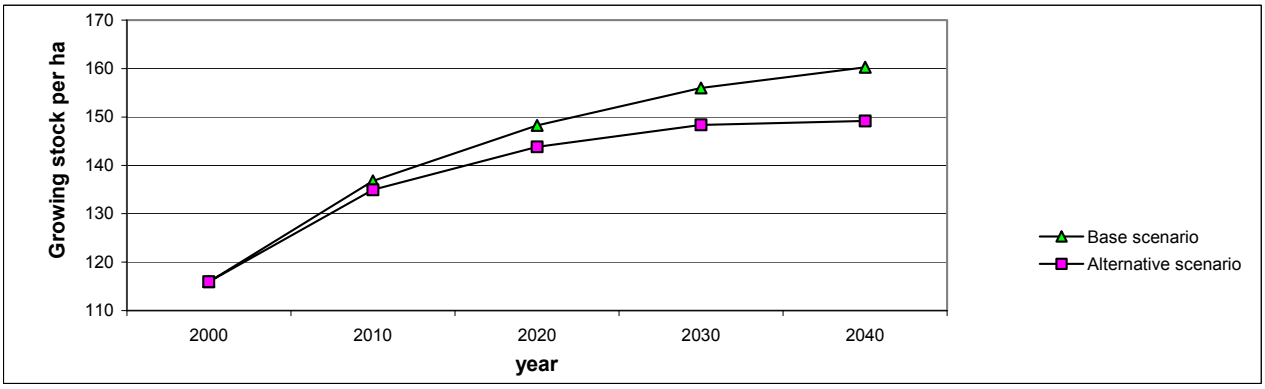

Removals, total (1000 cu.m. u.b.)
45,000
40,000
35,000
30,000
25,000
20,000
15,000
10,000
2000
2010
2020
2030
2040
year
Base scenario
Alternative scenario

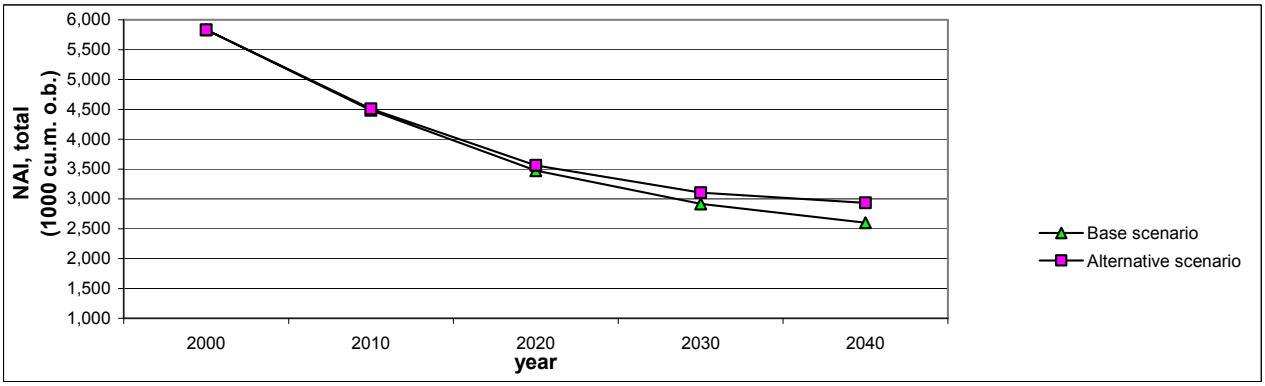

Fellings/NAI
120%
100%
80%
60%
40%
20%
0%
2000
2010
2020
2030
2040
year
Base scenario
Alternative scenario

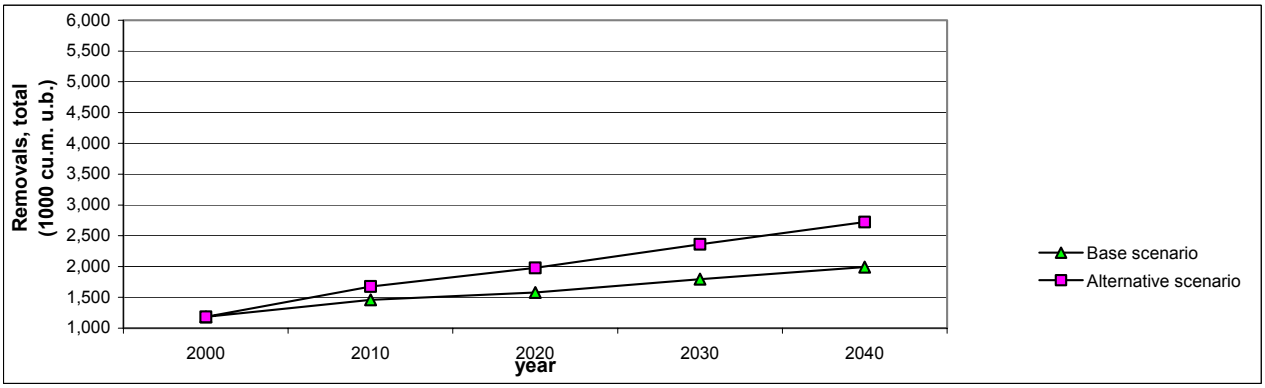
Serbia and Montenegro	**Base scenario**					
	Unit	**2000**	**2010**	**2020**	**2030**	**2040**
Forest resource parameters						
Area of forest available for wood supply	1000 ha	2,356	2,286	2,230	2,174	2,132
- coniferous	*1000 ha*	*185*	*180*	*175*	*171*	*168*
- broadleaved	*1000 ha*	*2,171*	*2,106*	*2,055*	*2,003*	*1,964*
Growing stock, total	1000 cu.m. o.b.	273,178	312,743	330,556	339,133	341,644
- coniferous	*1000 cu.m. o.b.*	*25,571*	*27,063*	*27,443*	*27,122*	*26,313*
- broadleaved	*1002 cu.m. o.b.*	*247,607*	*285,680*	*303,113*	*312,011*	*315,331*
Net annual increment, total	1000 cu.m. o.b. / y.	5,833	4,487	3,476	2,919	2,601
- coniferous	*1000 cu.m. o.b. / y.*	*380*	*402*	*388*	*379*	*384*
- broadleaved	*1000 cu.m. o.b. / y.*	*5,454*	*4,086*	*3,087*	*2,539*	*2,217*
Fellings, total	1000 cu.m. o.b. / y.	1,475	1,819	1,970	2,240	2,483
- coniferous	*1000 cu.m. o.b. / y.*	*236*	*299*	*371*	*425*	*476*
- broadleaved	*1000 cu.m. o.b. / y.*	1,239	1,521	1,599	1,815	2,007
Removals, total	1000 cu.m. u.b. / y.	1,182	1,458	1,579	1,796	1,990
- coniferous	*1000 cu.m. u.b. / y.*	*189*	*239*	*297*	*341*	*382*
- broadleaved	*1000 cu.m. u.b. / y.*	*993*	*1,219*	*1,282*	*1,455*	*1,608*
Removals, total from final fellings	1000 cu.m. u.b. / y.	827	1,047	1,301	1,492	1,670
- coniferous	*1000 cu.m. u.b. / y.*	*132*	*168*	*208*	*239*	*267*
- broadleaved	*1000 cu.m. u.b. / y.*	*695*	*879*	*1,093*	*1,253*	*1,403*
Removals, total from thinnings	1000 cu.m. u.b. / y.	355	411	278	304	320
- coniferous	*1000 cu.m. u.b. / y.*	*57*	*72*	*89*	*102*	*114*
- broadleaved	*1000 cu.m. u.b. / y.*	*298*	*339*	*189*	*202*	*205*
Ratios						
- Growing stock per Area	cu.m. o.b. / ha	116	137	148	156	160
- Net annual increment per growing stock	cu.m. o.b. / cu.m. o.b.	2.1%	1.4%	1.1%	0.9%	0.8%
- Net annual increment per ha	cu.m. o.b. / ha / y.	2.5	2.0	1.6	1.3	1.2
- Fellings per Net annual increment	cu.m. o.b. / cu.m. o.b.	25%	41%	57%	77%	95%
- Removals per Area	cu.m. u.b. / ha / y.	0.5	0.6	0.7	0.8	0.9

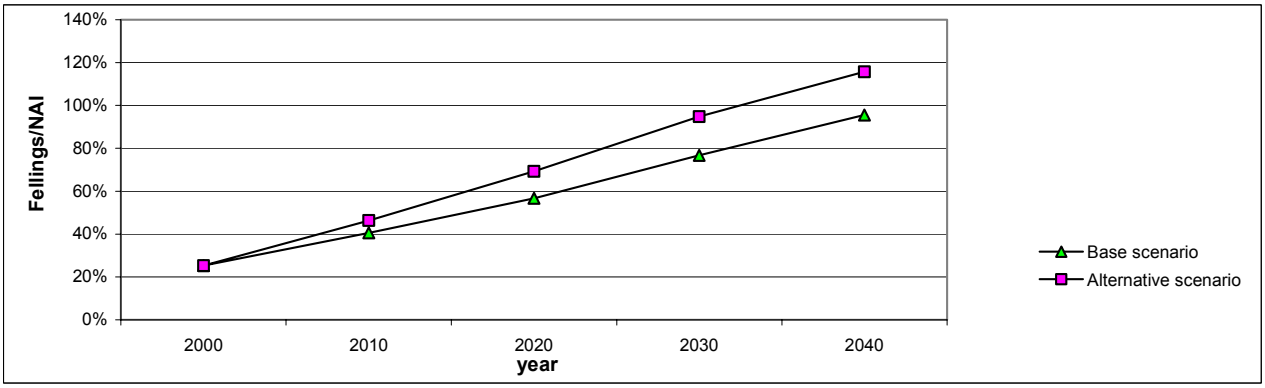




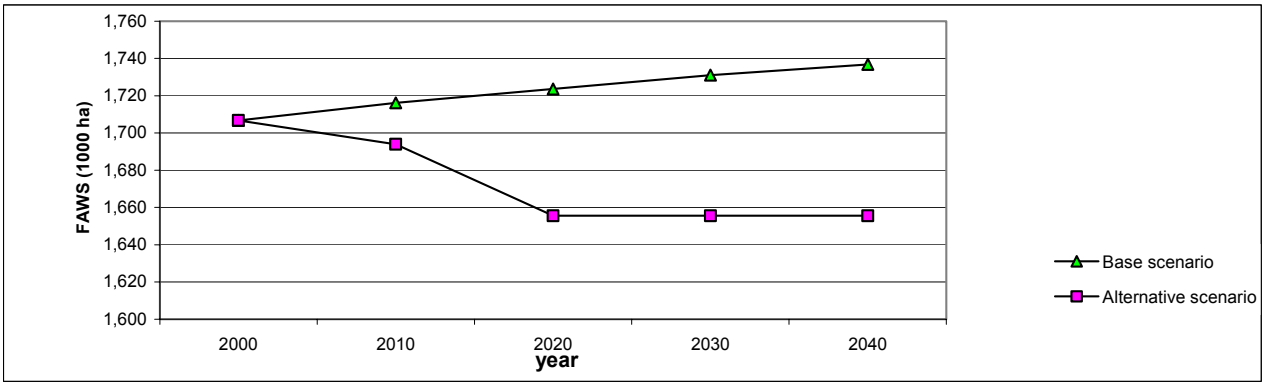

Growing stock per ha
170
160
150
140
130
120
110
2000
2010
2020
2030
2040
year
Base scenario
Alternative scenario

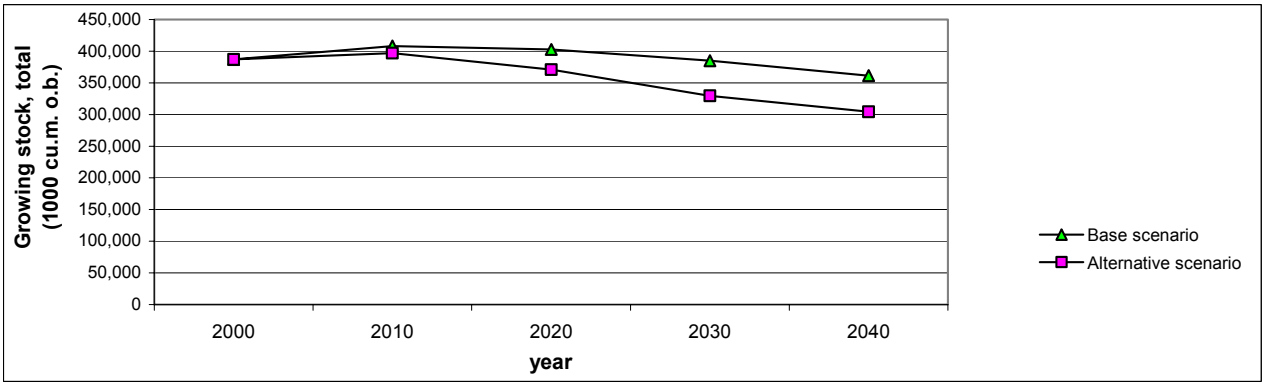

NAI, total (1000 cu.m. o.b.)
6,000
5,500
5,000
4,500
4,000
3,500
3,000
2,500
2,000
1,500
1,000
2000
2010
2020
2030
2040
year
Base scenario
Alternative scenario

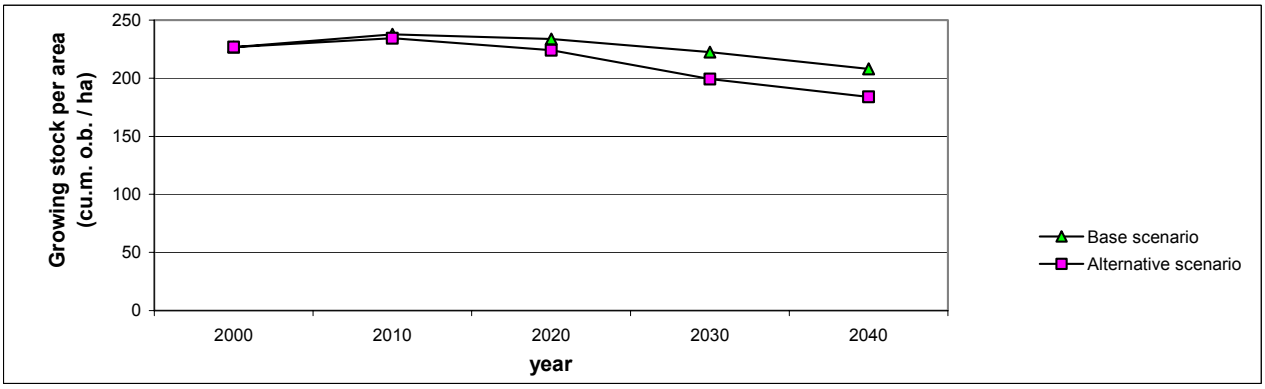

Removals, total (1000 cu.m. u.b.)
6,000
5,500
5,000
4,500
4,000
3,500
3,000
2,500
2,000
1,500
1,000
2000
2010
2020
2030
2040
year
Base scenario
Alternative scenario

