Background information

The development, improvement and implementation of C&I for SFM in Austria

Presented by Stefanie Linser

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Stefanie Linser holds a PhD in natural sciences and an MSc in forestry sciences. She is a recognised expert on indicators for sustainable forest management. She actively participates in the Austrian Forest Dialogue and its Working Group on Indicators for Sustainable Forest Management since its inauguration in April 2003. She co-coordinates the improvement process of the Austrian Indicators for Sustainable Forest Management since 2010. In 2011 and in 2015/16 she has updated the underlying data in all factsheets and provided indicative assessments whether the targets set have been reached or not.

The Austrian set of C&I for SFM

The first set was developed in a very broad participatory process in 2004 and has since then regularly been improved and updated according to emerging issues and policy needs by a smaller Group of experts (Indicator Working Group). The Austrian Indicators for Sustainable Forest Management presently consist of 32 FOREST EUROPE indicators and additional 32 national SFM indicators focusing on issues of particular importance for Austria, like for instance protection forests, illegal logging, certification, contractual nature conservation, well-being, innovations, associations of forest owners or Austria's international responsibility for SFM.

Year	Number of Indicators	Available data	Threshols & Targets
2004	345	-	-
2005	92	42	-
2006	97	65	47
2009	72	49	54
2011	70	67	67
2014	74	71	71
2015	62	60	58
2016	64	55	60

Table: The Austrian indicator process

Data, trends, agreed threshold degrees, targets and assessments are available for all indicators. The report in German contains an English summary (see below). Furthermore, 15 key indicators were extracted from the set and presented in a brochure which is available in several languages (see below).

No.	Ind. No.	Name of indicator	Targets
Crite	erion 1	1: Contribution of Austrian	Forests to Climate Protection
1	1.1	Forest area	 No decreases in the total Austrian forest area (reference year 2000/02) Increase in forest areas in regions poor in forest (reference year 2000/02)
2	1.2	Growing stock	The overall growing stock of the reference period 2000/02 should not decrease
3	1.3	Age structure and diameter distribution	 At least the share of areas with older forests > 100 years in commercial forests should be maintained (reference year 2000/02) In the long term 2.5 % of the total number of stems are to have a diameter > 50 cm
4	1.4	Carbon stock	The carbon stock in the forest biomass is not to decrease
Crite	erion 2	2: Forest Ecosystem Health	and Vitality
5	2.1	Deposition of air pollutants	Decline in deposition of air pollutants No exceedance of the critical levels of air pollutant concentrations
6	2.2	Soil condition	Reduction of the share of degraded or contaminated soils (reference year 2006/07)
7	2.3	Defoliation & analysis of needles/leaves 1) Decrease in the defoliation classes 2, 3 and 4. 2) Reduction of the share of permanent sample plots with threshold ceedances (reference year 2010).	
			Production forest:
8			 Bark-peeling damage: Number of stems showing bark-peeling damage: > 93 % of the stems should not be affected by bark peeling; the aim is therefore an at least 10 % reduction in the number of stems affected by bark peeling by the year 2025 (reference year 2000/02); in the categories "Juvenile stage II" and "pole stage" a reduction by 15 % is aimed at Intensity of peeling: > 96 % of the forest are to have a bark-peeling intensity of < 1/3 of the number of trees/stems, i.e. a reduction by approximately 10 % by 2025 (reference year 2000/02) is aimed at.
	2.4	Forest damage	 Browsing damage: > 60 % of the forest area requiring regeneration are not to show any browsing damage, which means that the areas suffering damage due to browsing should be reduced by 10 % by the year 2025 (reference year 2000/02).
			 Injuries caused by harvesting: Reduction by 10 % compared to the reference year 2000/02.
			Damage due to forest pasture: Continuous reduction.
			Productive protection forest:
			Bark-peeling damage: The percentage share of peeled stems is to be less than 5 % of the total number of stems.
			Browsing damage: The share of the area requiring regeneration with game damage from browsing parameters and the target-performance comparison is to be less than 10 %.
			• Restraint factor forest pasture: The share in the restraint factors for forest pasture is to be less than 10 %.

