FP1201 Short Term Scientific Mission Report

Grantee:
Dr. Srdjan Keren
University of Banja Luka, Faculty of Forestry
Stepe Stepanovica 75a, 78000 Banja Luka
Bosnia and Herzegovina

STSM reference:	FACESMAP – COST Action FP1201
Action Working Group:	WG1 Forest ownership types and motives
Host:	Prof. Dr. Jaroslaw Socha, University of Agriculture, Faculty of Forestry, Krakow, Poland
Title:	Effects of afforestation on changes in forest ownership structure in Poland
Period:	10/07/2015 - 10/08/2015
Reference code:	COST-STSM-ECOST-STSM-FP1201-100715-057133

Purpose of the Short Term Scientific Mission

The purpose of this STSM was to collect and analyze the data about afforestation of private land and state-owned land in Poland for the period 1995-2012. The analysis focused on response of private land owners to subsidies, which were specifically provided for the purpose of afforestation of low-productive agricultural land. In addition, we compared results from Poland with some other EU countries which applied subsidies.

Description of the work carried out during the STSM

In the first week the database about forest ownership structure regarding afforestation was examined. The review of administrative acts, afforestation maps and activities of landowners was carried out in order to find answers to questions such as: 1) to what extent have landowners received grants (subsidies) for afforestation in Poland so far; 2) do they have certain obligations after receiving the afforestation grant (in terms of protecting young stands, e.g., from fire), that is, do they have any additional maintenance costs; and 3) what are their main motives to establish forest plantations. In the second week, based on available maps and statistical data, we

investigated the size of agricultural holdings which could be potentially converted into forest land and also what is the percentage of the investors (in this case Polish farmers) who are older than 35. Afterwards, in the third week we determined which tree species composition and forest structure are recommended by the Polish afforestation plan, and if this plan is in collision with preferences of landowners (which tree species they prefer to plant).

Further, we defined sources of investment risks for landowners such as the changes of administrative acts, the negative effects of natural factors in forest plantations (e.g. wind, fire, etc.). In the last week, we examined how many of landowners were willing to turn their agricultural land into forested land through the process of afforestation. Then we analyzed if forest ownership structure in Poland has changed significantly inperiod 1995-2012 due to grants given to landowners for afforestation of agricultural land. The analyses were based on the data which were available at the Faculty of Forestry in Krakow (database with spatial information concerning afforestation in Poland during 1995-2012 (for individual parcels) and information regarding forest ownership structure for the smallest administrative districts.

Description of the main results obtained

Forests in Poland occupy the area of 9.176.000 ha and most of them are state-owned (81,1%), 1% is owned by local governments, while 18,9% are privately owned. Farmlands occupy around 61% of the whole territory, and significant share of it represents low quality agricultural land which generates very low income. Those areas could be converted to non-agricultural purposes. In Europe, the average forest cover is estimated at 32%, and in the European Union at 37.1%. On the other hand, forests in Poland account for 29.3% (Adamczyk *et al.*, 2015).

In the 1950s, Western European countries developed various political tools, such as grants, premiums and subsidies, to increase the appeal of afforestation schemes (Marey-Perez and Rodriguez-Vicente, 2009). In Ireland, the introduction of government and EU incentives for woodland creation in the 1980s contributed to an increase in afforestation rates (McCarthy *et al*., 2003). Most new forests were planted on land that had been used for agricultural purposes. Therefore, landowners are sensitive not only to financial incentives, but also to factors that determine the profitability of alternative uses. Every decision is burdened with an opportunity cost, in this case – termination of agricultural production. A study of the Spanish forest market covering period from 1993–2003 revealed that farmers who participated in afforestation schemes co-funded by subsidies earned 3% more than agricultural producers who chose not to convert their land to forests (Marey-Perez and Rodriguez-Vicente, 2009).

Since farmers have different and complex value systems, their motives for afforestation could vary significantly. In some cases, they decide to plant forests when land cannot be used for a better alternative purpose. In other cases, farmers' decisions are motivated only by economic

factors, such as the desire to maximize profit, generate satisfactory profit or obtain benefits other than economic gain (Duesberg *et al.*, 2014). The market investment risk is associated mainly with an absence of or a decrease in the demand for timber or an absence of prospective buyers interested in afforested land. The main risks associated with afforestation include fire, pests and higher than planned labor costs. On the other hand, some farmers regard afforestation schemes as an investment that will benefit future generations (heirs), whereas others plant forests for environmental reasons.

