

**dr inż. Adam Kaliszewski vel Kieliszewski**

**Forest Research Institute**

**SUMMARY OF PROFESSIONAL ACHIEVEMENTS**

Sękocin Stary 2019

1. Name: **Adam Kaliszewski vel Kieliszewski**

2. Diplomas and degrees

- June 14, 2010 **Ph.D. in Forest Sciences**  
Forest Research Institute in Sękocin Stary (IBL)  
Doctoral thesis title: „Analysis of institutional structures and economic instruments in forest nature conservation in Poland and in selected European Union countries”  
Supervisor: prof. dr hab. Stanisław Zajac
- December 14, 2001 **Master Engineer in Forestry**  
Faculty of Forestry, Warsaw University of Life Sciences (SGGW)  
Master thesis title: „Aspects of forest utilization in the Kyoto Protocol”  
Supervisor: prof. dr hab. Piotr Paschalis
- January 22, 2001 **Master in Environmental Protection**  
Inter-Faculty Studies in Environmental Protection, University of Warsaw  
Master thesis title: „Protection of forests against atmospheric pollution in Polish and the European Union law with particular focus on preservation of forest ecosystems in the area of the so-called «Black Triangle»”  
Supervisor: dr Hanna Machińska

3. Information on employment in research and scientific institutions

- 1.07.2010 – to date – Assistant Professor, Department of Forest Resources Management, Forest Research Institute
- 1.01.2010 – 30.06.2010 – Researcher, Department of Forest Resources Management, Forest Research Institute
- 1.05.2002 – 31.12.2009 – Researcher, Forest Economics and Policy Department, Forest Research Institute
- 1.09.2001 – 30.04.2002 – Process Engineer, Forest Economics and Policy Department, Forest Research Institute

#### 4. Scientific achievement forming the basis for the habilitation procedure

The scientific achievement forming the basis for the habilitation procedure under Art. 16 item 2 of the Act of March 14, 2003 on Academic Degrees and Titles as well as Degrees and Titles in Arts (Journal of Laws No. 65, item 595, as amended) consists of a series of ten original academic publications entitled:

#### **„Challenges for forest policy in Poland in light of membership in the European Union”,**

of which I am the author or co-author.

1. **Kaliszewski A.** 2018. Forest policy goals in Poland in light of the current forestry aims in Europe. Part 1. Forest policy processes in Europe. *Leśne Prace Badawcze (Forest Research Papers)*, 79 (1): 77-87.

**Pts MNiSW<sub>2016</sub>: 13**

2. **Kaliszewski A.** 2018. Forest policy goals in Poland in light of the current forestry aims in Europe Part 2. Forest policy priorities in Europe. *Leśne Prace Badawcze (Forest Research Papers)*, 79 (2): 169-179.

**Pts MNiSW<sub>2016</sub>: 13**

3. **Kaliszewski A.** 2018. Forest policy goals in Poland in light of the current forestry aims in Europe Part 3. European priorities for the forest policy in Polish programmes and strategies. *Leśne Prace Badawcze (Forest Research Papers)*, 79 (3): 211-227.

**Pts MNiSW<sub>2016</sub>: 13**

4. **Kaliszewski A.** 2018. Forest policy goals in Poland in light of the current forestry aims in Europe. Part 4. Trends in forest policy of selected European countries. *Leśne Prace Badawcze (Forest Research Papers)*, 79 (4): 345-354.

**Pts MNiSW<sub>2016</sub>: 13**

5. **Kaliszewski A.** 2018. Forest policy goals in Poland in light of the current forestry aims in Europe. Part 5. Towards a new forestry development strategy in Poland. *Leśne Prace Badawcze (Forest Research Papers)*, 79 (4): 355-364.

**Pts MNiSW<sub>2016</sub>: 13**

6. **Kaliszewski A., Gil W.** 2017. Goals and priorities of the 'National Forest Policy' in the light of the Forest Europe (formerly MCPFE) commitments. *Sylvan*, 161 (8): 648-658.

**IF<sub>2017</sub>: 0.623 / Pts MNiSW<sub>2016</sub>: 15**

7. **Kaliszewski A.** 2012. Problems implementing the „National Program for Expanding of Forest Cover” following Poland’s accession to the European Union. *Leśne Prace Badawcze (Forest Research Papers)*, 73 (3): 189-200.

**Pts MNiSW<sub>2010</sub>: 9**

8. **Kaliszewski A.**, Młynarski W., Gołos P. 2016. Factors limiting afforestation of post-agricultural lands in Poland according to the survey results. *Sylvan*, 160 (10): 846-854.

**IF<sub>2016</sub>: 0.481 / Pts MNiSW<sub>2016</sub>: 15**

9. **Kaliszewski A.**, Młynarski W., Gołos P. 2016. Prospects for agricultural lands afforestation in Poland until 2020. *Folia Forestalia Polonica, Series A – Forestry*, 58 (3): 163-169.

