

Forest carbon sequestration projects in Switzerland and Germany

Hubertus Schmidtke

SILVACONSULT AG
FSC Switzerland

Presentation 15.12.2020



SILVA CONSULT AG



Welcome to SILVACONSULT AG. We are highly skilled and committed in four areas:

- We develop **projects for climate protection.**
- We are in charge for the Main-Office of **FSC Schweiz.**
- We provide services and consulting for owners, public offices and investors **in the fields of valuation and specific economic questions.**
- **As a technical office** we organize and lead forest-inventory-projects .



Climate protection



FSC® Schweiz office



Forest inventories and maps



Consulting

Forest carbon sequestration projects in Switzerland and Germany

Carbon Markets	-	Compliance market
	-	Voluntary market
Standard/Methodology	-	Methodology according ISO 14064:2
Project types:	-	Forest nature reserves
	-	Managed Forest
	-	Plantations
Project examples	-	Hohgant-Goldbach Forest Nature Reserve, 27 ha
	-	Grüenenpass Forest Nature Reserve 600 ha
	-	Buchegggerg, managed forest 1'300 ha
	-	Prättigau, managed forest 10'000 ha
Organisation	-	How to organise projects (players, phases)
Marketing and sales, FSC	-	costs and revenues
	-	supply and demand,

Presentation 15.12.2020



SILVA CONSULT AG

Markets of CO2-certificates

- **Compliance market:**
Kyoto Protocol, Paris Agreement
Countries make commitments on GHG emission reductions
Governments commit industries to reduce GHG emissions
- **Voluntary market:**
Companies, organisations, people
Commitments to be «climate friendly», «climate neutral» etc.
Carbon foot print, compensation of unavoidable emissions
→ Verified Emission Reductions VER

We are in the market for **voluntary** measures to mitigate climate change

Presentation 15.12.2020



SILVA CONSULT AG

Voluntary market

Anything goes? No!

Credibility, Acceptance: accepted standards/methodologies needed

Criteria: (additionality, permanence, monitoring, accuracy, no leakage, external certification)

- Goldstandard
- Verra
- ISO 14064:2

We use a methodology according ISO 14064:2

- forest owners' association
- Swiss Federal Office for the Environment

Presentation 15.12.2020



SILVA CONSULT AG

ISO 14064 Issued in three parts

Part 1 - Carbon footprint of organisations.

Specifies principles and requirements at the organisation level for quantification and reporting of GHG emissions and removals. It covers design, development, management, reporting and verification of an **organisation's GHG inventory**

Part 2 - Greenhouse gas projects

Supports multiple GHG project types, so must adequately address offset carbon credits and innovative technology projects, as well as internal projects. **The second part specifies principles and requirements, and provides guidance at the project level for quantification, monitoring and reporting** of activities intended to cause GHG emission reductions or removal enhancements. It covers GHG project planning; identifying and selecting GHG sources, sinks and reservoirs relevant to the project and baseline scenario; monitoring, quantifying, documenting and reporting GHG project performance; and managing data quality.

Part 3 - Qualification of certification bodies

Specifies principles and requirements and guides those conducting or managing the validation and/or verification of GHG assertions. It can be applied to organisational or GHG project quantification, monitoring and reporting.

Presentation 15.12.2020



SILVA CONSULT AG

Benefits of ISO 14064

Showcase integrity

Verification against ISO 14064-1 and ISO 14064-2 **highlights the veracity of your systems and processes** to prove your GHG inventory, assertions and reports conform to the ISO 14064 standard; and are free from errors, omissions or misstatements.

Hit targets

Validation against ISO 14064-2, **establishes the integrity of your project** baseline, design plan and supporting assumptions to ensure you realise your projected GHG reductions.

Validate success

Validation of GHG projects to ISO 14064-2 provides confidence that the GHG project, if implemented as planned, will help achieve the projected emission reductions. Verification of your GHG projects gives assurance to your stakeholders of the quantum of emission reductions achieved in a specified period.