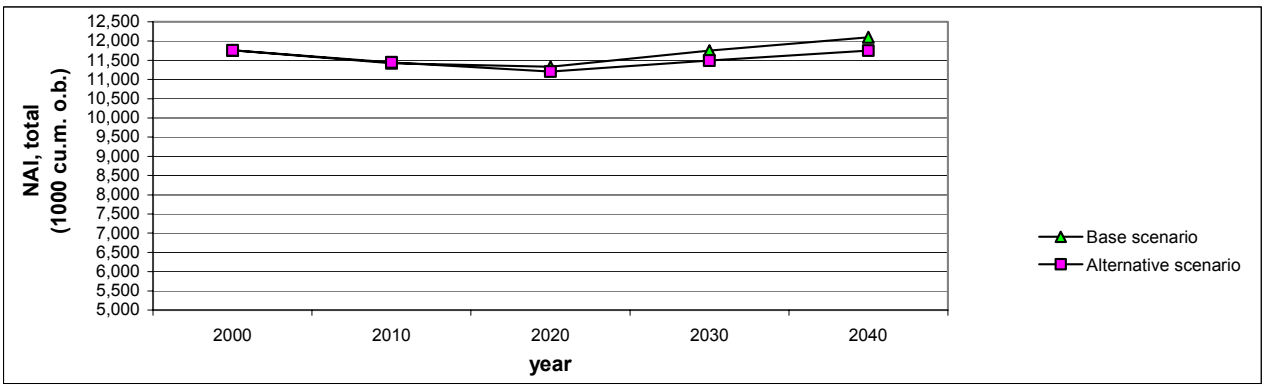

Fellings/NAI
140%
120%
100%
80%
60%
40%
20%
0%
2000
2010
2020
2030
2040
year
Base scenario
Alternative scenario

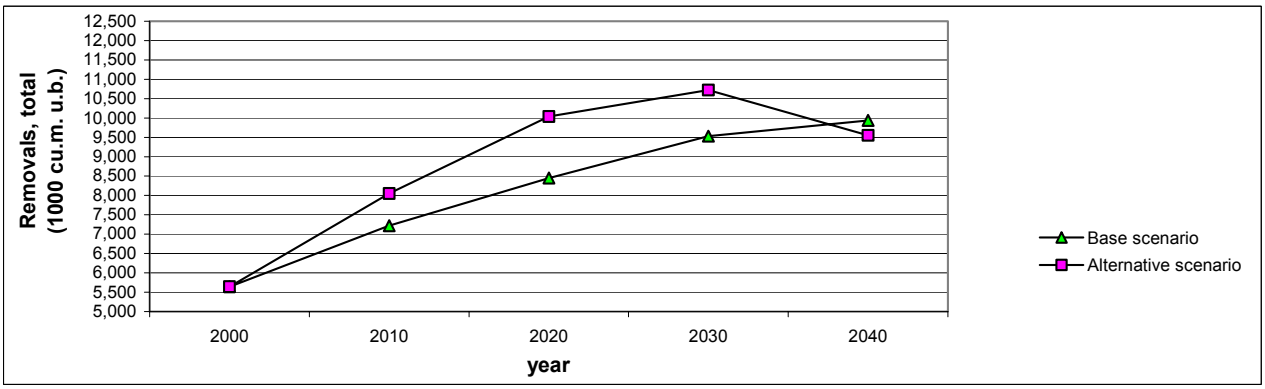
Slovak Republic	**Base scenario**					
	Unit	**2000**	**2010**	**2020**	**2030**	**2040**
Forest resource parameters						
Area of forest available for wood supply	1000 ha	1,707	1,716	1,724	1,731	1,737
- coniferous	*1000 ha*	*715*	*719*	*722*	*726*	*728*
- broadleaved	*1000 ha*	*991*	*997*	*1,001*	*1,006*	*1,009*
Growing stock, total	1000 cu.m. o.b.	386,974	408,258	402,844	385,253	361,316
- coniferous	*1000 cu.m. o.b.*	*185,146*	*187,018*	*176,133*	*159,015*	*141,196*
- broadleaved	*1000 cu.m. o.b.*	*201,829*	*221,240*	*226,710*	*226,238*	*220,120*
Net annual increment, total	1000 cu.m. o.b. / y.	11,759	11,423	11,331	11,754	12,099
- coniferous	*1000 cu.m. o.b. / y.*	*6,009*	*5,931*	*5,960*	*6,309*	*6,581*
- broadleaved	*1000 cu.m. o.b. / y.*	*5,750*	*5,492*	*5,371*	*5,445*	*5,518*
Fellings, total	1000 cu.m. o.b. / y.	8,172	10,457	12,239	13,812	14,396
- coniferous	*1000 cu.m. o.b. / y.*	*4,834*	*6,186*	*7,242*	*8,177*	*8,125*
- broadleaved	*1000 cu.m. o.b. / y.*	*3,338*	*4,271*	*4,997*	*5,634*	*6,272*
Removals, total	1000 cu.m. u.b. / y.	5,640	7,217	8,447	9,532	9,935
- coniferous	*1000 cu.m. u.b. / y.*	*3,336*	*4,269*	*4,998*	*5,643*	*5,607*
- broadleaved	*1000 cu.m. u.b. / y.*	*2,304*	*2,948*	*3,449*	*3,889*	*4,328*
Removals, total from final fellings	1000 cu.m. u.b. / y.	3,948	5,052	5,911	6,664	6,961
- coniferous	*1000 cu.m. u.b. / y.*	*2,335*	*2,988*	*3,496*	*3,942*	*3,931*
- broadleaved	*1000 cu.m. u.b. / y.*	*1,613*	*2,063*	*2,414*	*2,722*	*3,030*
Removals, total from thinnings	1000 cu.m. u.b. / y.	1,692	2,165	2,536	2,868	2,975
- coniferous	*1000 cu.m. u.b. / y.*	*1,001*	*1,281*	*1,501*	*1,702*	*1,676*
- broadleaved	*1000 cu.m. u.b. / y.*	*691*	*884*	*1,035*	*1,167*	*1,298*
Ratios						
- Growing stock per Area	cu.m. o.b. / ha	227	238	234	223	208
- Net annual increment per growing stock	cu.m. o.b. / cu.m. o.b.	3.0%	2.8%	2.8%	3.1%	3.3%
- Net annual increment per ha	cu.m. o.b. / ha / y.	6.9	6.7	6.6	6.8	7.0
- Fellings per Net annual increment	cu.m. o.b. / cu.m. o.b.	69%	92%	108%	118%	119%
- Removals per Area	cu.m. u.b. / ha / y.	3.3	4.2	4.9	5.5	5.7

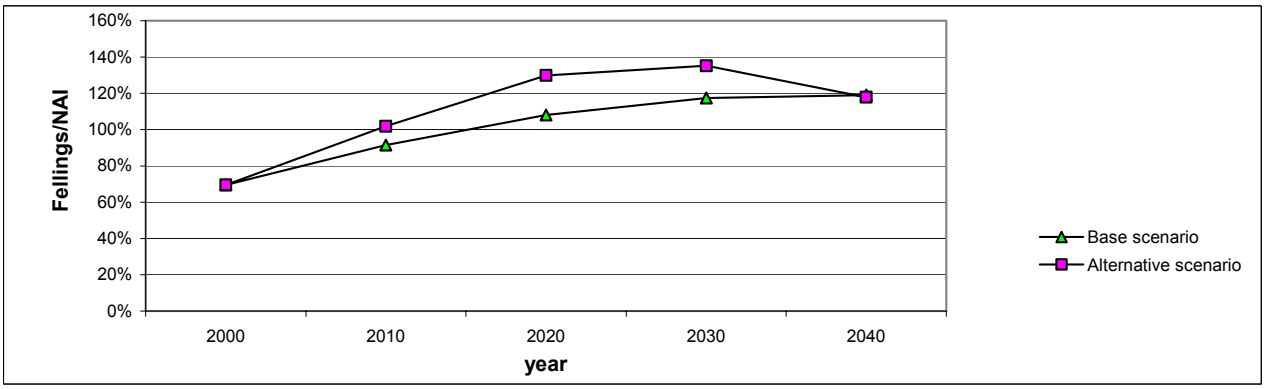




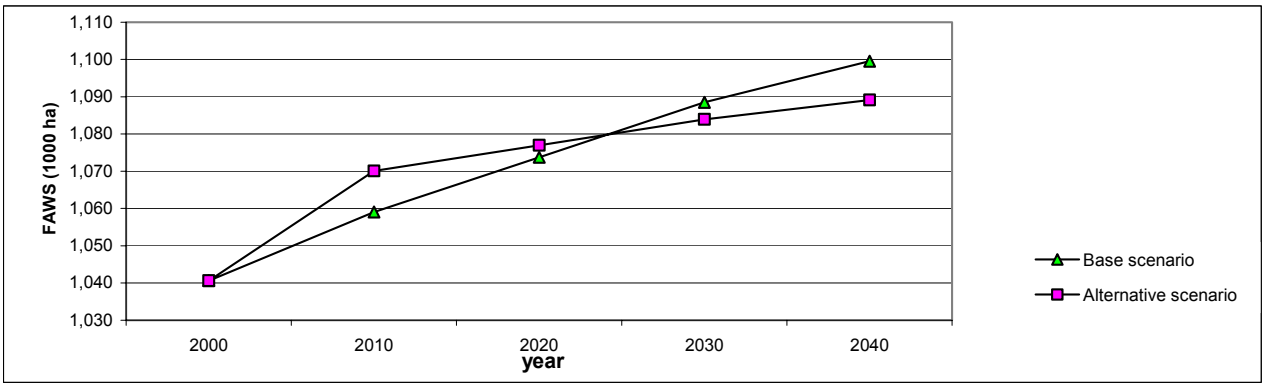

Growing stock per area
(cu.m. o.b. / ha)
250
200
150
100
50
0
2000
2010
2020
2030
2040
year
Base scenario
Alternative scenario

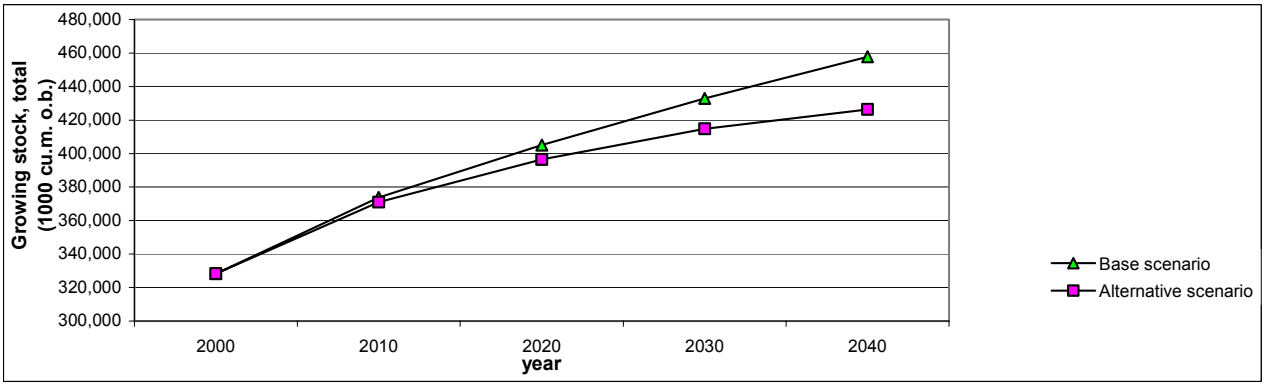

NAI, total
(1000 cu.m. o.b.)
12,500
12,000
11,500
11,000
10,500
10,000
9,500
9,000
8,500
8,000
7,500
7,000
6,500
6,000
5,500
5,000
2000
2010
2020
2030
2040
year
Base scenario
Alternative scenario

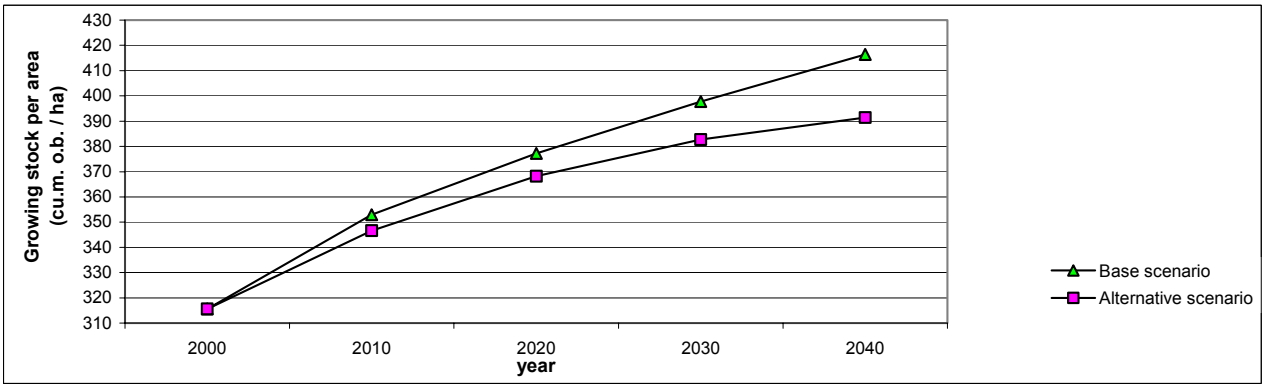

Removals, total
(1000 cu.m. u.b.)
12,500
12,000
11,500
11,000
10,500
10,000
9,500
9,000
8,500
8,000
7,500
7,000
6,500
6,000
5,500
5,000
2000
2010
2020
2030
2040
year
Base scenario
Alternative scenario

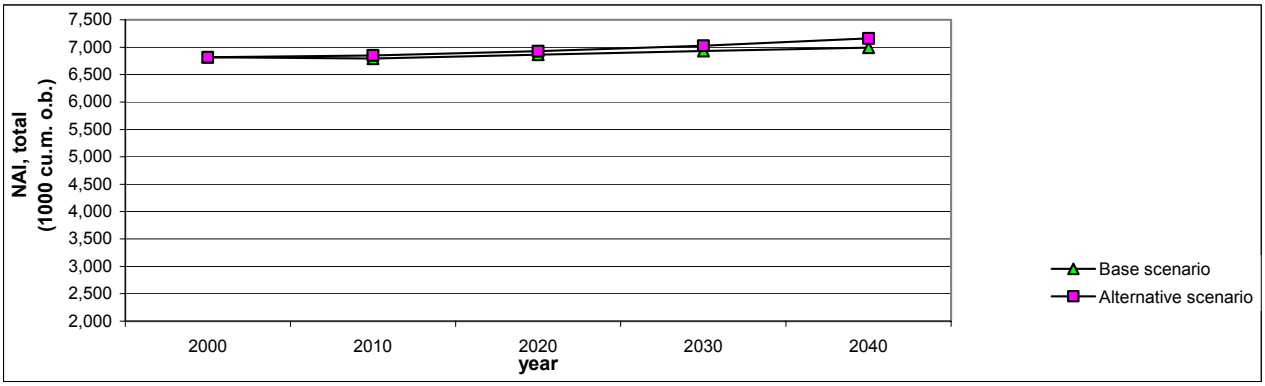

Fellings/NAI
160%
140%
120%
100%
80%
60%
40%
20%
0%
2000
2010
2020
2030
2040
year
Base scenario
Alternative scenario