			1) Adherence to the compulsory targets of the Emission ceilings-Air-Law (EG-L)
		NO _x , NH ₃ , Volatile Organic Compounds (NMVOC),	Emission ceilings in thousand tonnes [Gg]: SO ₂ : 39
9	2.5	SO ₂ and heavy metal	NO _x : 103
		emissions	NMVOC: 159
			NH ₃ : 66
			2) Decline in emissions of heavy metals
Crite	erion 3	B: Productive and Economic	Functions of Austrian Forests
10	3.1	Increment and fellings	1) Increase of the average annual timber utilisation to 80 % of the increment
		morement and reminge	2) Average annual timber utilisation of at least 85% of the increment (including natural losses)
11	3.2	Roundwood	Increase of the total volume felled to 18.5 million cubic metres of timber harvested in the 5-year average.
			In assumption of a higher awareness for regional and organic products in society:
12	3.3	Non-wood goods	1) 10–20% higher rate of marketed non-timber products by 2015 (reference year 2015)
			2) 10–20% higher rate of marketed non-timber products by 2020 (reference year 2015)
13	3.4	Services	1) Explicit increase (+20%) in the sustainable tourism offer ("soft tourism") and of infrastructure facilities, renting & leasing as well as education and training opportunities by 2015
13	3.4		2) Explicit increase (+20%) in the sustainable tourism offer ("soft tourism") and of infrastructure facilities, renting & leasing as well as education and training opportunities by 2015
		Forests under management plans	Increase of the share of forest areas managed under a forest management plan or an equivalent plan
14	3.5		2) Increase of the number and surface of the area covered by the management plans supported under the Austrian Rural Development Programme
		Satisfaction of the timber demand from Austrian forests	1) 70% satisfaction of the timber demand (incl. firewood) from Austrian forests
15	3.6		2) 65% satisfaction of the timber demand for the material use from Austrian forests
16	3.7	Forest Plans	40 Forest Plans until 2020
			1) No timber from illegal logging
17	3.8	Illegal logging	2) No forest law infringement
	1		3) Execution of forest law infringement
18	3.9	Certified forest area	Certification of the commercial forests (3.367 million hectares), i.e. all forest areas that are actively managed so the wood can be marketed as certified.
Crite	erion 4	l: Biological Diversity in Au	strian Forests
		Tree species composition	1) Raising the shares of land covered with rare native tree species (e.g. fir) compared to the reference year 2000/02.
	4.1		2) Raising the share of broad-leaved trees compared to the reference year 2000/02.
19			3) Maintenance of the share of shrubs in forests and shrub areas compared to the reference year 2000/02.
			4) Maintenance of the share of mountain pine and green alder in unproductive protection forests compared to the reference year 2000/02

20	4.2	Regeneration	production and in protect 2000/02 2) Increase in the existing re 50000 hectares by the ye 2000/02	cion forests, of egeneration ear 2012, co	areas in protection forests by	
					areas in protection forests by 500 If to the reference year 2000/02)00
21	4.3	Naturalness	Entire reduction of the "artific	cial" forest a	rea by 2020	
22	4.4	Introduced tree species	herb layer 2) No new occurrences of inv	vasive tree s	or plant species in the shrub and species and invasive plant species of the affected forest	es
			3) Use of financial subsidies sion of invasive neobiota	for the prev	ention of immigration and expan-	-
23	4.5	Deadwood	Maintenance of the ecologica (>20 cm BHD) of at least 3 m		volume of standing deadwood n production forests	
24	4.6	Genetic resources	 Maintenance of the number and areas of gene reserve forests as well as increase for rare origins Maintenance and tending of seed orchards. Utilisation of those orchards whenever seed harvesting is possible. This applies particularly to the harvesting of seeds of rare and endangered tree species 			
25	4.7	Fragmentation	from 30 to 100 km ² from 100 to 500 km ²	in 2008 12 % 27 % 38 %	Target until 2020 15 % 30 % 40 %	
26	4.8	Threatened forest species	No intensification of the hazardous situation for individual biotopes, animal and plant species: 1) No deterioration in terms of classification 2) Improvement where possible.			
27	4.9	Protected forests	 Increase of the percentage of the area ratio of class 1.2 up to 1 % of the total forest area Increase of the percentage of the area ratio of class 1.3 up to 4 % of the total forest area Increase of the percentage of the area ratio of class 1.3 up to 12 % of the total forest area 			
28	4.10	Naturalness of tree species composition	 Reduction of areas having a tree species composition deviating from the potential natural vegetation by 10 % by the year 2020 (for each forest community) Over 50 % canopy cover of the tree species characteristic of forest communities in the total canopy cover in all forest communities (this is called a natural tree species composition) by 2050. 			
29	4.11	Forest related biodiversity index	Forest related biodiversity index = 100 (optimal condition) No degrees of the biodiversity seems of the verieus sub-indicators.			
30	4.12	Natura 2000	No decrease of the biodiversity scores of the various sub-indicators In forests located Natura 2000 areas with management plans: 100%			
	Tatara 2000		2) Use of the respective finar	ncial subsidi	es	