Our investigation of data from Main Statistical Office of Poland showed that the average farm size in Poland is less than 10 hectares. In fact, there is a predominance of farms with an area of 2-5 hectares (31.9%), 5-10 hectares (22.1%) and 1-2 hectares (19.4%). Grants are available for afforestation of such farmlands in Poland. Therefore, we studied dynamics in afforestation rate for the period 1995-2012, and results are presented in Figure 1.

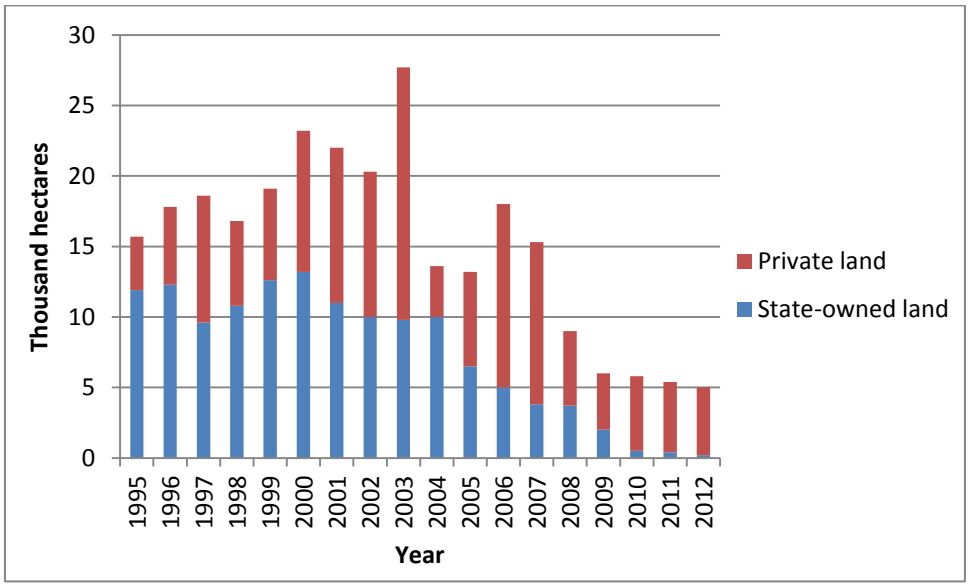

Figure 1. Afforestation dynamics in Poland for the period 1995-2012.

As it can be seen on the figure above, the sharp decline in afforestation of privately-owned land happened in 2004, because subsidies were temporarily suspended. It is also visible that in next years, the afforestation of private land was greater than that of state-owned land, however, overall afforestation rates were on the decline since 2004.

The main goal of the National Program for Afforestation is to increase Poland's forest cover to 30% by 2020 and 33% by 2050, and to guarantee the optimal spatial and temporal distribution of afforestation programs in the country. However, program costs are not fully reimbursed by central budget funds that are designated for this purpose. According to Polish law, wasteland,

farmland not suitable for agricultural production, farmland not used for agriculture and other types of land that are suitable for afforestation, including shifting sands, sand dunes, excavation spoil heaps, defunct sand, gravel, peat and clay excavation pits may be converted to forests.