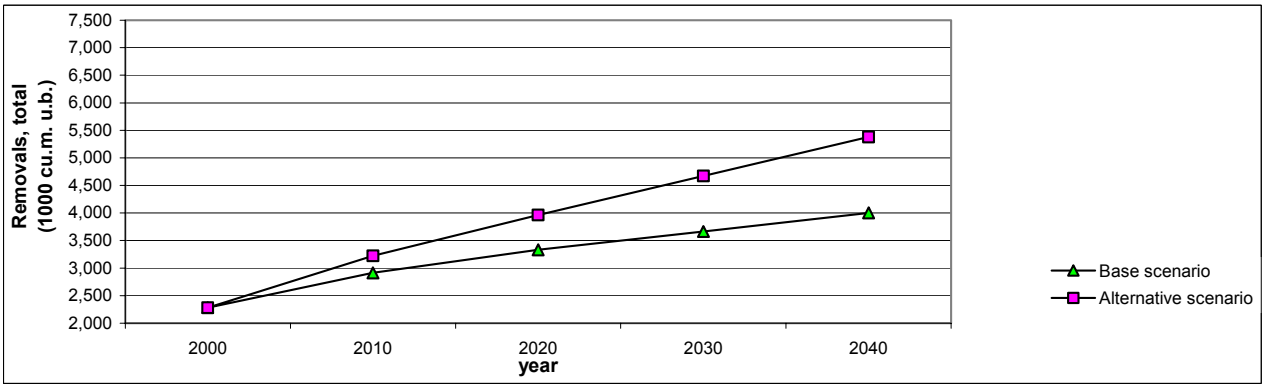
Slovenia	**Base scenario**					
	Unit	**2000**	**2010**	**2020**	**2030**	**2040**
Forest resource parameters						
Area of forest available for wood supply	1000 ha	1,041	1,059	1,074	1,089	1,100
- coniferous	*1000 ha*	*573*	*581*	*588*	*594*	*599*
- broadleaved	*1000 ha*	*467*	*478*	*486*	*494*	*500*
Growing stock, total	1000 cu.m. o.b.	328,372	373,761	405,043	432,987	457,847
- coniferous	*1000 cu.m. o.b.*	*205,492*	*231,416*	*248,324*	*262,866*	*275,376*
- broadleaved	*1000 cu.m. o.b.*	*122,879*	*142,346*	*156,719*	*170,121*	*182,471*
Net annual increment, total	1000 cu.m. o.b. / y.	6,818	6,794	6,865	6,931	6,995
- coniferous	*1000 cu.m. o.b. / y.*	*4,173*	*4,121*	*4,117*	*4,151*	*4,191*
- broadleaved	*1000 cu.m. o.b. / y.*	*2,645*	*2,673*	*2,748*	*2,780*	*2,805*
Fellings, total	1000 cu.m. o.b. / y.	2,621	3,350	3,829	4,215	4,600
- coniferous	*1000 cu.m. o.b. / y.*	*1,709*	*2,185*	*2,497*	*2,749*	*3,000*
- broadleaved	*1000 cu.m. o.b. / y.*	912	1,165	1,332	1,466	1,600
Removals, total	1000 cu.m. u.b. / y.	2,279	2,913	3,330	3,665	4,000
- coniferous	*1000 cu.m. u.b. / y.*	*1,486*	*1,900*	*2,172*	*2,390*	*2,609*
- broadleaved	*1000 cu.m. u.b. / y.*	*793*	*1,013*	*1,158*	*1,275*	*1,391*
Removals, total from final fellings	1000 cu.m. u.b. / y.	1,527	1,952	2,231	2,455	2,680
- coniferous	*1000 cu.m. u.b. / y.*	*996*	*1,273*	*1,455*	*1,601*	*1,748*
- broadleaved	*1000 cu.m. u.b. / y.*	*531*	*679*	*776*	*854*	*932*
Removals, total from thinnings	1000 cu.m. u.b. / y.	752	961	1,099	1,209	1,320
- coniferous	*1000 cu.m. u.b. / y.*	*491*	*627*	*717*	*789*	*861*
- broadleaved	*1000 cu.m. u.b. / y.*	*262*	*334*	*382*	*421*	*459*
Ratios						
- Growing stock per Area	cu.m. o.b. / ha	316	353	377	398	416
- Net annual increment per growing stock	cu.m. o.b. / cu.m. o.b.	2.1%	1.8%	1.7%	1.6%	1.5%
- Net annual increment per ha	cu.m. o.b. / ha / y.	6.6	6.4	6.4	6.4	6.4
- Fellings per Net annual increment	cu.m. o.b. / cu.m. o.b.	38%	49%	56%	61%	66%
- Removals per Area	cu.m. u.b. / ha / y.	2.2	2.8	3.1	3.4	3.6

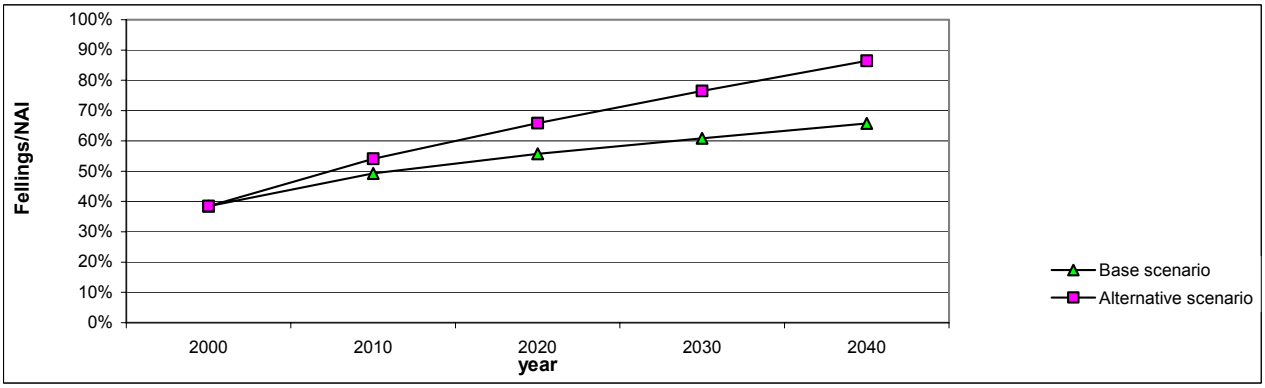




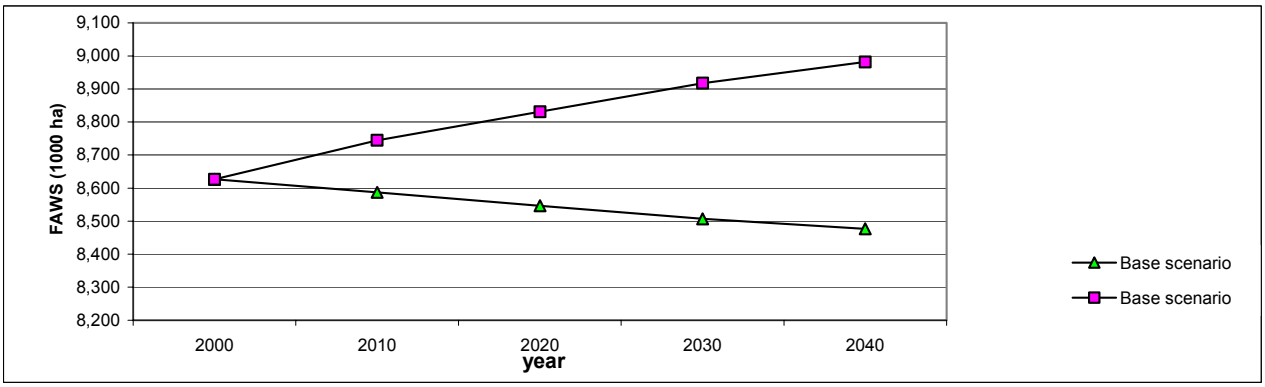

Growing stock per area (cu.m. o.b. / ha)
430
420
410
400
390
380
370
360
350
340
330
320
310
2000
2010
2020
2030
2040
year
Base scenario
Alternative scenario

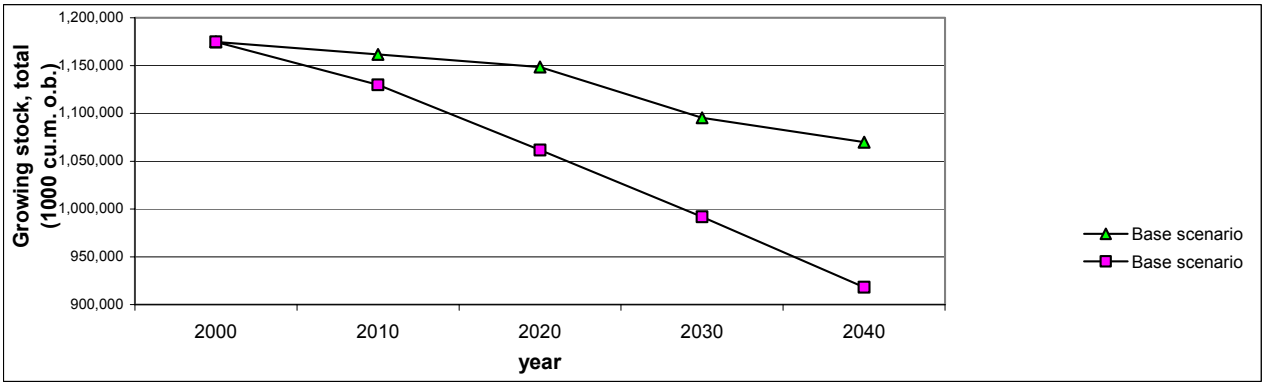

NAI, total (1000 cu.m. o.b.)
7,500
7,000
6,500
6,000
5,500
5,000
4,500
4,000
3,500
3,000
2,500
2,000
2000
2010
2020
2030
2040
year
Base scenario
Alternative scenario

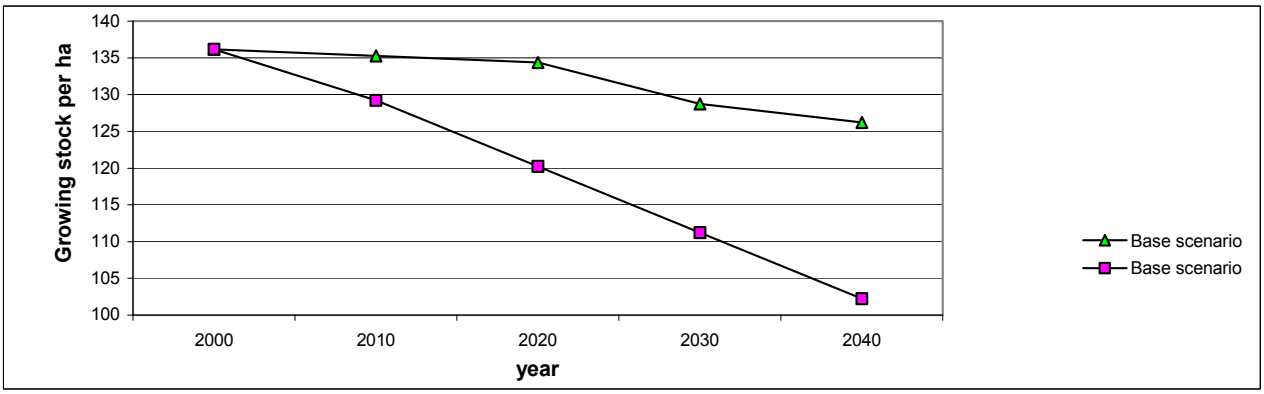

Removals, total (1000 cu.m. u.b.)
7,500
7,000
6,500
6,000
5,500
5,000
4,500
4,000
3,500
3,000
2,500
2,000
2000
2010
2020
2030
2040
year
Base scenario
Alternative scenario

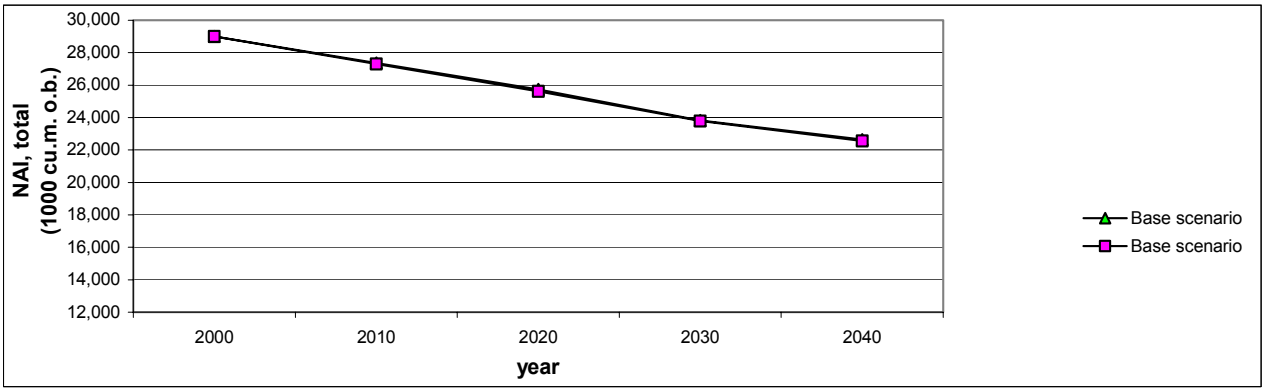

Fellings/NAI
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
2000
2010
2020
2030
2040
year
Base scenario
Alternative scenario

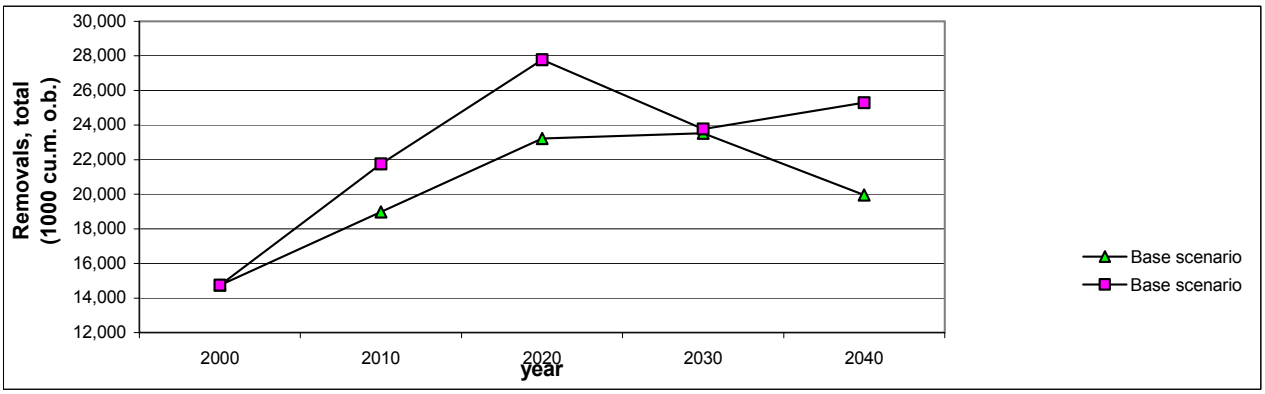
Turkey	**Base scenario**					
	Unit	**2000**	**2010**	**2020**	**2030**	**2040**
Forest resource parameters						
Area of forest available for wood supply	1000 ha	8,627	8,587	8,547	8,507	8,477
- coniferous	*1000 ha*	*6,820*	*6,788*	*6,757*	*6,725*	*6,701*
- broadleaved	*1000 ha*	*1,807*	*1,798*	*1,790*	*1,782*	*1,775*
Growing stock, total	1000 cu.m. o.b.	1,174,669	1,161,529	1,148,389	1,095,271	1,069,912
- coniferous	*1000 cu.m. o.b.*	*864,606*	*916,421*	*968,235*	*980,183*	*977,064*
- broadleaved	*1000 cu.m. o.b.*	*310,063*	*245,108*	*180,153*	*115,088*	*92,848*
Net annual increment, total	1000 cu.m. o.b. / y.	29,007	27,372	25,737	23,815	22,648
- coniferous	*1000 cu.m. o.b. / y.*	*23,210*	*21,824*	*20,439*	*19,335*	*18,831*
- broadleaved	*1000 cu.m. o.b. / y.*	*5,797*	*5,548*	*5,298*	*4,481*	*3,817*
Fellings, total	1000 cu.m. o.b. / y.	18,229	23,471	28,713	29,101	24,683
- coniferous	*1000 cu.m. o.b. / y.*	*10,290*	*13,293*	*16,297*	*18,900*	*19,435*
- broadleaved	*1000 cu.m. o.b. / y.*	*7,939*	*10,178*	*12,417*	*10,201*	*5,248*
Removals, total	1000 cu.m. u.b. / y.	14,743	18,982	23,222	23,536	19,962
- coniferous	*1000 cu.m. u.b. / y.*	*8,322*	*10,751*	*13,180*	*15,285*	*15,718*
- broadleaved	*1000 cu.m. u.b. / y.*	*6,421*	*8,232*	*10,042*	*8,250*	*4,244*
Removals, total from final fellings	1000 cu.m. u.b. / y.	10,367	13,376	16,385	17,513	15,350
- coniferous	*1000 cu.m. u.b. / y.*	*5,581*	*7,203*	*8,825*	*10,502*	*12,179*
- broadleaved	*1000 cu.m. u.b. / y.*	*4,787*	*6,174*	*7,561*	*7,011*	*3,170*
Removals, total from thinnings	1000 cu.m. u.b. / y.	4,375	5,606	6,837	6,023	4,613
- coniferous	*1000 cu.m. u.b. / y.*	*2,741*	*3,548*	*4,355*	*4,784*	*3,539*
- broadleaved	*1000 cu.m. u.b. / y.*	*1,634*	*2,058*	*2,482*	*1,240*	*1,074*
Ratios						
- Growing stock per Area	cu.m. o.b. / ha	136	135	134	129	126
- Net annual increment per growing stock	cu.m. o.b. / cu.m. o.b.	2.5%	2.4%	2.2%	2.2%	2.1%
- Net annual increment per ha	cu.m. o.b. / ha / y.	3.4	3.2	3.0	2.8	2.7
- Fellings per Net annual increment	cu.m. o.b. / cu.m. o.b.	63%	86%	112%	122%	109%
- Removals per Area	cu.m. u.b. / ha / y.	1.7	2.2	2.7	2.8	2.4