1) Safeguarding of the existing areas under contractual nature conservation servation of in also upon expiration of the contractual nature conservation of foresty to the maintenance and improvement of forest habitats and forest species according to the EU Biodiversity Strategy 2020 32 4.14 Natural Forest Reserves On about 10 000 ha of forest area, coverage of all forest communities in Austria by 2020 Areas of forests with special traditional management types Areas of forests with special traditional management types No reduction (reference year 2000/02). Criterion 5: Protective Functions of Austrian Forests Areas of forests with special traditional management types Protective forests - soil, water and other ecosystem functions Protective forests - infragrants for the forest special traditional managed anatural resources Protective forests - infragrants for improvement protection forests No soil movements in productive protection forests until 2020: Raising the share of "green" areas (no measures for improvement needed, continuous tending anatural resources of the subsidies 2) Full utilisation of the subsidies 2) Subsidies concerning protective forests 35 5.2 District forestry framework; plants for protective forests in forests in forests in forests Areas of forest victive and managed anatural resources of the subsidies 2) Full utilisation of the subsidies 2) Full utilisation of the subsidies 2) Full utilisation of the subsidies 3 5.3 District forestry framework; plants for protective forests in forests in forests in forests of the subsidies 3 Criterion 6: Social and Economic Functions of Austrian Forests Annual increase to 9 billion euro until 2015 3) Increase to 9 billion euro until 2020 Annual increase of the expenditures for services to maintain ecosystem services by 2020 (for nature conservation and protection forests) (Reference year 2005) 2) 15 % increase of the expenditures for services to maintain ecosystem services by 2020 (for nature conservation and protection forests) (Reference y		1			
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	43	6.5		of 2013) has to be maintained in the private sector and for public serv-	
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				4) The workforce of forest workers (as of 2013) should to be maintained.	

44	6.6	Occupational safety and health	Reduction of occupational accidents over the medium term. For self-employed persons For employees No fatal accidents
45	6.7	1) Increase in the consumption of wood for energy by up to 10% by year 2015 (reference year 2000) 2) Stabilization in the consumption of wood for energy on the level of 3) Increase in the consumption of wood as a material by up to 10% year 2015 (reference year 2000) 4) Increase in the consumption of wood as a material by up to 10% year 2025 (reference year 2000)	
46	6.8	Trade in wood	 1) 10 % increase in the foreign trade surplus by 2010 (reference year 2005 2) 10% increase in the foreign trade surplus by 2015 (reference year 2005) 3) 10% increase in the foreign trade surplus by 2020 (reference year 2005)
47	6.9	Energy from wood resources	 Stabilization of the share of wood energy on the total energy consumption on the level of 2014 Plus 40 PJ wood energy sources by 2015 (reference year 2005).
48	6.10	Accessibility for recreation	No marked increase in permanently banned forest areas (increase <= 10% of the areas banned in the reference year 2005).
49	6.11	1) 400 activities per year, 2016-2022 at least 2 500 activities	
50	6.12	Public awareness and participation of the public	No increase of subsidies for the promotion of public relation
51	6.13	Research, training and further training	1) Increase in research expenditure "forest – wood" (inflation-adjusted) 2a) Increase in the numbers of participants and graduates of forest-specific institutions (without BOKU University) by 10 % (reference year 2005) 2b) Continuation of the forest-specific education and training courses and number of students at BOKU University (reference year 2014) 3) Increasing number of advanced trainings and related numbers of participants 4) Increasing number of participants of the "forest biodiversity project" course
52	6.14	Shares of the exploitation types	Increase in the share of thinning - in private forests - in forest enterprises - at the Austrian Federal Forests (ÖBf AG)
53	6.15	Availability of a permanent Forest Forum	Regular activities of the Forest Forum
54	6.16	Awareness raising about the importance and health effects of forests	Maintenance or increase of the amount of forest education events in schools Increase of the registered forest pedagogics with a forestry background Increase of the Green Care WOOD projects
55	6.17	Development of the roundwood and sawnwood prices	At least average annual price increases (reference year 2005) to the amount of the consumer price index.