Presentation 15.12.2020

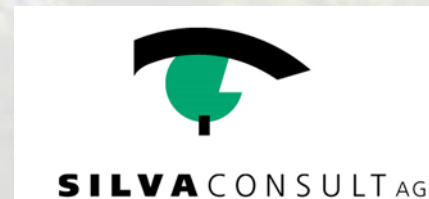


SILVA CONSULT AG

Main characteristics of GHG projects

Baseline:	Development of the carbon stock without project
Project case:	Development of the carbon stock with project, ex-ante estimation
Monitoring:	Measuring the actual development of the carbon stock
Accuracy:	Statistically determined accuracy is required
Permanence:	Durability of carbon stocks must be guaranteed
Additionality:	Carbon sequestration happens because of projects revenues only/substantionally
Leakage:	No emissions of GHG else where due to the project
Conservativity:	No overestimation of the climate effect
External certification:	Credibility

Presentation 15.12.2020



Forests are huge carbon stocks

Growth of trees: sequestration of carbon from the atmosphere

1 m³ standing conifer tree = 1.2 tCO₂ (whole tree biomass)

1 m³ standing leaf tree = 1.5 tCO₂ (whole tree biomass)

Soil carbon: same amount as tree biomass,
not accounted for in our methodology yet.

- Soil carbon follows living biomass with delay
- Soil carbon difficult to measure on project level

Presentation 15.12.2020



SILVA CONSULT AG

Forest carbon project types

- Forest nature reserves (forest conservation)
- Carbon management in managed forests (improved forest management IFM)
- Afforestation/Reforestation



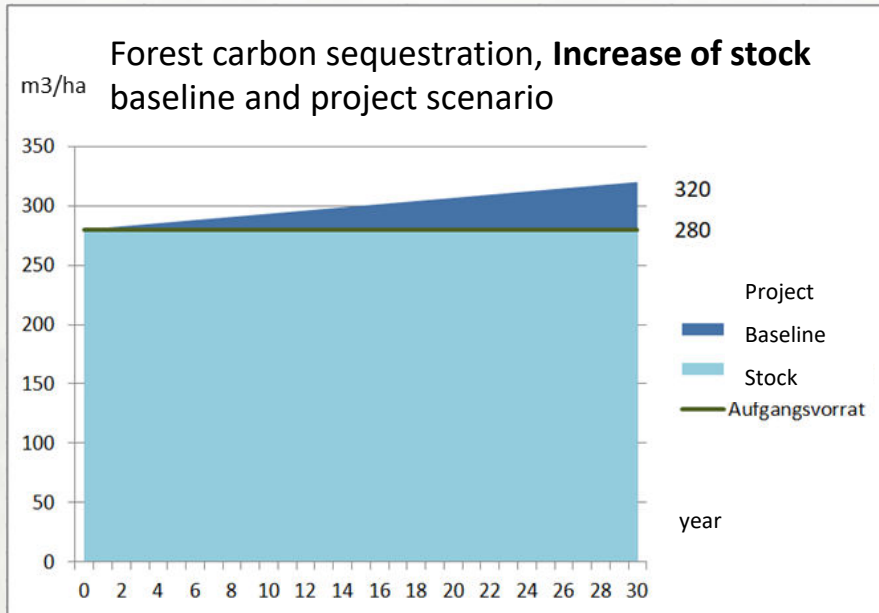
Presentation 15.12.2020

Project type	Forest nature reserve (conservation)	Improved forest management (IFM)	Afforestation/Reforestation A/R (not used in GER and CH so far)
Measure	No harvest.	Reduced harvest	New Plantations
Monitoring	The status of a nature reserve must be secured for 50 years. Carbon sequestration estimated by applying models . Monitoring is only on the status of the protection.	Numbers on carbon stock, yield, mortality from forest inventories. Data on annual harvest are from the forest enterprise. Carbon stock is recalculated annually for monitoring.	Numbers on carbon stock, yield, mortality from forest inventories. Data on annual harvest are from the forest enterprise. Carbon stock is recalculated annually for monitoring.
Data	Model assumptions of mean stock levels in managed forest according to common practice and in natural forest on the same site.	Periodic forest sample plot inventories with defined accuracies adjust the updating of the stock.	Periodic forest sample plot inventories with defined accuracies adjust the updating of the stock.
Project duration, min	50 years	30 years	30 years Several rotations possible
Certificaten type VER Verified Emission Reduction	Ex-ante (in advance), once at the beginning of the project	Ex-post (retrospective) annually or periodically	Ex-post (retrospective) annually or periodically