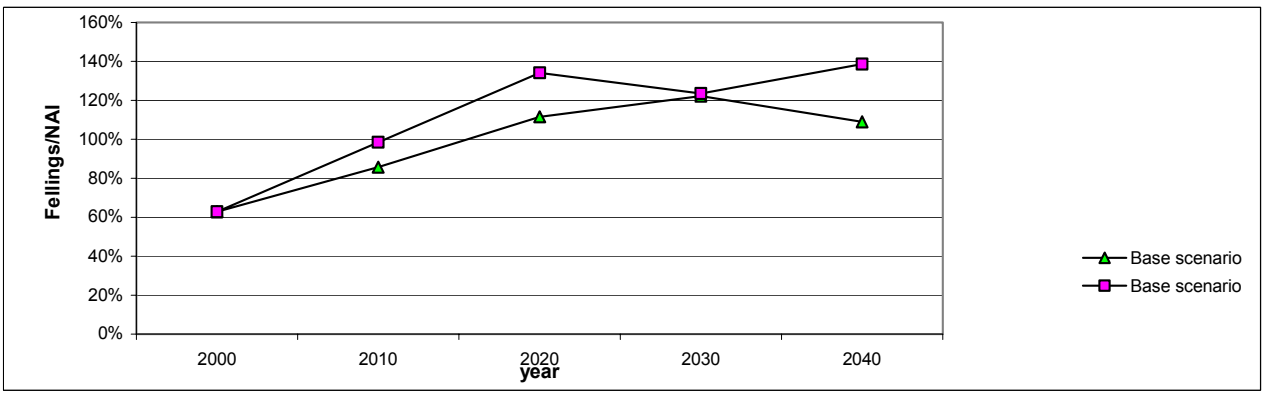




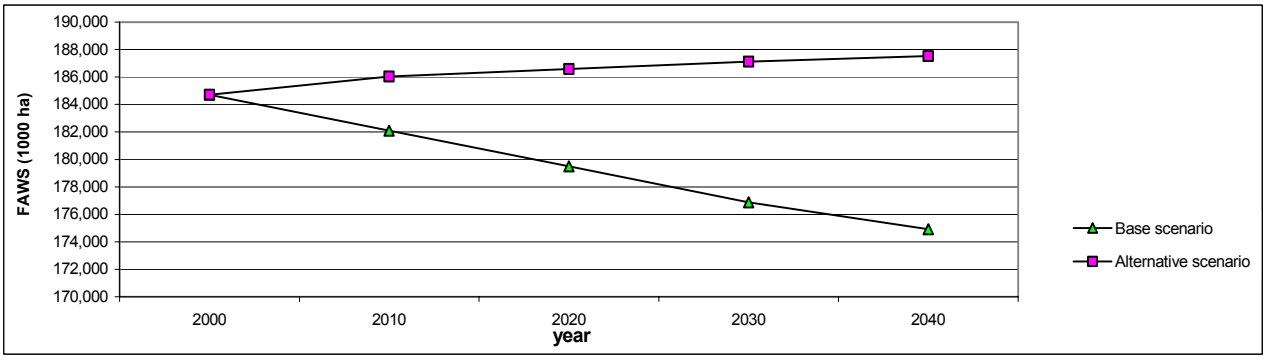

Growing stock per ha
140
135
130
125
120
115
110
105
100
2000
2010
2020
2030
2040
year
Base scenario
Base scenario

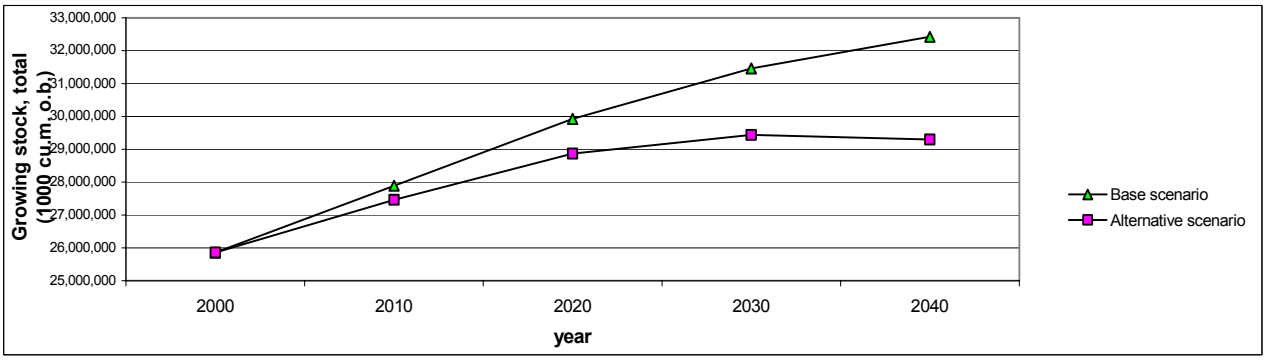

NAI, total (1000 cu.m. o.b.)
30,000
28,000
26,000
24,000
22,000
20,000
18,000
16,000
14,000
12,000
2000
2010
2020
2030
2040
year
Base scenario
Base scenario

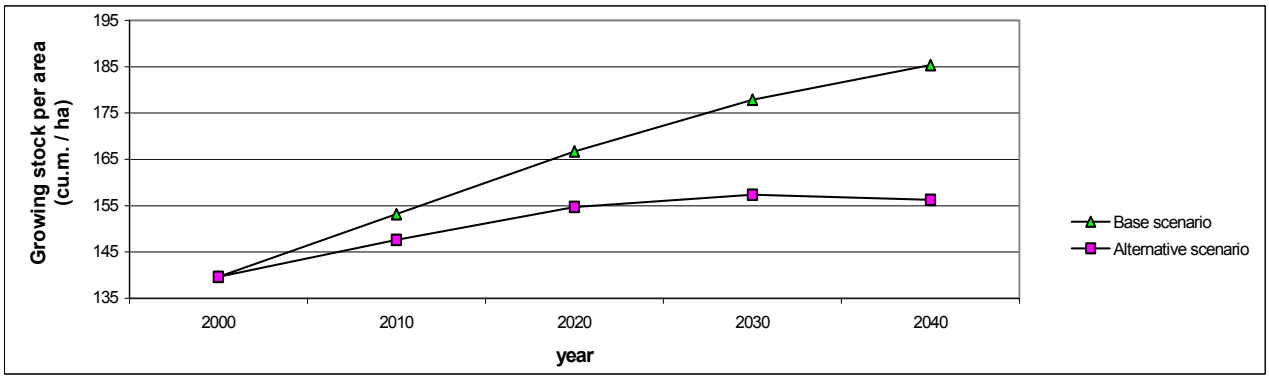

Removals, total (1000 cu.m. o.b.)
30,000
28,000
26,000
24,000
22,000
20,000
18,000
16,000
14,000
12,000
2000
2010
2020
2030
2040
year
Base scenario
Base scenario

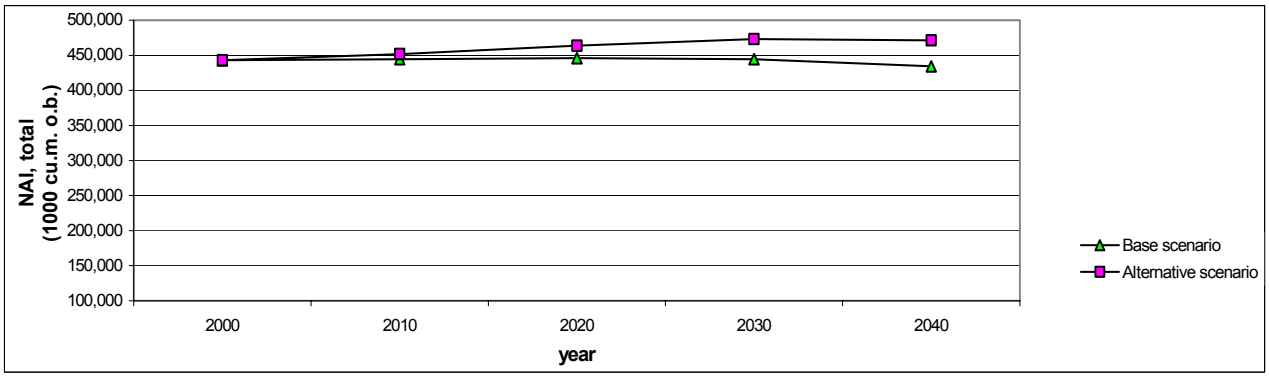

Fellings/NAI
160%
140%
120%
100%
80%
60%
40%
20%
0%
2000
2010
2020
2030
2040
year
Base scenario
Base scenario

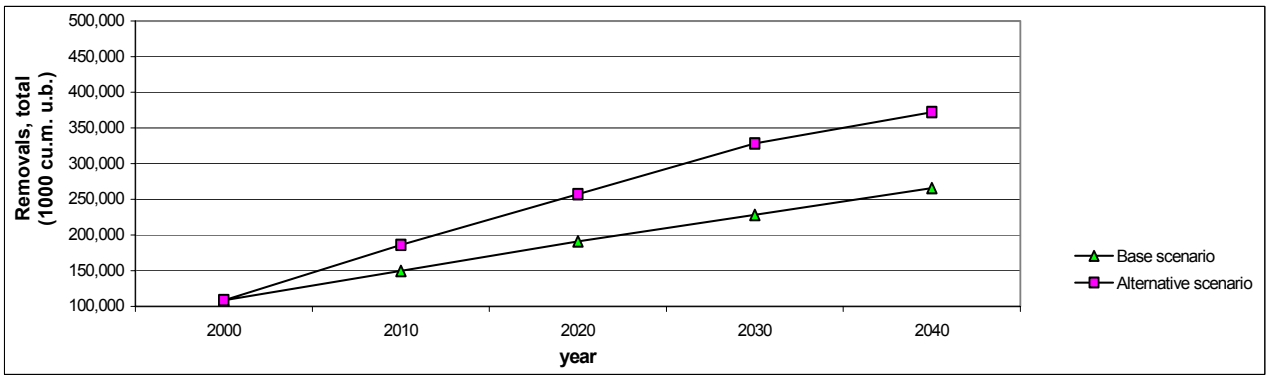
Commonwealth of Independent States	**Base scenario**					
	Unit	**2000**	**2010**	**2020**	**2030**	**2040**
Forest resource parameters						
Area of forest available for wood supply	1000 ha	184,714	182,102	179,491	176,878	174,918
- coniferous	*1000 ha*	*114,427*	*112,804*	*111,181*	*109,557*	*108,339*
- broadleaved	*1000 ha*	*70,287*	*69,298*	*68,310*	*67,321*	*66,579*
Growing stock, total	1000 cu.m. o.b.	*25,859,057*	27,892,936	29,926,815	31,459,162	32,421,446
- coniferous	*1000 cu.m. o.b.*	*15,389,663*	*15,916,651*	*16,443,640*	*16,608,864*	*16,386,198*
- broadleaved	*1002 cu.m. o.b.*	*10,469,394*	*11,976,284*	*13,483,175*	*14,850,298*	*16,035,247*
Net annual increment, total	1000 cu.m. o.b. / y.	*442,975*	444,388	445,800	444,427	434,239
- coniferous	*1000 cu.m. o.b. / y.*	*253,063*	*255,501*	*257,939*	*264,033*	*266,513*
- broadleaved	*1000 cu.m. o.b. / y.*	*189,912*	*188,887*	*187,861*	*180,395*	*167,726*
Fellings, total	1000 cu.m. o.b. / y.	*144,807*	199,909	255,011	304,982	354,862
- coniferous	*1000 cu.m. o.b. / y.*	*121,843*	*168,470*	*215,097*	*257,397*	*299,718*
- broadleaved	*1000 cu.m. o.b. / y.*	*22,964*	31,439	39,913	47,585	55,145
Removals, total	1000 cu.m. u.b. / y.	*108,421*	149,677	190,934	228,349	265,696
- coniferous	*1000 cu.m. u.b. / y.*	*91,227*	*126,138*	*161,049*	*192,720*	*224,407*
- broadleaved	*1000 cu.m. u.b. / y.*	*17,194*	*23,539*	*29,884*	*35,629*	*41,288*
Removals, total from final fellings	1000 cu.m. u.b. / y.	*76,480*	105,537	134,595	160,964	187,311
- coniferous	*1000 cu.m. u.b. / y.*	*64,174*	*88,693*	*113,213*	*135,459*	*157,695*
- broadleaved	*1000 cu.m. u.b. / y.*	*12,306*	*16,844*	*21,382*	*25,504*	*29,616*
Removals, total from thinnings	1000 cu.m. u.b. / y.	*31,941*	44,140	56,339	67,385	78,384
- coniferous	*1000 cu.m. u.b. / y.*	*27,053*	*37,445*	*47,837*	*57,261*	*66,712*
- broadleaved	*1000 cu.m. u.b. / y.*	*4,888*	*6,695*	*8,502*	*10,124*	*11,672*
Ratios						
- Growing stock per Area	cu.m. o.b. / ha	140	153	167	178	185
- Net annual increment per growing stock	cu.m. o.b. / cu.m. o.b.	1.7%	1.6%	1.5%	1.4%	1.3%
- Net annual increment per Area	cu.m. o.b. / ha / y.	2.4	2.4	2.5	2.5	2.5
- Fellings per Net annual increment	cu.m. o.b. / cu.m. o.b.	33%	45%	57%	69%	82%
- Removals per Area	cu.m. u.b. / ha / y.	0.6	0.8	1.1	1.3	1.5