56	6.18	Share of sawnwood in the assortment of the products of cutting	Percentage of sawn roundwood in the volume felled: At least two thirds.	
		Forest area represented	Increase in the amount of timber marketed to 4 million cubic metres of timber harvested until 2010	
57	6.19	by associations of forest owners, their members as well as the volume of tim- ber marketed	 Increase in the amount of timber marketed to 4 million cubic metres of timber harvested until 2015 	
			 Increase in the amount of timber marketed to 4 million cubic metres of timber harvested until 2020 	
58	6.20	Networks of test forest enterprises ("forest- economic monitoring") in private forests and in en- terprises	Maintenance or increase of the number of enterprises participating to extend content and volume in large and small forests and provide international comparability	
			Increase of the amount of Austrian partners/consortia in the research programme EIP-AGRI	
59	6.21	Innovations in the forest and wood sector	2) No decrease of the subsidies for innovations in forestry	
		and wood sector	3) Research projects shall continue to contribute to successful patent aplications	
Crite	erion 7	7: Austria's International Re	sponsibility for SFM	
60	7.1	Number of and budget of development cooperation projects with a focus on SFM	Increase of the number of projects and of the budget, according to the 4 th Global Objective on Forests: to raise additional funds for the development cooperation in forestry	
61	7.2	Austrian contribution to an international and multilateral Forest Governance	Continuous priority setting of the Austrian policy towards a global sustainable forest management	
62	7.3	Public funds for forest related international organisations and for the participation of Austrian experts in forest related international bodies, boards or committees	Maintenance or increase of the budget, depending on the available public funds At least constant participation in forest-relevant, international committees and meetings	
63	7.4	Austrian contribution to combat illegal logging	Implementation of the related EU Regulations in such a way that Austria gives no reason to the EC to initiate infringement procedures Austria provides no incentives for operators to place illegally harvested timber on the market	
64	7.5	Forest-sector related bi- and multilateral co-operation agreements (signed)	-	
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Austria's Headline Indicators on SFM 2015

Information based on the Austrian Criteria and Indicators for Sustainable Forest Management

These criteria and indicators were developed for Austria on the basis of the Pan-European Criteria and Indicators¹ to illustrate to what extent the objective of sustainable forest management is being achieved.

The criteria describe the different aspects of sustainability. With the help of the indicators the changes over time can be measured and assessed for each criterion. Indicators show how well the requirements specified by the criteria are met and thus serve as the basis of the reporting system.

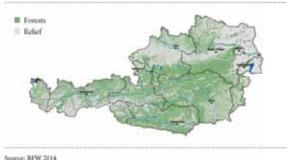
Criteria:

- 1: Contribution of Austrian forests to climate protection
- 2: Health and vitality of Austrian forests
- 3: Productivity and economic aspects of Austrian forests
- 4: Biodiversity in Austria's forests
- 5: Protective functions of Austria's forests
- 6: Social and economic aspects of Austrian forests
- 7: Austria's international responsibility for sustainable forest management

A country rich in forests (Indicator 1.1)

In Austria, forest land has increased for decades. It covers about 4 million hectares, a figure which corresponds to 47.6% of the whole Austrian territory and exceeds the EU average of 42 %.

