

Ladies and gentlemen, dear fellows and colleagues

First I'd like to thank you for being here with me and to present my project to you. I'll make my presentation to an audience of colleagues, some of them biased against FME. From the economists in this room I'd very much like feedback after my presentation about whether my first pillar is going to work out or not.

I would like to show you a new way of how to cope with Swiss avalanche protection forests or APFs. In Switzerland it is quite common to find people living in the mountains or traveling through the valleys during the winter. There are days or even whole weeks, when these people are very much endangered by snow avalanches. Well maintained forests, however, are capable of reducing these grave risks in many parts of the Alps.

My presentation has three parts:

1. How do we manage our APFs today?
2. How could and should we manage them in the future?
3. How can you be a part of a new approach to APFs?

**So let's begin with section 1 of the presentation: how do we manage our APF today?**

Let me show you first what an APF looks like. Here you see the lake of Brienz, located on the left side would be Interlaken, a town you may know as a tourist resort, on the right side is Brienz. Along the shore you'll find maybe 10 little towns and one major highway. Above these towns and the highway is a steep slope, mainly forested. Between Interlaken and Brienz we can count exactly 29 avalanche runs, all of them endangering traffic in wintertime. But how many avalanches would we count without these forests? As you've noticed: villages are always set up below a forest, because in this way the people living there in wintertime wouldn't be endangered by avalanches.

Let's take a closer look at this picture. Now, how do we manage APF? It takes three things to get a useful APF. A protective forest is one that has no vertical gaps longer than 30-60 yards depending on the slope, has a heterogeneous structure and, most importantly, ensures very favorable conditions for natural tree regeneration, a process which normally takes 50 years.

In this slide you see some of the features a mountain forester doesn't like: lots of dead trees with the possibility for a major invasion by insects, mainly bark beetle. So this could be the beginning of a gap with the potential for a break-out of snow avalanches. Fortunately there is also some regeneration in the picture, so maybe the light coming in

will enable the young trees to grow up quickly and close the gap and not have an outcome like this one here.

In the past our main approach to keep up with avalanche protection was relying on cautious timber production and on restoring those forests, that are no longer in a favorable state to afford protection. If restoration isn't successful, we put up protective steel constructions at a price of USD 300'000 per acre. Unfortunately timber production isn't economically viable anymore, so we started to subsidize restoration projects.

That means restoration is always done within a project and is usually a joint operation between the feds, the state (we call them Cantons) and the forest owner. This means that the forest owner works out the project, the cantonal forest service authorizes the project by decree, the feds throw in a lot of money and the forest owner then executes the project together with the forest service. Important project decisions would still be taken by the regional forester, though financial responsibility lies with the forest owner.

Before we go on, I'll show you how it came that restoration projects are subsidized. As you all know, timber prices in Central Europe have fallen dramatically. Real timber prices are now depressed by 75% when compared with prices 20 years ago and the average price per cubic meter is as low as USD 50. With timber prices falling, Swiss alpine forestry became a cash burning machine and now more than 50% of the costs - which amount to 160 USD/acre - are covered by subsidies. Well you could say that we are providing a public good. But this provisioning also has some serious unintended consequences. We now practice subsidizing restoration projects for a duration of more than 20 years. As you may guess, this financing encourages forest owners, especially county foresters who manage public forests, not to engage in innovating and improving skills and techniques. To make my point clear I'll show you a benchmark for a sawmill log, that was recently done between 5 European countries. Timber yield costs are brown, harvesting costs are light green, transportation is green, overhead is light brown. As you notice, the productivity gaps in harvesting and transporting timber between Switzerland and its neighboring countries are big and even bigger if compared with the southern part of Scandinavia. As a result, the residual for forest owners, the brown part of the column, becomes incredible small.

So what are these unintended consequences in detail? The most important came out of the benchmark. The incentives aren't right anymore either as a result of financial mechanism (e.g. paying for real costs) or as a result of managerial discretion: «the subsidies just get sucked up by huge agency costs». There are two more reasons why incentives are basically wrong: funny property rights within project management - those who do decide don't have to bear the full costs of their decisions - and - more philosophically - the subsidies are rewarding past neglect of forests.

The longer this goes on, the larger the timber productivity gap gets between Switzerland and its neighboring countries - especially Austria, a country with very similar forests. Yes, with these subsidies we are putting our own forest industries out of business, be-

cause after some time we'll just lose our ability to make up. And this could very well lead to a sharp increase in costs just for maintaining the current status.