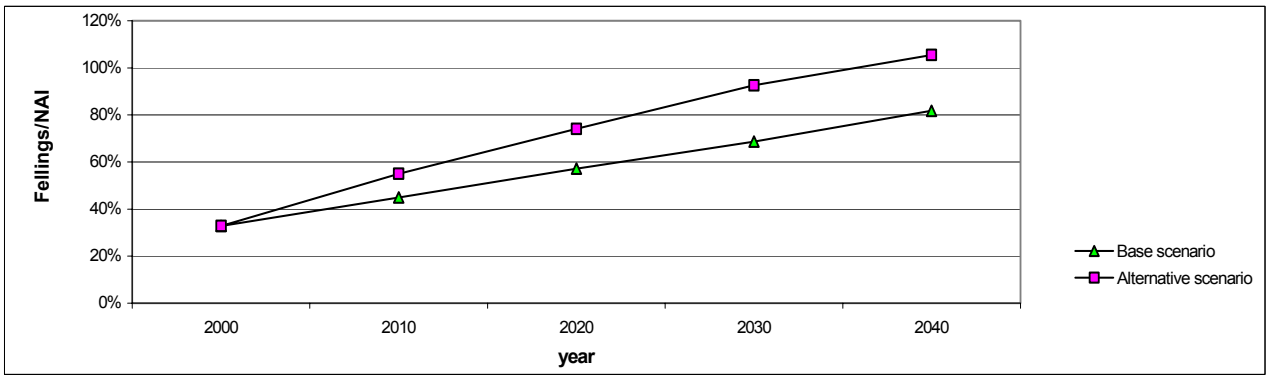




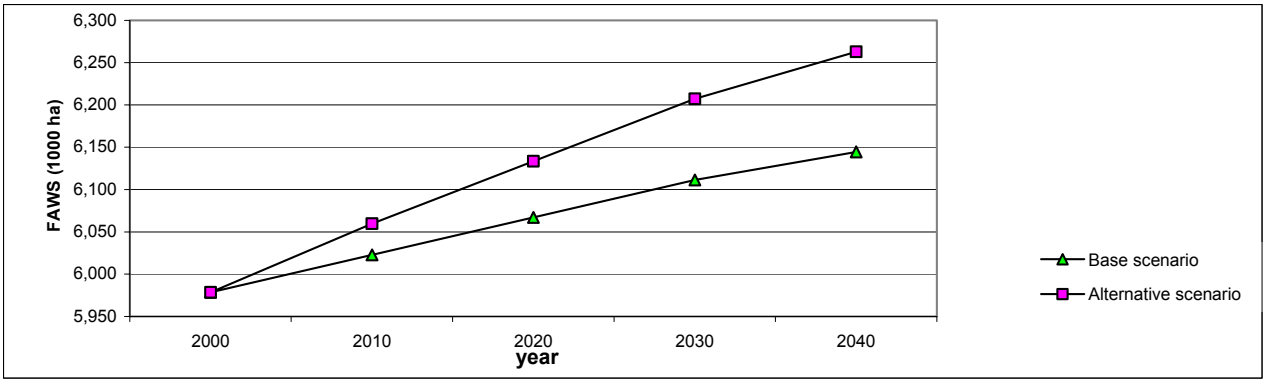

Growing stock per area (cu.m. / ha)
195
185
175
165
155
145
135
2000
2010
2020
2030
2040
year
Base scenario
Alternative scenario

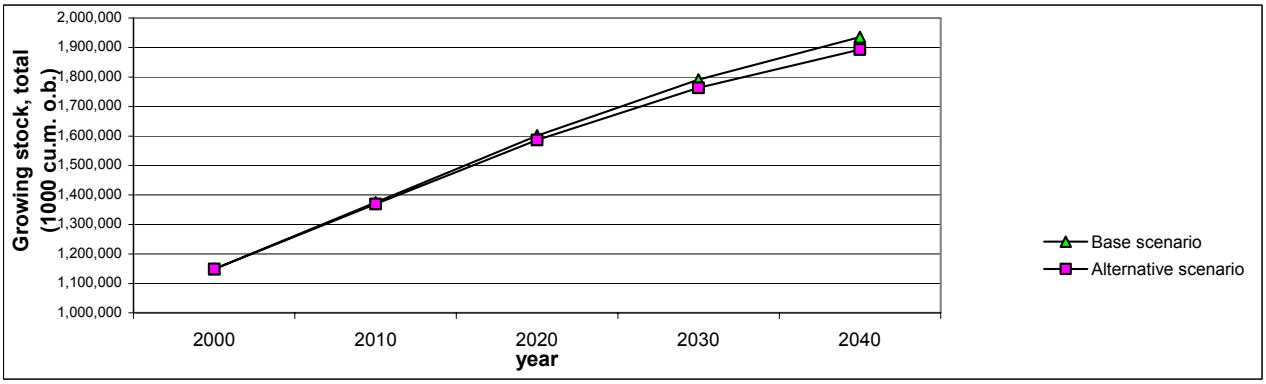

NAI, total (1000 cu.m. o.b.)
500,000
450,000
400,000
350,000
300,000
250,000
200,000
150,000
100,000
2000
2010
2020
2030
2040
year
Base scenario
Alternative scenario

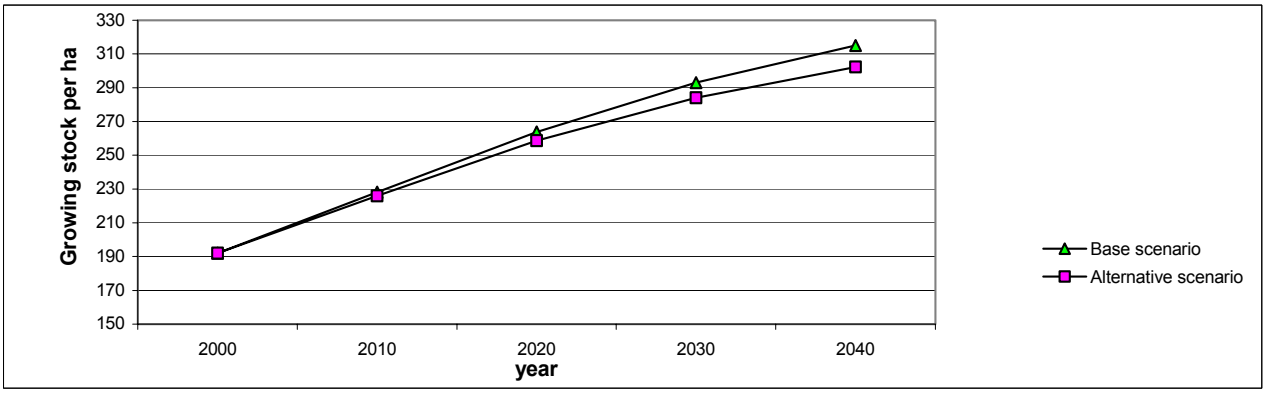

Removals, total (1000 cu.m. u.b.)
500,000
450,000
400,000
350,000
300,000
250,000
200,000
150,000
100,000
2000
2010
2020
2030
2040
year
Base scenario
Alternative scenario

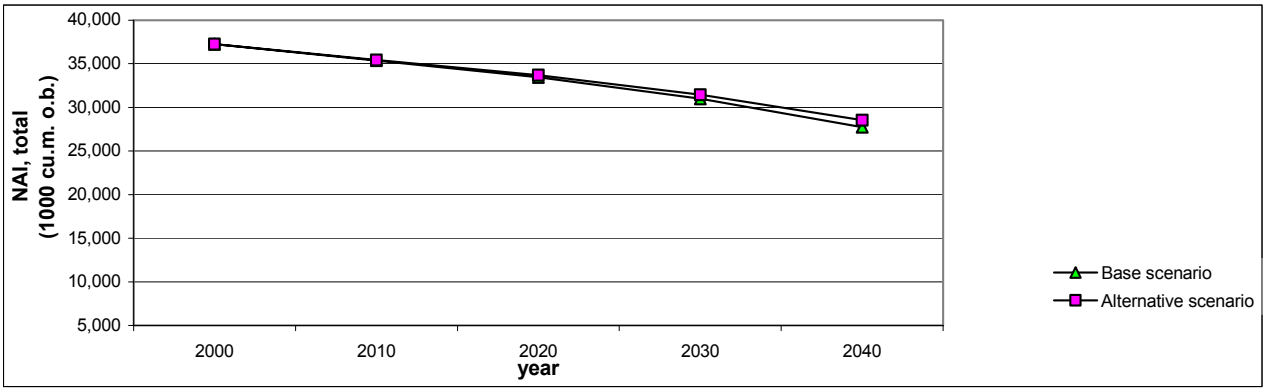

Fellings/NAI
120%
100%
80%
60%
40%
20%
0%
2000
2010
2020
2030
2040
year
Base scenario
Alternative scenario

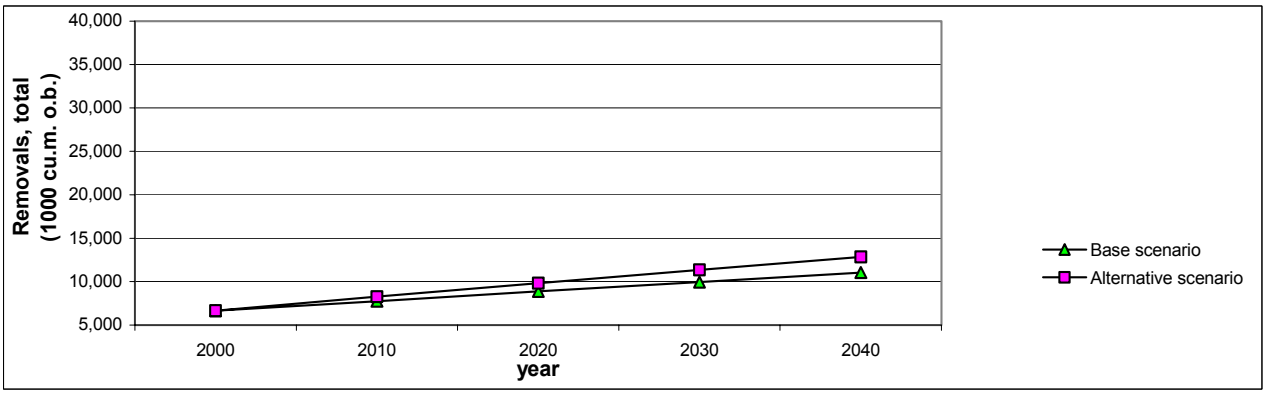
Belarus	**Base scenario**					
	Unit	**2000**	**2010**	**2020**	**2030**	**2040**
Forest resource parameters						
Area of forest available for wood supply	1000 ha	5,978	6,023	6,067	6,111	6,144
- coniferous	*1000 ha*	*3,740*	*3,768*	*3,795*	*3,823*	*3,844*
- broadleaved	*1000 ha*	*2,238*	*2,255*	*2,272*	*2,288*	*2,301*
Growing stock, total	1000 cu.m. o.b.	1,148,682	1,374,934	1,601,185	1,791,136	1,935,706
- coniferous	*1000 cu.m. o.b.*	*781,673*	*930,257*	*1,078,842*	*1,204,468*	*1,297,893*
- broadleaved	*1000 cu.m. o.b.*	*367,009*	*444,676*	*522,343*	*586,669*	*637,814*
Net annual increment, total	1000 cu.m. o.b. / y.	37,269	35,368	33,467	30,987	27,733
- coniferous	*1000 cu.m. o.b. / y.*	*24,384*	*23,360*	*22,336*	*20,702*	*18,335*
- broadleaved	*1000 cu.m. o.b. / y.*	*12,885*	*12,008*	*11,131*	*10,285*	*9,398*
Fellings, total	1000 cu.m. o.b. / y.	8,699	10,163	11,626	13,050	14,475
- coniferous	*1000 cu.m. o.b. / y.*	*5,921*	*6,917*	*7,913*	*8,882*	*9,852*
- broadleaved	*1000 cu.m. o.b. / y.*	*2,778*	*3,246*	*3,713*	*4,168*	*4,623*
Removals, total	1000 cu.m. u.b. / y.	6,640	7,758	8,875	9,961	11,049
- coniferous	*1000 cu.m. u.b. / y.*	*4,519*	*5,280*	*6,041*	*6,780*	*7,521*
- broadleaved	*1000 cu.m. u.b. / y.*	*2,121*	*2,478*	*2,834*	*3,181*	*3,529*
Removals, total from final fellings	1000 cu.m. u.b. / y.	4,980	5,818	6,656	7,471	8,287
- coniferous	*1000 cu.m. u.b. / y.*	*3,389*	*3,960*	*4,531*	*5,085*	*5,640*
- broadleaved	*1000 cu.m. u.b. / y.*	*1,591*	*1,858*	*2,126*	*2,386*	*2,647*
Removals, total from thinnings	1000 cu.m. u.b. / y.	1,660	1,939	2,219	2,490	2,762
- coniferous	*1000 cu.m. u.b. / y.*	*1,130*	*1,320*	*1,510*	*1,695*	*1,880*
- broadleaved	*1000 cu.m. u.b. / y.*	*530*	*619*	*709*	*795*	*882*
Ratios						
- Growing stock per Area	cu.m. o.b. / ha	192	228	264	293	315
- Net annual increment per growing stock	cu.m. o.b. / cu.m. o.b.	3.2%	2.6%	2.1%	1.7%	1.4%
- Net annual increment per ha	cu.m. o.b. / ha / y.	6.2	5.9	5.5	5.1	4.5
- Fellings per Net annual increment	cu.m. o.b. / cu.m. o.b.	23%	29%	35%	42%	52%
- Removals per Area	cu.m. u.b. / ha / y.	1.1	1.3	1.5	1.6	1.8

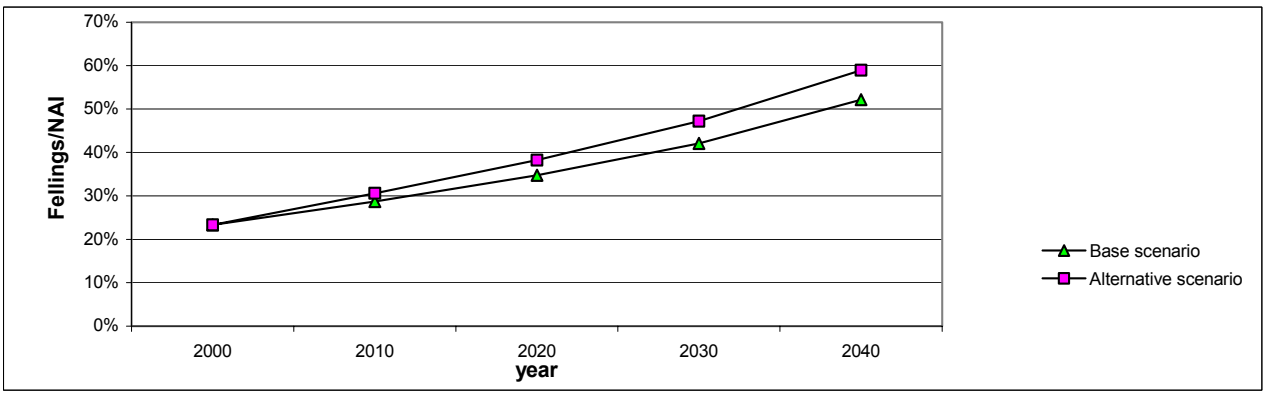




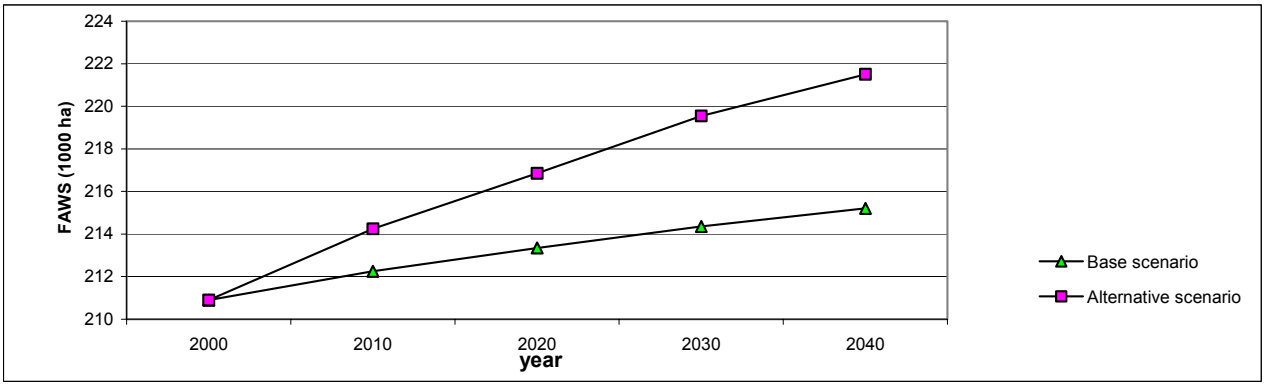

Growing stock per ha
330
310
290
270
250
230
210
190
170
150
2000
2010
2020
2030
2040
year
Base scenario
Alternative scenario