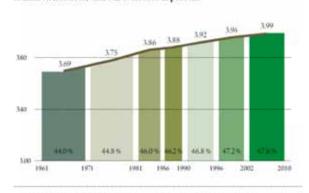
Map of Austrian forests



¹ FOREST EUROPE – Ministerial Conference on the Protection of Forests in Europe

Development of the forest area in Austria

in million hectares/share in total area in percent



Source: OWI 2007/09, BFW 2014

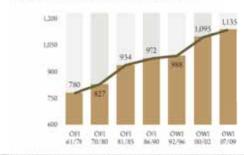
Large stocks of wood (Indicator 1.2)

With 1,135 million m³, the stocks in wood have reached a record level. With an average 354 m³/hectare, small private forests have the largest stock of all ownership types.

The increase in stocks is not only a consequence of the growth in area, but is also due to a significant increase in forests themselves.

Development of stocks

Development of stocks (in million m3) since 1961



Source: ÖWI 2007/09, BFW 2014

Forests are our most important carbon sink (Indicator 1.4)

Surveys prove that forests absorb by far more carbon than they release. In earlier reporting years on the Climate Convention (1990 to 2012) forests have always acted as carbon sinks. These sinks correspond to up to 25 % of Austria's annual greenhouse gas emissions.

Overall CO₂ emissions and CO₂ sink through forests in Gg (gigagramme) CO₂ **Total amminisms ** Forests **Total amminisms ** **Total amminisms **

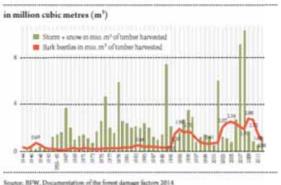
The carbon balance of forests is the by far most important factor of influence on the greenhouse balance of the entire land-use sector.

As a result of the higher degree of utilisation the net sink of forests has, over the past few years, clearly decreased compared to the figures of the nineteen nineties. However, the wood which is utilised has a positive effect on the greenhouse gas balance also in the balance of the timber product stock from domestic felling (sawnwood, panels, paper) and, indirectly, via the substitution of products made of other raw materials (e.g. concrete, steel, plastic).

Forest damage is a continuous challenge (Indicator 2.4)

Damage caused by storm and bark beetles are among the most significant problems of the past decades. A connection of this development with climate change is rather likely. Furthermore, there are harmful factors that endanger the stocks of individual tree species all over Austria, for example the ash dieback caused by the Chalara fraxinea fungus. Damage by game has been on a high level for many years and often prevents the necessary regeneration.

Trend in quantities damaged by bark beetles, storm and snow

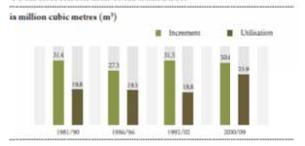


Wood increment exceeds consumption

(Indicator 3.1)

Since the first surveys of the nineteen sixties the quantity of wood we consumed has always been below the increment. Presently the annual increment amounts to approximately 30.4 million cubic metres, of which 25.9 million cubic metres are utilised.

Total increment and total utilisation



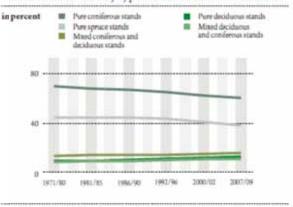
Soutce: OWI 2007/09, 88W 2014

Diversity of tree species composition

(Indicator 4.1)

For decades the trend in Austria's forest management has been towards greater closeness to nature. As a result, the share of broadleaved trees and shrubs has increased, pure spruce stands have decreased and a trend towards mixed stands has been observed.

Shares of forest land by types of mix in commercial forest



Source: ÖW1 3007/09, SPW 3014

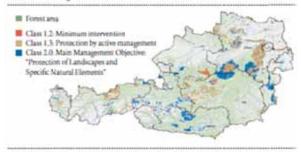
Growing share of deadwood (Indicator 4.5)

Dead wood in the form of standing tree stumps and lying trunks provide a habitat for a multitude of organisms and becomes an important component of the forest soil after humidification. Many species depend on deadwood during part of their life cycle. Since the nineteen nineties the share of deadwood has almost doubled and now amounts to about 8.4 m³/hectare, which is 2.5% of the total stock.