Now before I come to the 2nd part of my presentation, I want you to think about Bobby's suggestion of making forest owners liable for avalanches coming out of their forests. Would this be an acceptable solution for a free marketer. My answer to this idea is no, because making forest owners responsible for avalanches coming out of their forest would

- make property owners liable for natural hazards (!);
- transfer valuable property rights from private and public forest owners to private developers and public owners of roads and highways;
- transfer many private forests to the public, because forest owners will go broke;
- centralize public forests, because small counties couldn't afford their forests anymore.

**Let's go on with the 2nd part: How could and should we manage our APF in the future?**

The solution I propose for managing APF rests on three pillars:

- the cantons compensate forest owners for good or sufficient received protection;
- forest owners who have APF which cannot provide sufficient protection but are willing to undertake certain measures are granted some subsidies after completion of their work;
- important APF which are in a very bad shape concerning protecting human life and valuable property are taken over by the Canton for a certain time period, the take-over maybe friendly (by contract) or unfriendly (by expropriation based on statute law).

I'll now lay out some of the details of my concept. The 1st pillar builds on

- cantons compensate forest owners for received protection;
- the paid amount depends on the state of the forest (good, sufficient) and associated risks (3 levels);
- forest management is costcovering or profitable;
- conditions: atomistic ownership has to be overcome.

This 1st pillar is probably the most innovative part of my proposal. So let me answer some of the obvious questions arising out of my project (3 questions). In April I had the chance to talk with some of our best experts on these three issues, so I can give you a short answer: Yes, we can!

- Risk analysis has been done for quite a time. However it got never implemented, because federal funds are very much distributed for political reasons and proper allocation based on risk analysis is only of minor concern. So we figured that sophisticated geographical information systems exist and could be put to work on short notice.
- Measuring protection afforded? That has to be hard, at least that's what my mentor Holly came up with. Actually what you have to do is a detailed field survey of every APF and work with existing guidelines on how to evaluate stands and especially how to assess the conditions that are critical for natural regeneration.
- So given that this can be done, we then ask if it isn't too expensive? Well, life in a APF is fortunately very slow so you would have to do your surveys only every 20 years. And assuming that only 10 to 20% of the so called APF are really APF, after doing your scientific risk analysis, it actually comes down to a cash amount that is clearly bearable.

Let's move to the 2nd pillar:

- cantons subsidize forest owners for measures taken;
- amount depends on associated risks (3 levels);
- forest management unprofitable, maybe break-even;
- conditions: atomistic ownership has to be overcome, guidelines for good management practices, only if protection afforded is insufficient and the work is completed.

Now, what are we going to do with all the forests that are not in good shape and whose owners are not willing to come up with money? I say it all depends on the available budget and the risks associated with doing nothing. Then let's assume that an APF is in bad shape and just above a major highway going from Germany thru Switzerland to Italy. Here my project comes up with a second little innovation, which may seem to you as minor but it isn't. Restoration projects today have mixed-up property rights and weird incentives. So let's just say the whole restoration issue is on the Canton and makes him responsible for the outcome, leaving the forest owners out of the picture. And let's force the forest authorities to have a bidding competition and start a nice little war between contractors. We do it for roads and bridges, yes even for government buildings, so why not do it for forest restoration?

What are the advantages of this new concept? I believe the most important advantage is being able to cope with the upcoming decline of Swiss timber production.

Timber prices, as I see it, will not recover within the next 20 or 40 years in such a way as to put Swiss forestry back into business. Switzerland is a high wage country, with forest workers earning as much as USD 50 - 60'000 per year. And there are no reasons to suspect trends that would bring wages down. The opportunity costs for producing timber are just too high in a small open rich country which very much depends on pharmaceu-

tical products or banking and insurance services. – There are other advantages. My proposal

- is able to cope with a total break-down of timber production;
- gets the incentives right: pays the able or lucky forest owner and doesn't pay anything to lazy forest owners;
- clarifies property rights in restoration;
- relies on government action only as a last resort: subsidizes willing owners of insufficient APF and takes over forest management when the stakes are high.

### How can we be part of this new approach?

What needs to be done:

- channel federal funds through risk analysis, not politics:
  - risk analysis,
  - designate APF by decree (3 levels);
- change forest acts: federal forest act, cantonal forest acts, set tariffs, increase budgets;
- measure state of APF.

«*Panta rhei*» or everything is in a state of flux. Swiss timber has no comparative advantages, but maintaining or enhancing ecosystem services means protecting life and property, so we got a us new free market environmentalism product. The world of yesterday is history, you cannot make it come back. The good news is the future is open, it all depends on us. So let's be optimistic and go to work, everybody in his or her own function and make it possible that our mountains are not shutdown in wintertime.