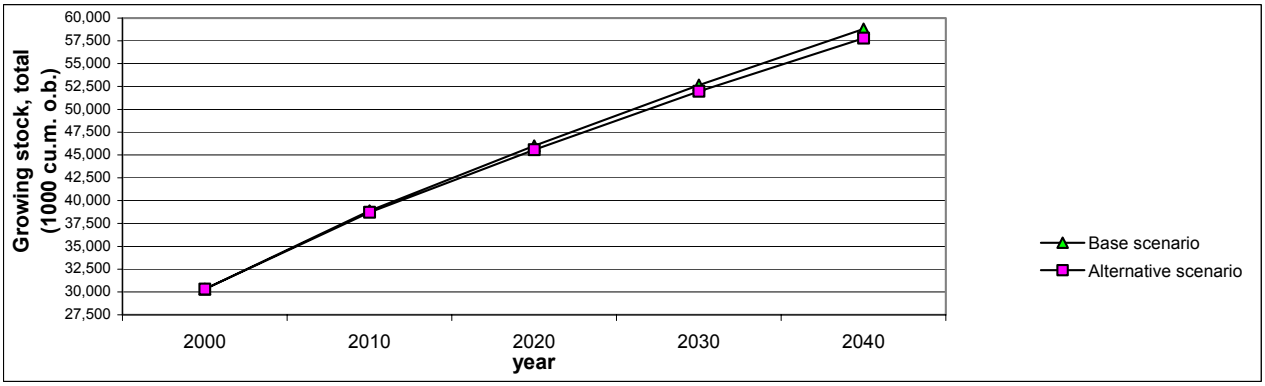

NAI, total (1000 cu.m. o.b.)
40,000
35,000
30,000
25,000
20,000
15,000
10,000
5,000
2000
2010
2020
2030
2040
year
Base scenario
Alternative scenario

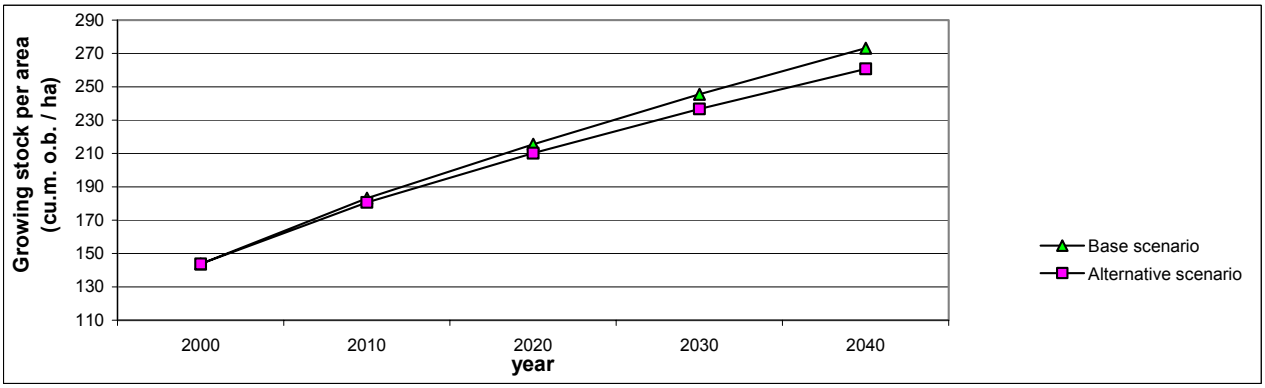

Removals, total (1000 cu.m. o.b.)
40,000
35,000
30,000
25,000
20,000
15,000
10,000
5,000
2000
2010
2020
2030
2040
year
Base scenario
Alternative scenario

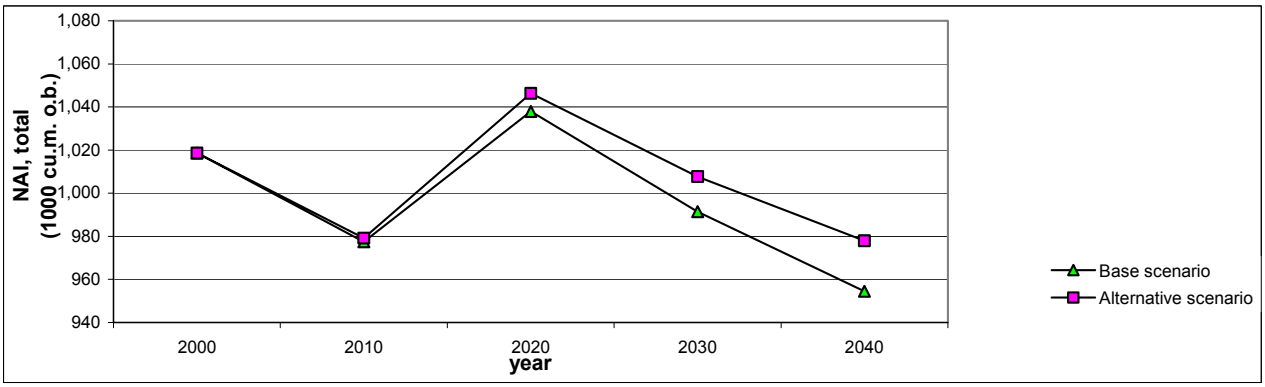

Fellings/NAI
70%
60%
50%
40%
30%
20%
10%
0%
2000
2010
2020
2030
2040
year
Base scenario
Alternative scenario

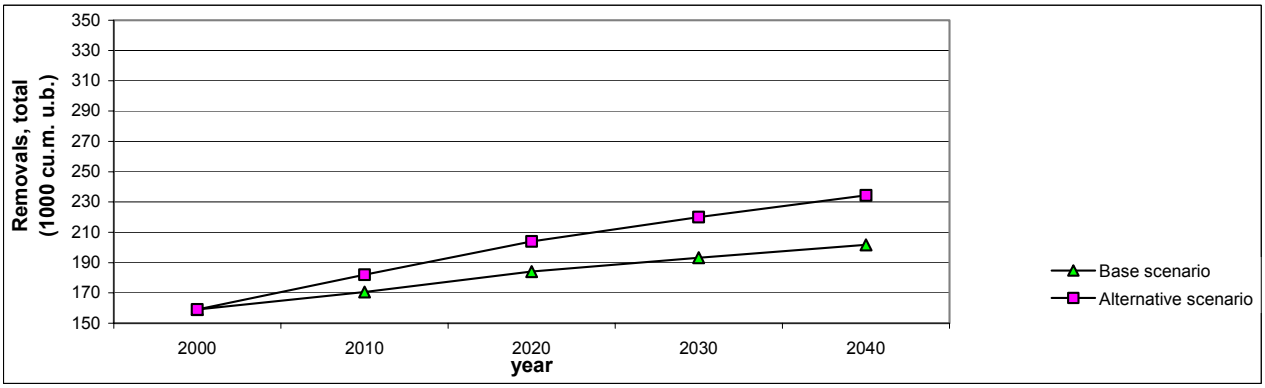
The Republic of Moldova	**Base scenario**					
	Unit	**2000**	**2010**	**2020**	**2030**	**2040**
Forest resource parameters						
Area of forest available for wood supply	1000 ha	211	212	213	214	215
- coniferous	*1000 ha*	*0*	*0*	*0*	*0*	*0*
- broadleaved	*1000 ha*	*211*	*212*	*213*	*214*	*215*
Growing stock, total	1000 cu.m. o.b.	30,306	38,884	45,988	52,644	58,803
- coniferous	*1000 cu.m. o.b.*	*0*	*0*	*0*	*0*	*0*
- broadleaved	*1000 cu.m. o.b.*	*30,306*	*38,884*	*45,988*	*52,644*	*58,803*
Net annual increment, total	1000 cu.m. o.b. / y.	1,019	977	1,038	991	954
- coniferous	*1000 cu.m. o.b. / y.*	*0*	*0*	*0*	*0*	*0*
- broadleaved	*1000 cu.m. o.b. / y.*	*1,019*	*977*	*1,038*	*991*	*954*
Fellings, total	1000 cu.m. o.b. / y.	279	300	323	339	354
- coniferous	*1000 cu.m. o.b. / y.*	*0*	*0*	*0*	*0*	*0*
- broadleaved	*1000 cu.m. o.b. / y.*	*279*	*300*	*323*	*339*	*354*
Removals, total	1000 cu.m. u.b. / y.	159	171	184	193	202
- coniferous	*1000 cu.m. u.b. / y.*	*0*	*0*	*0*	*0*	*0*
- broadleaved	*1000 cu.m. u.b. / y.*	*159*	*171*	*184*	*193*	*202*
Removals, total from final fellings	1000 cu.m. u.b. / y.	119	128	138	145	151
- coniferous	*1000 cu.m. u.b. / y.*	*0*	*0*	*0*	*0*	*0*
- broadleaved	*1000 cu.m. u.b. / y.*	*119*	*128*	*138*	*145*	*151*
Removals, total from thinnings	1000 cu.m. u.b. / y.	40	43	46	48	50
- coniferous	*1000 cu.m. u.b. / y.*	*0*	*0*	*0*	*0*	*0*
- broadleaved	*1000 cu.m. u.b. / y.*	*40*	*43*	*46*	*48*	*50*
Ratios						
- Growing stock per Area	cu.m. o.b. / ha	144	183	216	246	273
- Net annual increment per growing stock	cu.m. o.b. / cu.m. o.b.	3.4%	2.5%	2.3%	1.9%	1.6%
- Net annual increment per ha	cu.m. o.b. / ha / y.	4.8	4.6	4.9	4.6	4.4
- Fellings per Net annual increment	cu.m. o.b. / cu.m. o.b.	27%	31%	31%	34%	37%
- Removals per Area	cu.m. u.b. / ha / y.	0.8	0.8	0.9	0.9	0.9

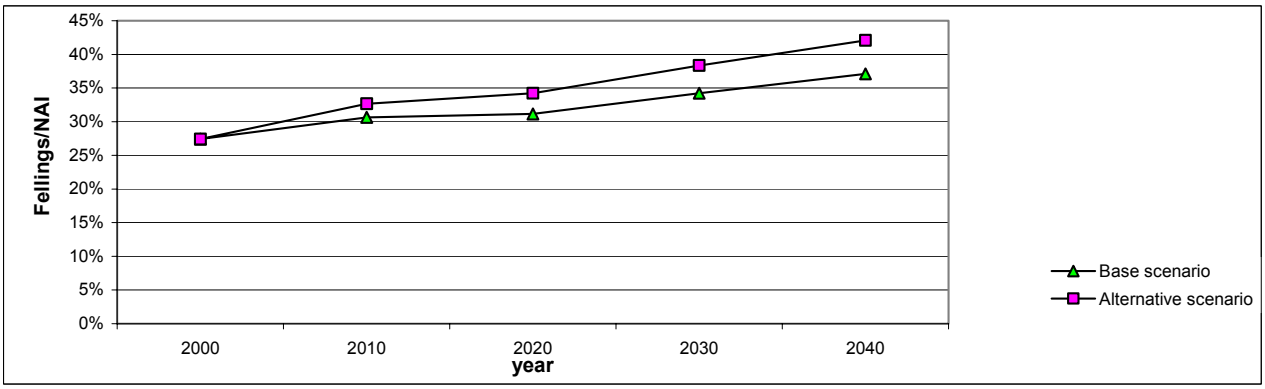




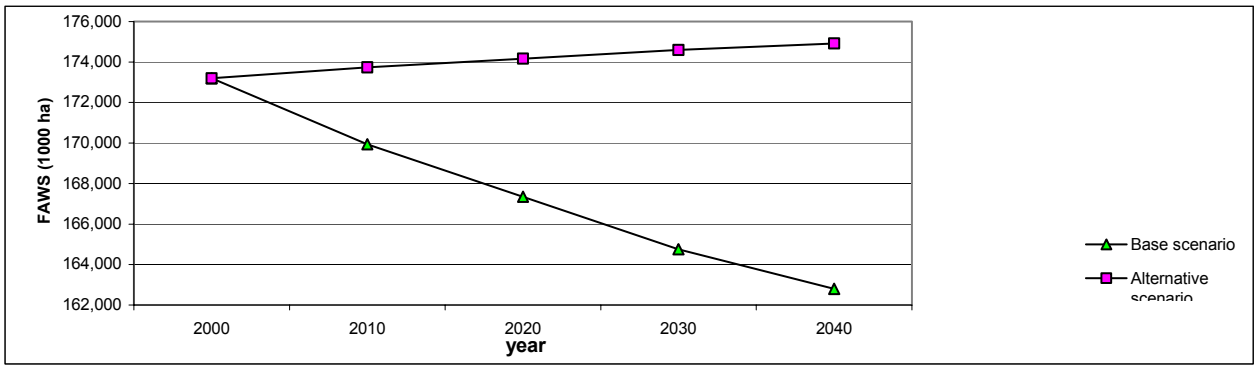

Growing stock per area (cu.m. o.b. / ha)
290
270
250
230
210
190
170
150
130
110
2000
2010
2020
2030
2040
year
Base scenario
Alternative scenario

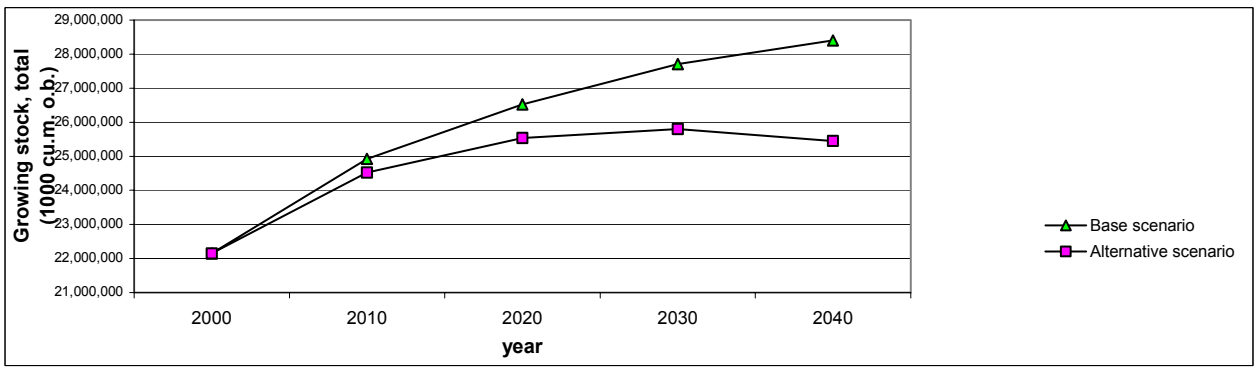

NAI, total (1000 cu.m. o.b.)
1,080
1,060
1,040
1,020
1,000
980
960
940
2000
2010
2020
2030
2040
year
Base scenario
Alternative scenario