High share of protected forests (Indicator 4.9)

In Austria, about 830,000 hectares of forests are located in areas identified under nature conservation law; this corresponds to 21.5% of the total forest area.

Austrian forests in protected areas, classified according to Forest Europe 2013



Source: Federal Environment Agency 2014.

The protective effect of forests safeguards human habitats (Indicators 5.1 and 5.2)

Almost one fifth of the Austrian forest area (820 000 hectares) are so-called "protective forests", which means forests having a protective effect. They protect infrastructures like settlements, roads, cables and pipes (forests with object-protecting effect) as well as soil and water (site protecting forest).

The Initiative Protection By Forest (in German "Initiative Schutz durch Wald", abbreviated ISDW) has proved to be a suitable planning and subsidisation instrument to preserve and enhance object-protecting forests and will be continued on an area of about 385,000 hectares in the framework of the upcoming Rural Development Programme.

Forests are a significant economic factor (Indicators 6.2, 6.5, 6.8)

Together with the wood, paper and board industries forestry plays an important role in economy.

In 2012 the forestry sector accounted only for about 1.8 % of the GDP; in absolute terms the gross value added amounted to 5 billion euro. However, with a foreign trade surplus of 3.69 billion euro the value-added chain of forest-timber-paper is one of the most important items of Austria's foreign trade.

About 300,000 persons draw an income from the forest- and wood-based sector. The significantly increasing mechanisation and technical development of timber harvesting which has taken place since the beginning of the nineteen eighties, as well as administrative rationalisation measures have led to declining numbers of employees.

The use of wood promotes climate protection and green economy (Indicators 6.7 and 6.9)

Using the renewable raw material wood from sustainable forest management has a positive impact on climate protection and on the green economy and strengthens Austria as a business location.

Presently, approximately 38 million cubic metres of wood are processed in Austria per year. This wood is not entirely from Austrian forests; almost 10 million cubic metres are imported.

The largest timber consumers are the sawing, paper and board industries. The share of wood used to generate energy has continuously risen over the past few years.

Modern training and advanced training ensures sustainable forest management (Indicator 6.13)

Forestry training is oriented towards the concept of sustainable, multi-functional forest management as well as towards the job opportunities of its graduates in the different fields of production. It takes account of national and international education strategies. Austrian forest expertise is estimated and demanded world-wide.

After declining numbers of students and graduates from the study branches forestry and wood technology were observed for some time, this trend has reversed now and student numbers are rising again.

Special focus on social and cultural aspects of forests (Indicators 6.11 and 6.17)

With the help of targeted measures the social and cultural aspects of forests can be developed and made noticeable.

More than 1,000 persons have already been trained in special "certificate courses" on forest-related education and on the issue "Forests & Culture". With some 41,000 offers for kindergartens, schools and adults, graduates of those courses reached approximately 620,000 persons during the 2007-2013 period.

Under the title "Green CARE Wald" forest topics of relevance to society are bundled in order to better integrate them into regional and operational procedures. A particular task to be pursued in this field is the development of specific health and therapy offers in and around forests.

Austria takes big efforts to promote sustainable forestry on the international level (Indicators 7.1, 7.2, 7.3)

The objective of Austria's foreign-policy endeavours is to promote the breakthrough of sustainable forest management principles, if possible all over the world. Austria proactively participates in the process of shaping international forest policy, in particular at the United Nations Forum on Forests, in the Climate Convention, in the Convention on Biodiversity and in the Ministerial Conference on the Protection of Forests in Europe.

A second priority is bilateral know-how and technology transfer as well as support for projects on sustainable forest management. In 2013 alone, 12 forest-related projects were publicly funded in the scope of development cooperation (€7.6 million) and received technical assistance from Austrian organisations. Furthermore, international organisations active in fields of relevance to forests received about €300,000 of financial support.

For more detailed information, please see the 2015 Forest Report at

https://www.bmlfuw.gv.at/dam/jcr:c0979609-92aa-4b89-8ddb-482ddd5af699/Austrian%20Forest%20Report %202015.pdf