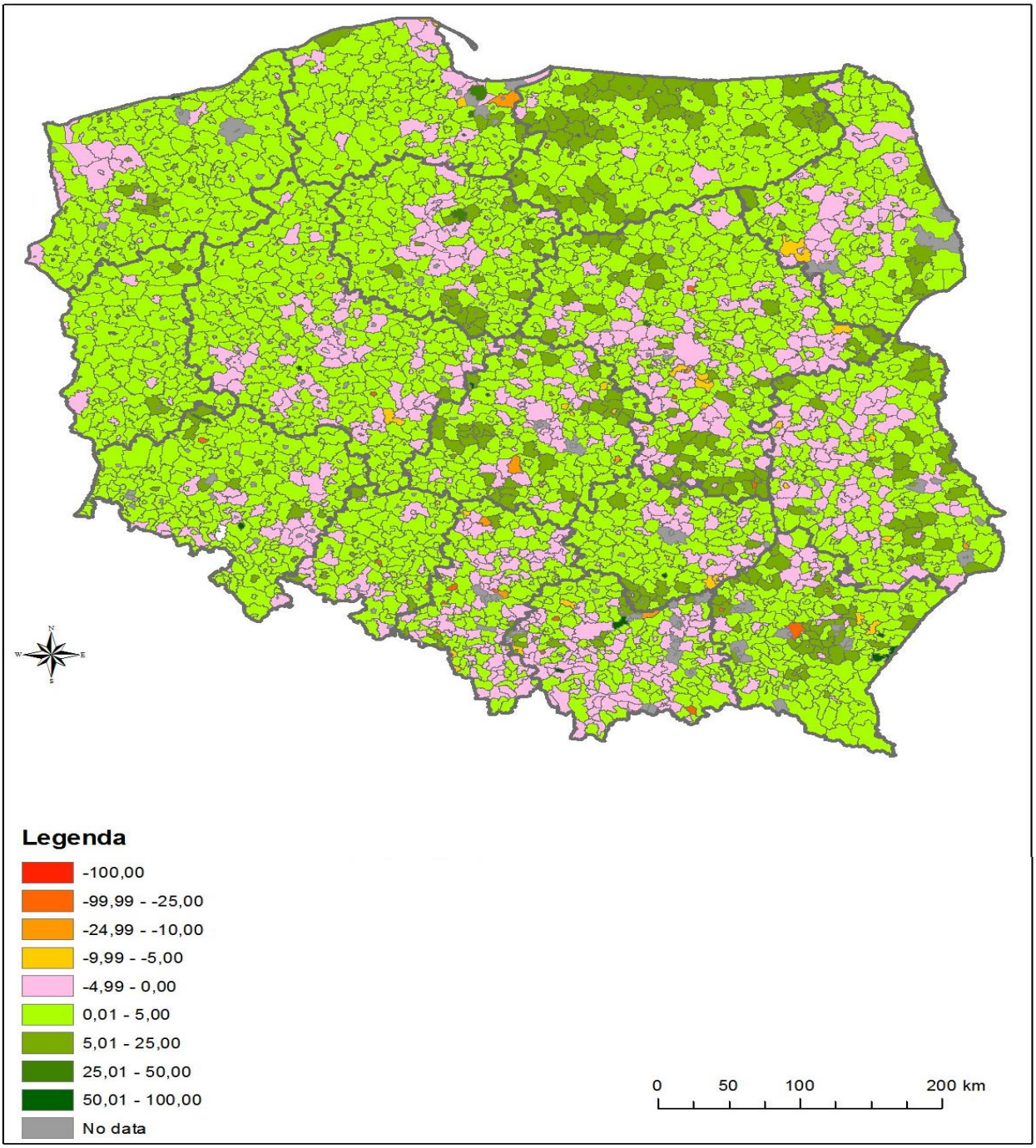

Figure 2. Change in share (%) of private forests in Poland for the period 2004-2013 (please note that for map creation currently only data for period 2004-2013 were available in GIS base).

The owners of such land are eligible to government subsidies to cover establishment costs in whole or in part, provided that the afforestation scheme complies with the local zoning plan or an outline planning permission. In practice, private landowners who decide to plant trees pursuant to the provisions of the Forest Act are entitled to free seedlings (that account for 30%–40% of afforestation costs) and information about the recommended structure of the planted forest. The above provisions of the Forest Act continue to be applied in practice.

On the Figure 2 we see slight changes in private forest owner structure. However, even if we reach further back in the past comprising periods 1995-2012 (increase of private *vs*. state-forests only 1,9%), or even older from 1981, we can conclude that the share of private forests has increased, but this increase was not large. Namely, in 1981 the share of private forests was 16.9%, whereas in 2012/13 this share amounts to 18.9%. Thus, increase of private *vs*. state-forests in last three decades was only 2,0%.