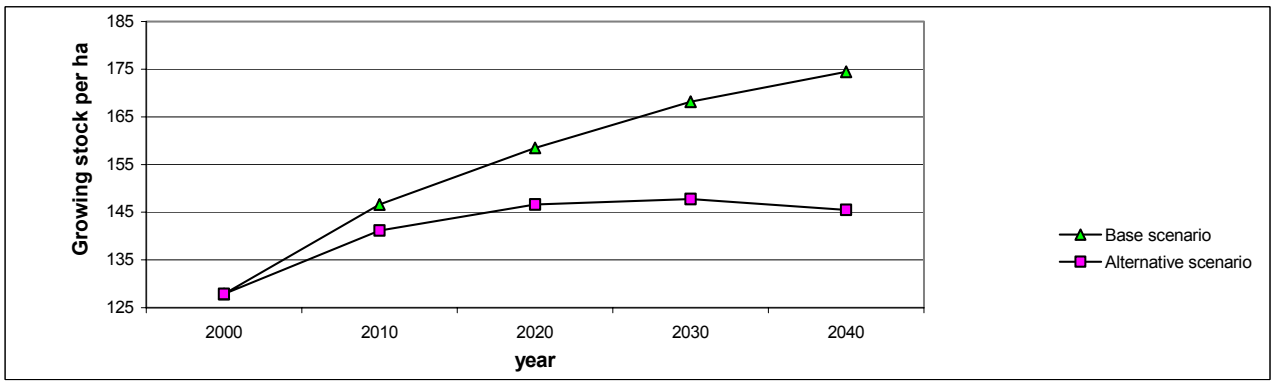

Removals, total (1000 cu.m. u.b.)
350
330
310
290
270
250
230
210
190
170
150
2000
2010
2020
2030
2040
year
Base scenario
Alternative scenario

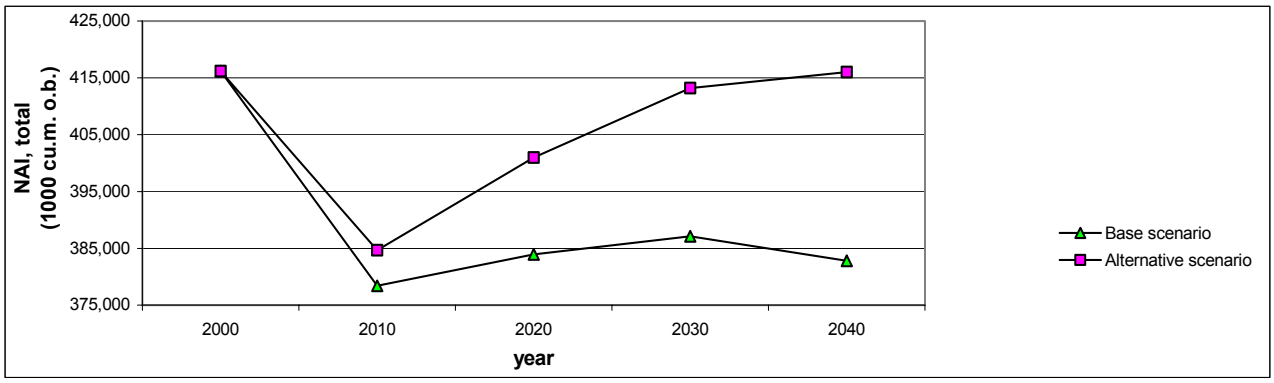

Fellings/NAI
45%
40%
35%
30%
25%
20%
15%
10%
5%
0%
2000
2010
2020
2030
2040
year
Base scenario
Alternative scenario

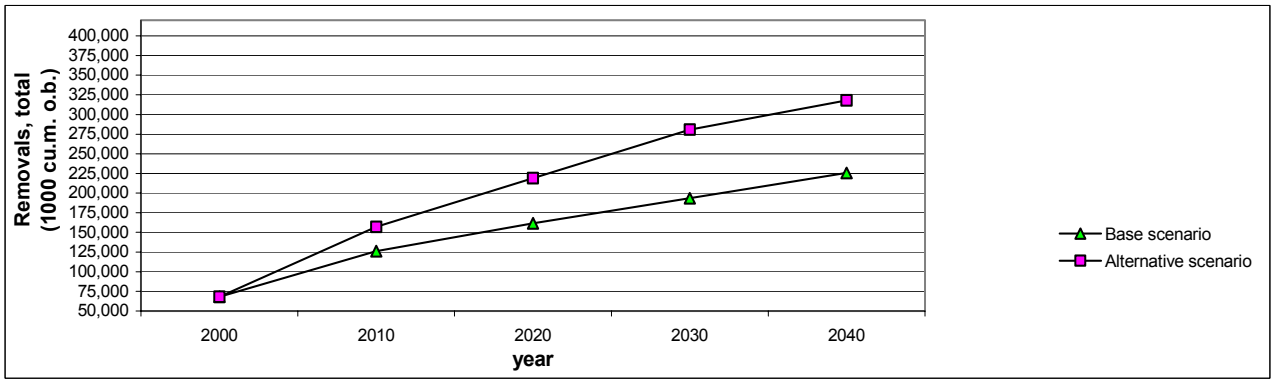
European part of Russia	**Base scenario**					
	Unit	**2000**	**2010**	**2020**	**2030**	**2040**
Forest resource parameters						
Area of forest available for wood supply	1000 ha	173,193	169,945	167,348	164,750	162,801
- coniferous	*1000 ha*	*108,105*	*106,078*	*104,457*	*102,836*	*101,619*
- broadleaved	*1000 ha*	*65,088*	*63,867*	*62,891*	*61,915*	*61,182*
Growing stock, total	1000 cu.m. o.b.	22,147,252	24,921,152	26,526,036	27,703,869	28,402,689
- coniferous	*1000 cu.m. o.b.*	*13,145,568*	*14,092,442*	*14,347,155*	*14,283,858*	*13,896,330*
- broadleaved	*1000 cu.m. o.b.*	*9,001,684*	*10,828,709*	*12,178,881*	*13,420,011*	*14,506,359*
Net annual increment, total	1000 cu.m. o.b. / y.	416,206	378,416	383,927	387,106	382,800
- coniferous	*1000 cu.m. o.b. / y.*	*228,102*	*214,277*	*218,837*	*228,295*	*234,739*
- broadleaved	*1000 cu.m. o.b. / y.*	*188,105*	*164,139*	*165,089*	*158,811*	*148,062*
Fellings, total	1000 cu.m. o.b. / y.	98,744	182,642	234,047	280,589	327,075
- coniferous	*1000 cu.m. o.b. / y.*	*85,354*	*157,877*	*202,314*	*242,570*	*282,865*
- broadleaved	*1000 cu.m. o.b. / y.*	*13,390*	*24,765*	*31,733*	*38,019*	*44,210*
Removals, total	1000 cu.m. u.b. / y.	68,137	126,030	161,501	193,618	225,695
- coniferous	*1000 cu.m. u.b. / y.*	*58,898*	*108,941*	*139,605*	*167,383*	*195,188*
- broadleaved	*1000 cu.m. u.b. / y.*	*9,240*	*17,089*	*21,897*	*26,235*	*30,507*
Removals, total from final fellings	1000 cu.m. u.b. / y.	47,697	88,221	113,052	135,548	158,043
- coniferous	*1000 cu.m. u.b. / y.*	*41,229*	*76,259*	*97,723*	*117,168*	*136,613*
- broadleaved	*1000 cu.m. u.b. / y.*	*6,468*	*11,962*	*15,329*	*18,380*	*21,430*
Removals, total from thinnings	1000 cu.m. u.b. / y.	20,440	37,809	48,449	58,070	67,652
- coniferous	*1000 cu.m. u.b. / y.*	*17,669*	*32,682*	*41,882*	*50,215*	*58,575*
- broadleaved	*1000 cu.m. u.b. / y.*	*2,771*	*5,127*	*6,568*	*7,855*	*9,077*
Ratios						
- Growing stock per Area	cu.m. o.b. / ha	128	147	159	168	174
- Net annual increment per growing stock	cu.m. o.b. / cu.m. o.b.	1.9%	1.5%	1.4%	1.4%	1.3%
- Net annual increment per ha	cu.m. o.b. / ha / y.	2.4	2.2	2.3	2.3	2.4
- Fellings per Net annual increment	cu.m. o.b. / cu.m. o.b.	24%	48%	61%	72%	85%
- Removals per Area	cu.m. u.b. / ha / y.	0.4	0.7	1.0	1.2	1.4

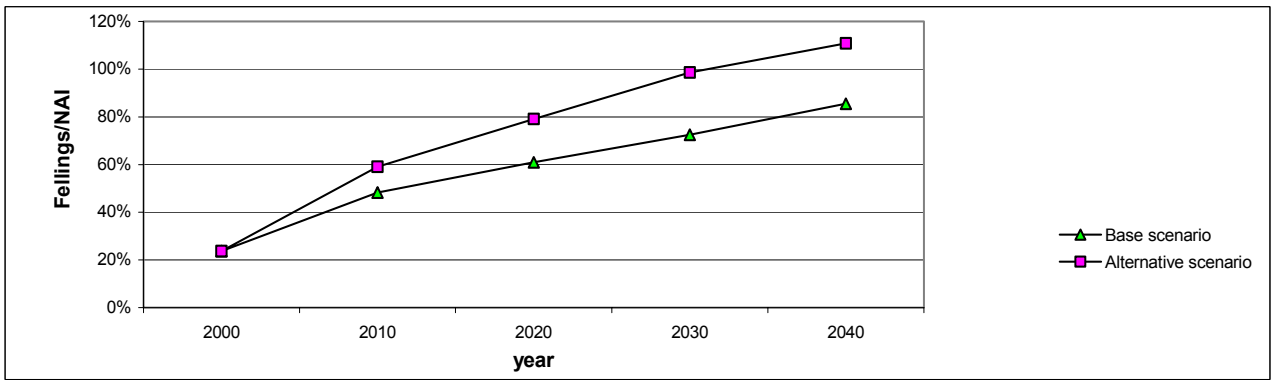




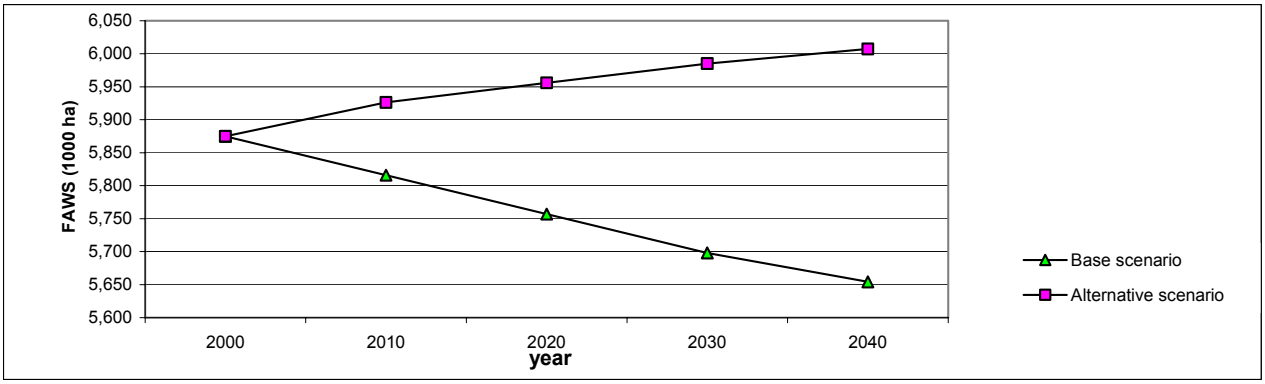

Growing stock per ha
185
175
165
155
145
135
125
2000
2010
2020
2030
2040
year
Base scenario
Alternative scenario

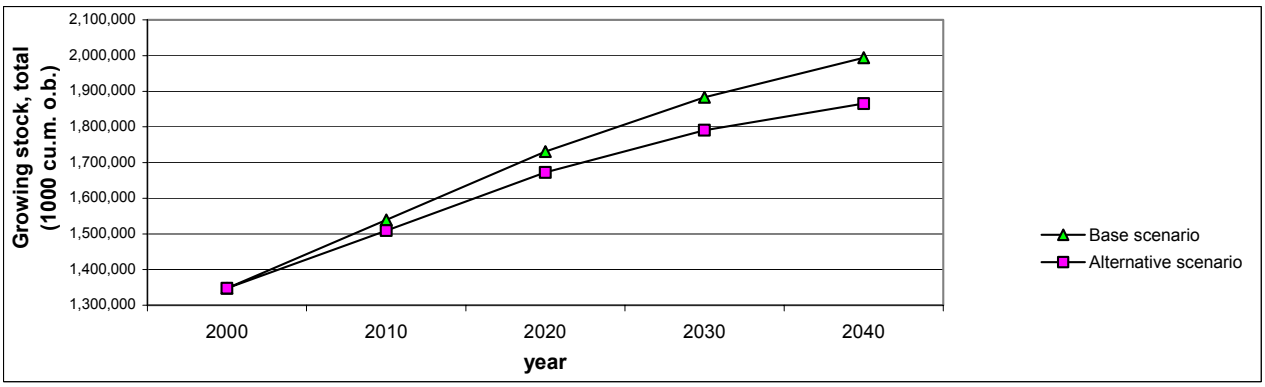

NAI, total (1000 cu.m. o.b.)
425,000
415,000
405,000
395,000
385,000
375,000
2000
2010
2020
2030
2040
year
Base scenario
Alternative scenario

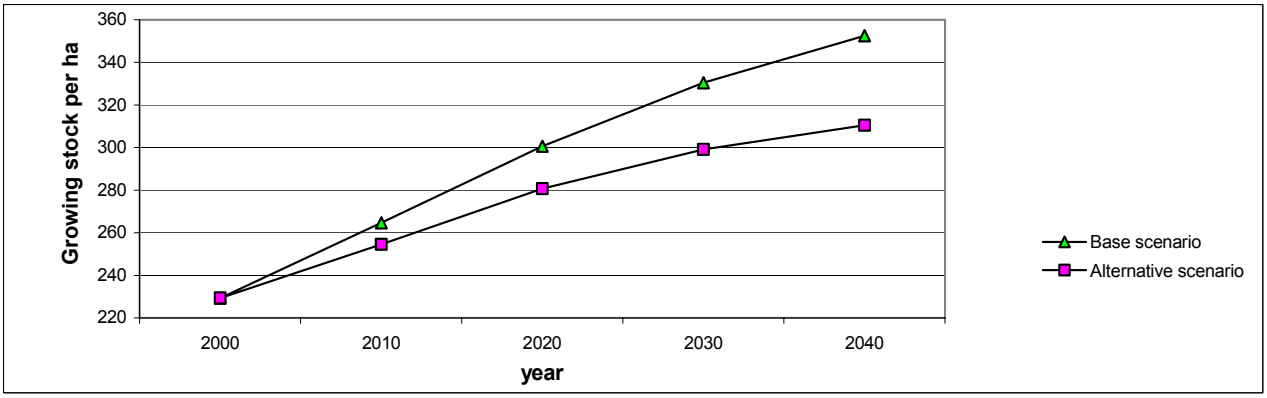

Removals, total (1000 cu.m. o.b.)
400,000
375,000
350,000
325,000
300,000
275,000
250,000
225,000
200,000
175,000
150,000
125,000
100,000
75,000
50,000
2000
2010
2020
2030
2040
year
Base scenario
Alternative scenario