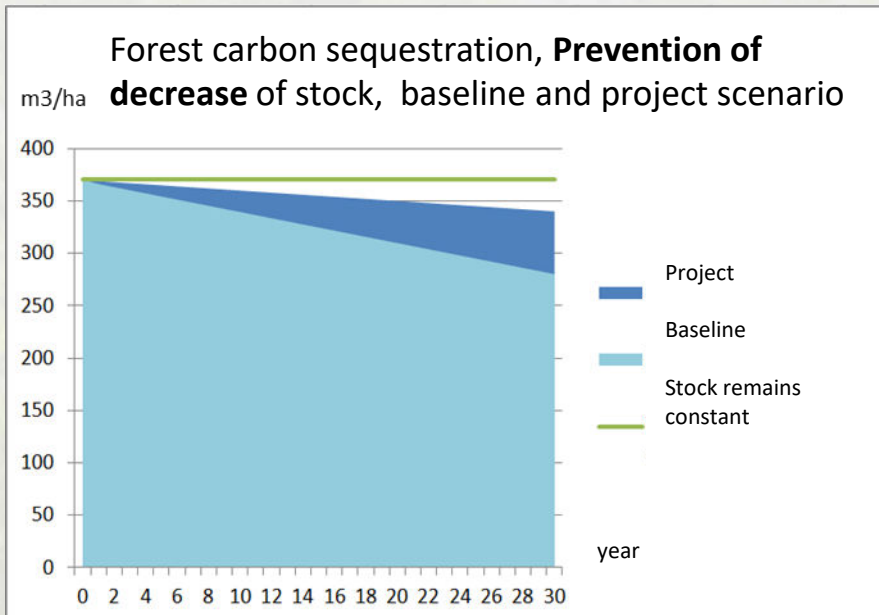
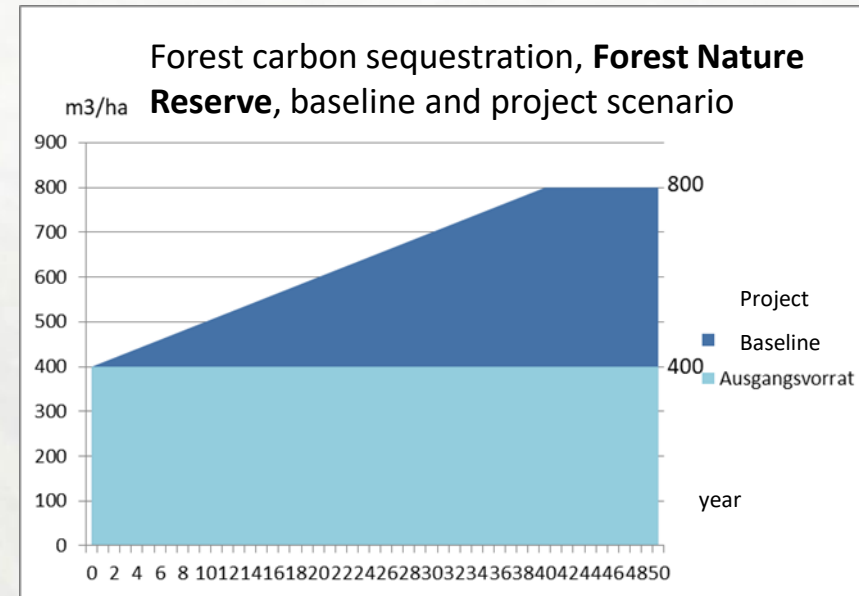