Since 2007 new set of administrative rules was introduced for granting subsidies for "Afforestation of agricultural and non-agricultural land" (Rural Development Program for 2007–2013). New rules significantly differ from previous ones, so that the landowners who plan afforestation have to take some of the following principles into consideration:

- New forest cultures planted by agricultural producers have to be nurtured for a period of 15 years, starting from the first day of receiving afforestation subsidy payment;
- Areas designated by Natura 2000 network are not envisaged for afforestation subsidy payments;
- Minimum area for afforestation is set at 0.5 ha (although there is initiative to lower this area to 0.1 ha);
- Afforestation of grasslands such as pastures and meadows is not supported by subsidy payments;
- Maximum area for afforestation is restricted to 20 ha per landowner;
- Financial support is also available for planting of non-agricultural land, including those undergoing forest succession, where trees are young (up to than 20 years).
- Planting costs - this is a single payment that covers the costs associated with planting and, optionally, fencing the forest, per hectare of afforested land. The payment is made in the first year after planting;
- Maintenance premium—this is a lump-sum payment that covers maintenance services per hectare of afforested land. The payment is made over a period of five years, counting from the date of forest planting (beginning from the second year).

Since Poland joined EU in 2004, the old way of direct payments to farmers was put out of action and then subsidies through application became available. Beside decrease in available/appropriate land for afforestation, growing costs of establishing new forests on agricultural land increased at the same time, and these are hence considered the main reasons for decreasing afforestation rates in the period 2004-2012 (also to this day costs for afforestation have not decreased).

Regardless of economic considerations, the final decision on forest establishment is made by an individual who has specific preferences, therefore, it is also influenced by non-economic factors. Our assumption was that if investors are younger than 35, then they may expect some direct benefits from afforestation; otherwise, they may plan to leave planted forests as a heritage to their children. Statistical data that were at our disposal indicated that most planting decisions in Poland were made by owners of relatively small farms (under 10 hectares), whereas 85.3% farmers are older than 35 (the EU average is 93.6%), and most farmers in this group are actually older than 40. Besides, bearing in mind the Polish Forest Law, which says that trees cannot be cut down before they reach maturity (often 90 years), indicates that most investors plan to leave the afforested land as a heritage to their children or other legal successors.

Future collaboration with host institution

This STSM definitely helped strengthen collaboration between Faculty of Forestry in Krakow and Faculty of Forestry in Banja Luka. Together with University for Sustainable Development in Eberswalde (Germany) we have initiated joint project proposal to be submitted to German Ministry of Science. There are also other partners such as University of Sopron (Hungary) and Institute for Lowland Forestry in Novi Sad (Serbia). In my personal opinion, even without financial support the collaboration between our institutions is expected to continue, especially in terms of scientific publications.

Foreseen publications/articles resulting or to result from the STSM

Results of this STSM are planned to be published in a peer-reviewed journal. Nevertheless, before final submission of the scientific paper some additional analyses may be carried out.

Confirmation by the host institution of the successful execution of the STSM

Together with this report, in the attachment I submit the Confirmation of the successful execution of Short Term Scientific Mission, signed by Prof. Jaroslaw Socha.

References

Adamczyk, W., Jodłowski, K., Socha , J. (2015) Forest Land Ownership Change in Poland. COST Action FACESMAP Country Reports, European Forest Institute Central-East and South-East European Regional Office, Vienna. p. 27

Duesberg S., Ni Dhubhain A., O'Connor D., 2014. Assessing policy tools for encouraging farm afforestation in Ireland. *Land Use Policy*, 38: 194–203.

Lette, H.; de Boo, H. Economic Valuation of Forests and Nature: A Support Tool for Effective Decision-Making; Theme Studies Series/ (Forests, Forestry and Biodiversity Support Group), Reprint; International Agricultural Centre (IAC): Wageningen, The Netherlands, 2002. p. 20.

Main Statistical Office of Poland. Agriculture in 2013; GUS: Warszawa, Poland, 2014.

Marey-Perez M.F., Rodriguez-Vicente V. 2009. Forest transition in Northern Spain: Local responses on large-scale programmes of field-afforestation. *Land Use Policy*, 26: 139–156.

McCarthy S., Matthews A., Riordan B. 2003. Economic determinants of private afforestation in the Republic of Ireland. *Land Use Policy*, 20: 51–59.

Rural Development Program for 2007–2013. The publication accessed online on 19th July, 2015. (*http://www.arimr.gov.pl/fileadmin/pliki/zdjecia_strony/204/kfl/Rozporzadzenie_2009.pdf*)

State Forests General Directorate. Report on the Condition of Polish Forests 2012; DGLP: Warszawa, Poland, p. 85.