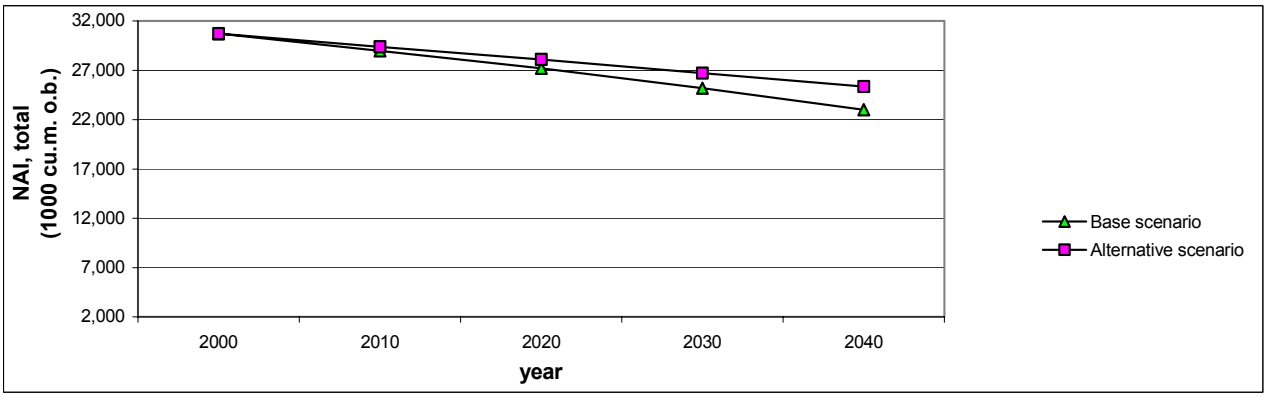

Fellings/NAI
120%
100%
80%
60%
40%
20%
0%
2000
2010
2020
2030
2040
year
Base scenario
Alternative scenario

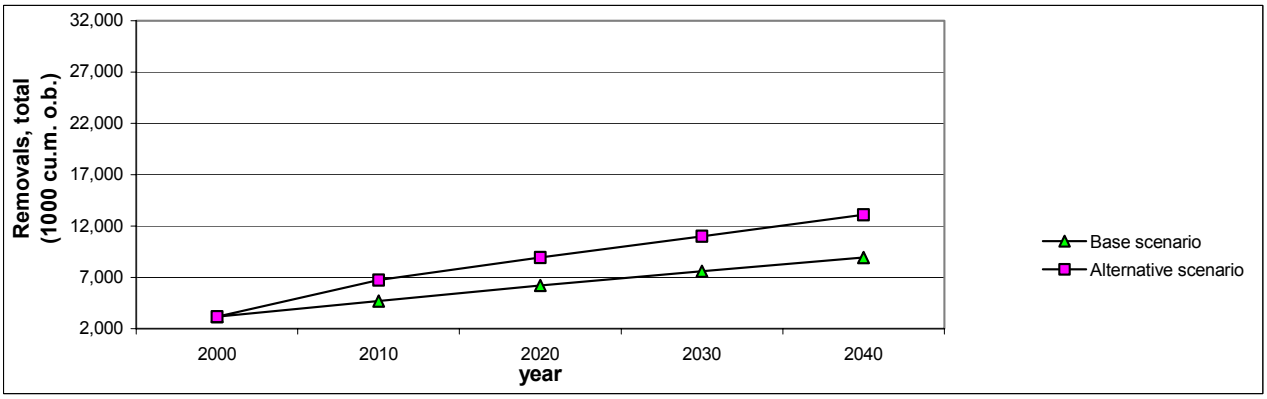
Ukraine	**Base scenario**					
	Unit	**2000**	**2010**	**2020**	**2030**	**2040**
Forest resource parameters						
Area of forest available for wood supply	1000 ha	5,875	5,816	5,757	5,698	5,654
- coniferous	*1000 ha*	*2,988*	*2,958*	*2,929*	*2,899*	*2,876*
- broadleaved	*1000 ha*	*2,886*	*2,858*	*2,829*	*2,800*	*2,778*
Growing stock, total	1000 cu.m. o.b.	1,347,411	1,539,144	1,730,878	1,882,781	1,993,657
- coniferous	*1000 cu.m. o.b.*	*771,470*	*894,635*	*1,017,800*	*1,116,937*	*1,190,705*
- broadleaved	*1000 cu.m. o.b.*	*575,941*	*644,509*	*713,077*	*765,844*	*802,952*
Net annual increment, total	1000 cu.m. o.b. / y.	30,717	28,964	27,212	25,185	22,997
- coniferous	*1000 cu.m. o.b. / y.*	*18,764*	*17,692*	*16,619*	*15,246*	*13,719*
- broadleaved	*1000 cu.m. o.b. / y.*	*11,953*	*11,273*	*10,593*	*9,939*	*9,278*
Fellings, total	1000 cu.m. o.b. / y.	4,594	6,804	9,014	11,004	12,959
- coniferous	*1000 cu.m. o.b. / y.*	*2,482*	*3,676*	*4,870*	*5,945*	*7,001*
- broadleaved	*1000 cu.m. o.b. / y.*	*2,112*	*3,128*	*4,144*	*5,059*	*5,958*
Removals, total	1000 cu.m. u.b. / y.	3,169	4,693	6,217	7,589	8,937
- coniferous	*1000 cu.m. u.b. / y.*	*1,712*	*2,535*	*3,359*	*4,100*	*4,828*
- broadleaved	*1000 cu.m. u.b. / y.*	*1,457*	*2,157*	*2,858*	*3,489*	*4,109*
Removals, total from final fellings	1000 cu.m. u.b. / y.	2,449	3,627	4,806	5,866	6,908
- coniferous	*1000 cu.m. u.b. / y.*	*1,284*	*1,901*	*2,519*	*3,075*	*3,621*
- broadleaved	*1000 cu.m. u.b. / y.*	*1,165*	*1,726*	*2,286*	*2,791*	*3,287*
Removals, total from thinnings	1000 cu.m. u.b. / y.	719	1,065	1,411	1,723	2,029
- coniferous	*1000 cu.m. u.b. / y.*	*428*	*634*	*840*	*1,025*	*1,207*
- broadleaved	*1000 cu.m. u.b. / y.*	*291*	*432*	*572*	*698*	*822*
Ratios						
- Growing stock per Area	cu.m. o.b. / ha	229	265	301	330	353
- Net annual increment per growing stock	cu.m. o.b. / cu.m. o.b.	2.3%	1.9%	1.6%	1.3%	1.2%
- Net annual increment per ha	cu.m. o.b. / ha / y.	5.2	5.0	4.7	4.4	4.1
- Fellings per Net annual increment	cu.m. o.b. / cu.m. o.b.	15%	23%	33%	44%	56%
- Removals per Area	cu.m. u.b. / ha / y.	0.5	0.8	1.1	1.3	1.6

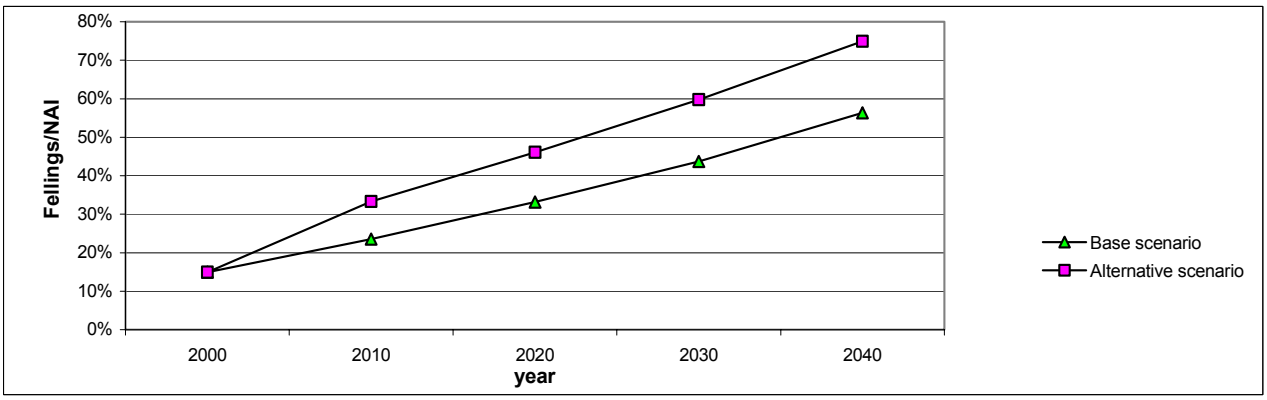





Growing stock per ha
360
340
320
300
280
260
240
220
2000
2010
2020
2030
2040
year
Base scenario
Alternative scenario


NAI, total (1000 cu.m. o.b.)
32,000
27,000
22,000
17,000
12,000
7,000
2,000
2000
2010
2020
2030
2040
year
Base scenario
Alternative scenario


Removals, total (1000 cu.m. o.b.)
32,000
27,000
22,000
17,000
12,000
7,000
2,000
2000
2010
2020
2030
2040
year
Base scenario
Alternative scenario


Fellings/NAI
80%
70%
60%
50%
40%
30%
20%
10%
0%
2000
2010
2020
2030
2040
year
Base scenario
Alternative scenario

Some facts about the Timber Committee

The Timber Committee is a principal subsidiary body of the UNECE (United Nations Economic Commission for Europe) based in Geneva. It constitutes a forum for cooperation and consultation between member countries on forestry, forest industry and forest product matters. All countries of Europe; the former USSR; United States of America, Canada and Israel are members of the UNECE and participate in its work.

The UNECE Timber Committee shall, within the context of sustainable development, provide member countries with the information and services needed for policy- and decision-making regarding their forest and forest industry sector ("the sector"), including the trade and use of forest products and, when appropriate, formulate recommendations addressed to member Governments and interested organizations. To this end, it shall:

1. With the active participation of member countries, undertake short-, medium- and long-term analyses of developments in, and having an impact on, the sector, including those offering possibilities for the facilitation of international trade and for enhancing the protection of the environment;

2. In support of these analyses, collect, store and disseminate statistics relating to the sector, and carry out activities to improve their quality and comparability;

3. Provide the framework for cooperation e.g. by organizing seminars, workshops and ad hoc meetings and setting up time-limited ad hoc groups, for the exchange of economic, environmental and technical information between governments and other institutions of member countries that is needed for the development and implementation of policies leading to the sustainable development of the sector and to the protection of the environment in their respective countries;

4. Carry out tasks identified by the UNECE or the Timber Committee as being of priority, including the facilitation of subregional cooperation and activities in support of the economies in transition of central and eastern Europe and of the countries of the region that are developing from an economic point of view;

5. It should also keep under review its structure and priorities and cooperate with other international and intergovernmental organizations active in the sector, and in particular with the FAO (Food and Agriculture Organization of the United Nations) and its European Forestry Commission and with the ILO (International Labour Organisation), in order to ensure complementarities and to avoid duplication, thereby optimizing the use of resources.

More information about the Committee's work may be obtained by writing to:

UNECE/FAO Timber Section
Trade Development and Timber Division
United Nations Economic Commission for Europe
Palais des Nations
CH - 1211 Geneva 10, Switzerland
Fax: + 41 22 917 0041
E-mail: info.timber@unece.org
http://www.unece.org/trade/timber

UNECE/FAO
Publications

Timber Bulletin Volume LVIII (2005) **ECE/TIM/BULL/2005/3**
Forest Products Annual Market Review, 2004-2005

Note: *other market related publications and information are available in electronic format from our website.*

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European Forest Sector Outlook Study: 1960 – 2000 – 2020, Main Report	ECE/TIM/SP/20
Forest policies and institutions of Europe, 1998-2000	ECE/TIM/SP/19
Forest and Forest Products Country Profile: Russian Federation (Country profiles also exist on Albania, Armenia, Belarus, Bulgaria, former Czech and Slovak Federal Republic, Estonia, Georgia, Hungary, Lithuania, Poland, Romania, Republic of Moldova, Slovenia and Ukraine)	ECE/TIM/SP/18
Forest resources of Europe, CIS, North America, Australia, Japan and New Zealand	ECE/TIM/SP/17
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Trends in the Tropical Timber Trade, 2002-2003	ECE/TIM/DP/35
The Policy Context of the European Forest Sector	ECE/TIM/DP/34
Biological Diversity, Tree Species Composition and Environmental Protection in the Regional FRA-2000	ECE/TIM/DP/33
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Russian Federation Forest Sector Outlook Study	ECE/TIM/DP/27
Forest and Forest Products Country Profile: Georgia	ECE/TIM/DP/26
Forest certification update for the UNECE region, summer 2002	ECE/TIM/DP/25
Forecasts of economic growth in OECD and central and eastern European countries for the period 2000-2040	ECE/TIM/DP/24
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Manual on acute forest damage	ECE/TIM/DP/7

International Forest Fire News *(two issues per year)*

The above series of publications may be requested free of charge through:

UNECE/FAO Timber Section
Trade Development and Timber Division
United Nations Economic Commission for Europe
Palais des Nations
CH - 1211 Geneva 10, Switzerland
Fax: + 41 22 917 0041
E-mail: info.timber@unece.org

Downloads are available at: http://www.unece.org/trade/timber

UNECE/FAO GENEVA TIMBER AND FOREST DISCUSSION PAPERS

The objective of the Discussion Papers is to make available to a wider audience work carried out, usually by national experts, in the course of UNECE/FAO activities. The Discussion Papers do not represent the final official outputs of particular activities but rather contributions, which because of their subject matter or quality, deserve to be disseminated more widely than to the restricted official circles from whose work they emerged. The Discussion Papers are also utilized when the subject matter is not suitable (e.g. because of technical content, narrow focus, specialized audience) for distribution in the UNECE/FAO Geneva *Timber and Forest Study Paper* series. Another objective of the Discussion Papers is to stimulate dialogue and contacts among specialists.

In all cases, the author(s) of the discussion papers are identified, and the papers are solely their responsibility. The UNECE Timber Committee, the FAO European Forestry Commission, the governments of the authors' country and the UNECE/FAO secretariat, are neither responsible for the opinions expressed, nor the facts presented, nor the conclusions and recommendations in the Discussion Paper.

In the interests of economy, Discussion Papers are issued in the original language, with only minor language editing and final layout by the secretariat. They are distributed automatically to nominated forestry libraries and information centres in member countries. It is the intention to include this Discussion Paper on the Timber Committee website at: http//www.unece.org/trade/timber.

The Discussion Papers are available on request from the secretariat. Those interested in receiving them on the continuing basis should contact the secretariat as well. Your comments are most welcome and will be referred to the authors:

UNECE/FAO Timber Section
Trade Development and Timber Division
United Nations Economic Commission for Europe
Palais des Nations
CH - 1211 Geneva 10, Switzerland
Fax: + 41 22 917 0041
E-mail: info.timber@unece.org
http://www.unece.org/trade/timber

Outlook for the development of European forest resources

This *Outlook for the development of European forest resources* was prepared in the framework of the UNECE/FAO *European Forest Sector Outlook Studies* (EFSOS). It covers forest resource development from 2000-2040, including forest area, growing stock, increment and removals.The aim of the current study is to analyse the impacts on the European forest resource of two scenarios of derived roundwood demand provided by the market model. The general approach of the study is to present projections of the forest resource for 37 European countries under a specific required felling level as provided by the market model.

The European Forest Sector Outlook Study (EFSOS) presents long term trends for supply and demand of forest products and services and outlook to 2020, in western and eastern Europe and four major CIS countries, including Russia. It reviews trends for the forest resource, trade, markets and recycling. It stresses the future shift in the balance of the sector to the east, and the importance of cross-sectoral issues, notably consequences for the forest sector of energy, environment and trade policies.

UNECE Timber Committee and FAO European Forestry Commission

Further information about forests and forest products, as well as information about the UNECE Timber Committee and the FAO European Forestry Commission is available on the website www.unece.org/trade/timber. Information about the UNECE may be found at www.unece.org and information about FAO may be found at www.fao.org.

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