Improved Forest Management



Forest Nature Reserve





	Improved Forest Management				Forest Nature Reserve		
	Bucheggberg	Prättigau	Davos		Hohmattflue	Grueenenberg	
	1236	10'647	2'005	ha	27	650	ha
Carbon stock Start	370	379	285	m3/ha			
upper model figure	350	369	270	m3/ha			
low model figure	280	289	180	m3/ha			
obligation	340	359	250	m3/ha			
obligation difference	60	70	70	m3/ha			
	30	30	30	Years			
	2.0	2.3	2.3	m3/ha/year 30 years			
	1.35	1.18	1.22	tCO2/m3			
	2.70	2.75	2.85	tCO2/ha/year 30 years			
	3'338	29'315	5'708	tCO2/year	10'800	162'500	tCO2
	25	25	25	€/tCO2	25	25	€/tCO2
Revenues	83'439	732'869	142'689	€/year	270'000	4'062'500	€ once ex-ante
	68	69	71	€/Year/ha	10'000	6'250	€/ha once ex-ante
Initial costs	21'000	60'000	21'000	€	13'000	80'000	€
Annualcosts	4'000	6'000	4'000				

Presentation 15.12.2020



SILVA CONSULT AG

Project phases

- Monitoring
 - Marketing and Sales
 - Validation/verification
 - Project elaboration and implementation
- Feasibility study
- Interest

Presentation 15.12.2020



SILVA CONSULT AG

Projects in Switzerland

Interest Feasibility Project

	Projekt	Kanton	Projekttyp Bewirt.W Wald-Res.	Interesse	Vorstudie	Haupt- projekt
1	Forstbetrieb Bucheggberg	SO	BW	2016	2018	2018
2	Waldreservat Hohmattfluh Goldbach	BE	WR	2019	2020	2020
3	Landschaft Prättigau Davos	GR	BW	2013	2013	2020
4	Region Zofingen	AG	BW	2020	2020	2020/21
5	Valforêt	BE	BW	2020	2020	2021
6	WaldSchwyz	SZ	BW	2020	2020	
7	Bürgergemeinde Solothurn	SO	BW	2019		
8	ForêtValais	VS	BW	2019	2020	
9	Stadt Winterthur	ZH	BW	2020	2020	2021
10	Stadt Winterthur	ZH	WR	2020	2020	2021
11	Forstbetrieb Dorneckberg	SO	BW	2019	2019	
12	Forstbetrieb Dottlenberg	BL	BW	2019	2020	2021
13	Waldreservat Grüenebergpass	BE	WR	2020	2020	
14	Kriens/Stadt Luzern LU	LU	BW	2019	2019	
15	WaldLuzern Projekt für RO im Privatwald	LU	BW	2019	2020	
16	Waldgenossenschaft oberes Entlebuch	LU	BW	2019	2020	
17	Forstbetrieb Domat-Ems	GR	BW	2020		
18	Forstbetrieb Birretholz	SO	BW	2019		
19	Revier Wellenberg, Bürgerg. Thundorf und Hüttlingen	TG	BW	2019		
20	Bürgergemeinde Diessenhofen	TG	BW	2019		
21	Forstbetrieb Oberes Hauenstein	BL	BW	2020	Selbst?	
22	Marchissy	VD	BW	2019	abgesagt	