**Pts MNiSW<sub>2016</sub>: 14**

10. Wysocka-Fijorek E., **Kaliszewski A.** 2017. Causes and directions of reclassification of non-forest lands into forest lands according to the survey results. *Sylvan*, 161 (6): 460-466.

**IF<sub>2017</sub>: 0.623 / Pts MNiSW<sub>2016</sub>: 15**

**Total: IF: 1.727 / Pts MNiSW: 133**

The outcomes presented in the abovementioned papers result from three research projects I managed and performed, in particular:

- “New developments of the national forest policy in the context of changing conditions for forest management in Europe” (2012-2016),
- “Revision of the ‘National Programme for Expanding of Forest Cover’ 2014” (2014),
- “Revision of the ‘National Programme for Expanding of Forest Cover’ 2009” (2009).

## Description of research objectives of works submitted for the habilitation procedure and the achieved results

### Introduction

Forest policy in its traditional formal and legal approach is state action affecting forest management and it is a part of general economic policy<sup>1</sup>. It may be considered as a “purposive course of action or inaction followed by an individual or group in dealing with a matter of concern regarding the use of forest resources (...) usually to achieve some stated or implicit objective”<sup>2</sup>. Thus, the state forest policy can be considered as a complex of state actions regarding development, protection and access to forest resources.

The EU has not set out a separate, autonomous and common forest policy. The absence of any treaty as the basis for pursuing the common forest policy means that by reason of the principle of subsidiarity, forestry matters are under the competence of the Member States. However, numerous actions directly and indirectly influencing forests and the forest sector in all the Member States are taken within the framework of individual EU sectoral policies (including environment, biodiversity conservation, climate, energy, agriculture, industry and trade).

Wide competences of the EU Member States relating to shaping their own forest policies provide them with a great flexibility in defining specific goals and objectives for forestry as well as ways to achieve them. However, national forest policies are increasingly subject to “internationalization”, mainly due to growing global problems that require to search for comprehensive solutions at worldwide or regional levels<sup>3</sup>. The impact of other sectoral policies on the forest sector is also intensified<sup>4</sup>. In this situation, state authorities are particularly responsible for active shaping of national forest policies and periodically adapting them to new conditions.

The objectives and priorities of forest policy in Poland have been defined by the “National Forest Policy”<sup>5</sup>, adopted by the Council of Ministers on 22 April 1997. The past two decades have been a period of profound political, social and economic changes in Europe. The main factor in socio-economic and cultural changes in Poland was its accession to the European Union in 2004, and thus the adoption of the Community acquis and successive involvement in the process of shaping policy and establishing the Community law.

The papers submitted as the habilitation achievement focus on the issues of formulation, implementation, revision and updating of forest policy objectives in Poland. They refer to two separate but strongly related issues. The first group consists of 6 articles, including a series of five articles published in “Leśne Prace Badawcze” (“Forest Research Papers”) under the common title **“Forest policy goals in Poland in light of the current forestry aims**

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<sup>1</sup> Studniarski S. 1937. Podstawy i zadania polityki leśnej. Jan Jachowski Księgarnia Uniwersytecka, Poznań.

Grayson A. J. 1993. Private forestry policy in western Europe. CAB International, Wallingford.

<sup>2</sup> Cabbage F.W., O’Laughlin J., Bullock C.S. III 1993. Forest resource policy. J. Wiley, New York.

<sup>3</sup> Hyde W. F. 2012. The Global Economics of Forestry. Routledge, Resources for the Future, New York.

<sup>4</sup> Pülzl H., Hogl K. 2013. Forest Governance in Europe, w: Pülzl H., Hogl K., Kleinschmit D., Wydra D., Arts B., Mayer P., Palahi M., Winkel G., Wolfslehner B. (eds.). European Forest Governance: Issues at Stake and the Way Forward. What Science Can Tell Us 2, EFI, Joensuu. s. 11–17.

<sup>5</sup> Polityka leśna państwa. Dokument przyjęty przez Radę Ministrów w dniu 22 kwietnia 1997 r. Ministerstwo Ochrony Środowiska, Zasobów Naturalnych i Leśnictwa, Warszawa.

**in Europe**". The aim of the series is to indicate directions of changes in the "National Forest Policy" based on the analysis of the processes shaping forest policy in Europe, including policy trends observed in several European countries. The first two papers in this series describe the most important processes shaping forest policy in Europe, in particular the Forest Europe process, as well as pertinent activities relating to the EU sectoral policies that have direct or indirect impact on forests and forestry. They also analyze the most important forest policy priorities formulated between 1998 and 2016. The next paper (part 3) presents the results of the analysis of the Polish program and strategic documents directly or indirectly related to forests and forestry, as well as national and transregional development strategies in view of European priorities. Analogous research was carried out with reference to the content of the main forest policy documents of selected European countries: Austria, the Czech Republic, Slovakia, Germany (federal level) and Brandenburg (land level) and Finland, and their results were included in the fourth paper of the series. In the fifth part, the contents of documents elaborated during the works on the National Forest Programme in Poland were studied. The series of five articles is completed by the paper "**Goals and priorities of the 'National Forest Policy' in the light of the Forest Europe (formerly MCPFE) commitments**", published in "Sylvan". It discusses the above issues from the point of view of obligations arising from Poland's participation in the Ministerial Conference on the Protection of Forests in Europe (MCPFE), currently operating as the Forest Europe.