Presentation 15.12.2020



SILVA CONSULT AG

Problems

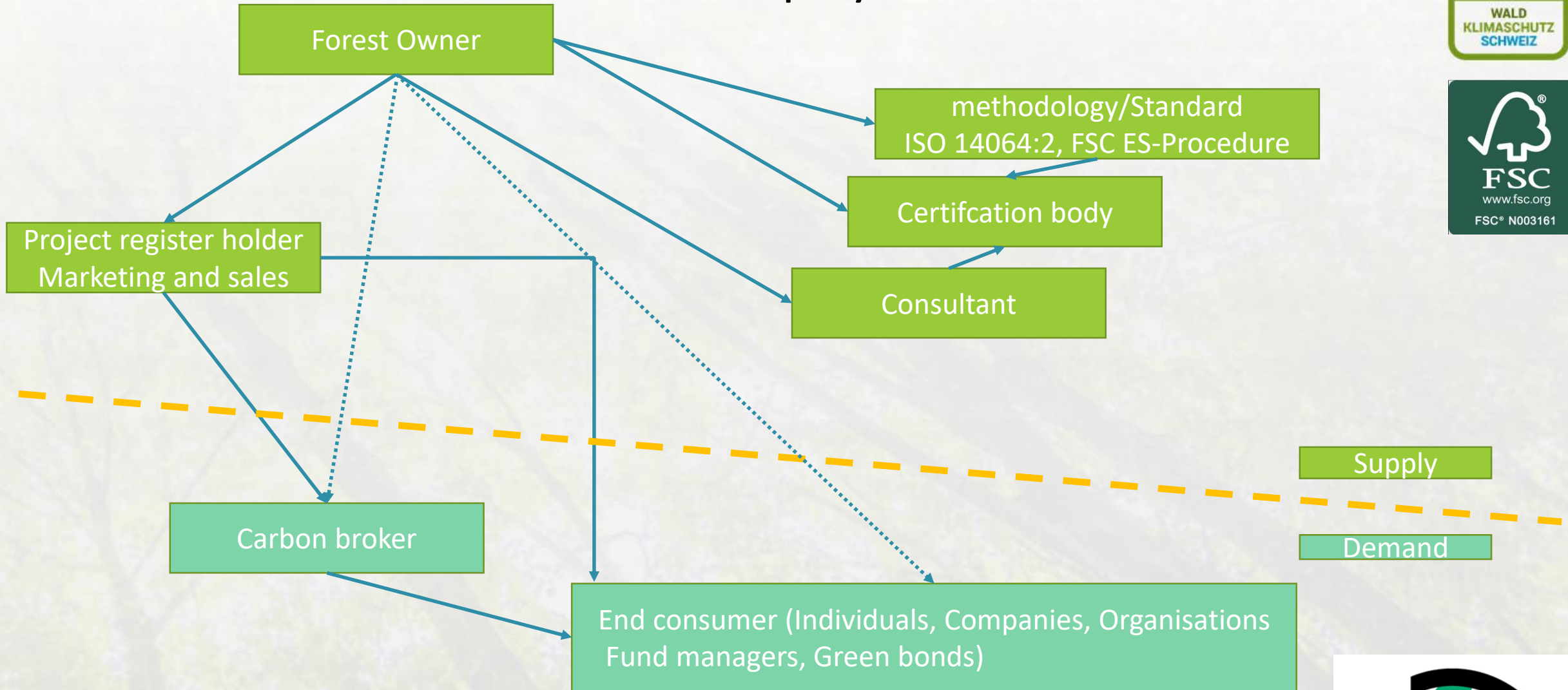
- Small area units
- No management plan
- No inventory data
- Inaccurate inventory data
- Not complete documentation of harvest

Presentation 15.12.2020



SILVA CONSULT AG

Market players



Presentation 15.12.2020



Supply and demand

- Climate targets of companies, Climate-Social-Responsability CSR-strategies,
- Strong tendency towards domestic and regional Verified Emission Reductions VER
- From 2021 on new rules according Paris Agreement, no cheap VER from developing countries
- VER from forest projects are premium price VER, quality (forest + FSC)
- Prize expectations in Switzerland and Germany
30 €/tCO₂ (36 €/m³ conifers, 45 €/m³ leaf trees)
- Supply < Demand

Presentation 15.12.2020



SILVA CONSULT AG

Summary

- We do have a methodology according ISO 14064, FSC ES-Procedure
- Pilot phase is over
- We are in the operational phase
- We develop projects
- We sell VER from forest carbon sequestration projects
- VER from FSC certified forest project have premium price (30 €/tCO₂)
- Supply is less than demand

We are in the operational phase of developing forest carbon sequestration projects according ISO 14064:2 and FSC ES-Procedure. We sell carbon credits (VER) from forestry projects in the fast growing voluntary market for climate mitigation measures at a premium prize.