The second group consists of 4 works focused on the issue of increasing forest cover in Poland after joining the European Union. Increasing of forest cover to 30% in 2020 and to 33% in 2050 is one of the main goals of the "National Forest Policy". Afforestation in Poland is performed under the "National Programme for Expanding of Forest Cover" (KPZL), approved by the Council of Ministers in 1995. A gradual increase in annually afforested area, progressing since the beginning of the 1990s, reached its maximum (26.5 thousand ha) in 2003. Since 2004 a significant decrease in afforestation rate has been observed, which is related to the Poland's accession to the EU and the ongoing socio-economic changes in rural areas. It also reflects weaknesses of forest policy instruments and difficulties in achieving the most important policy goals in confrontation with strong and actively implemented agricultural policy.

The paper „**Problems implementing the „National Program for Expanding of Forest Cover” following Poland's accession to the European Union**” presents KPZL implementation during the period 2001-2010, analyses legal and financial instruments stimulating the program performance, as well as presents the results of a survey on the major barriers to the Program's execution following Poland's accession to the EU in 2004. The study was carried out for the purpose of the KPZL revision in 2009. The paper „**Factors limiting afforestation of post-agricultural lands in Poland according to the survey results**” analyses the results of extended surveys on factors limiting afforestation on post-agricultural lands, made in connection of the KPZL revision in 2014. The article „**Prospects for agricultural lands afforestation in Poland until 2020**” presents a projection of the Program performance in the period 2015-2020 taking into account the social and economic conditions in rural areas over the past decade and the factors limiting the implementation of the KPZL. The last paper on „**Causes and directions of reclassification of non-forest lands into forest lands according to the survey results**” analyses major causes

of reclassification of non-forest lands into forest lands and the origin of forests on those lands based on based on a mail questionnaire survey outcomes. The issue is strongly related to the need to obtain compliance of land registries with the real situation in the field so as the actual forest cover of the country could be reported.

### **A detailed description of study results included in individual publications**

1. **Kaliszewski A.** 2018. Forest policy goals in Poland in light of the current forestry aims in Europe Part 1. Forest policy processes in Europe. *Leśne Prace Badawcze (Forest Research Papers)*, 79 (1): 77-87.

The paper describes the most important processes of forest policy formulation in Europe, in particular the Ministerial Conference on the Protection of Forests in Europe (Forest Europe process) as well as forest-focused and forest-related policies of the European Union. Desk research, i.e. the analysis involving the collation and synthesis of existing available data from various sources. The course of proceedings included the identification of applicable documents (agreements, legal acts, policies, strategies) adopted under the Forest Europe and by the EU (directly or indirectly connected to forests and forestry), and then their analysis in terms of priorities specified for forestry. The research covered the period from 1997 up to 2016 (inclusive).

The study results showed the following:

- The absence of a treaty as the basis for the implementation of a common forest policy by the European Union means that the issues related to forests and forestry remain primarily within the competence of the Member States.
  - Forest sector regulations are adopted within the framework of individual EU sectoral policies concerning in general the issues related with agriculture, environment, biodiversity, climate, energy, industry and trade.
  - This situation leads to the dominance of forestry by other sectors, each of which has its own policy and various accompanying instruments. In this context, a considerable problem is the lack of coordination and coherence of actions within individual EU's policy areas as well not sufficient collaboration between the Member States' and the EU's institutions.
  - Incorporation of the forest sector in the implementation of various sectoral policies obliges the EU Member States to revise national legislation and to update strategic and policy documents with regard to forest policy, so that they are consistent with the objectives and actions taken in the EU.
2. **Kaliszewski A.** 2018. Forest policy goals in Poland in light of the current forestry aims in Europe Part 2. Forest policy priorities in Europe. *Leśne Prace Badawcze (Forest Research Papers)*, 79 (2): 169-179.

The paper evaluates the priorities set for policy-making in forestry formulated under the Forest Europe process and in programmes, policies, strategies and legal acts of the European Union after 1997. The European forest policy priorities were identified based on 15 most

important documents of the Forest Europe process (content analysis). The analysis covers the period from the Lisbon conference (1998) till the Madrid conference (2015).

Identification of several dozens of detailed goals of forest policy formulated and developed within the last two decades was a result of the analysis of content of the Forest Europe documents. Those goals were then structured and formulated as 15 priorities of forestry on the European level. The next step was to analyse the presence of the defined European forest policy priorities in EU programmes, strategic documents (policies, strategies, action plans) and legislation (regulations, directives, decisions) adopted from 1998 to 2016. It covered over 30 documents directly and indirectly connected to forests and forest management.

The study results showed the following:

- Within the last twenty years, an intensive development of forest policy on European level took place (the Forest Europe process, the EU policies). Adopted priorities cover three major aspects of sustainable forest management (ecological, economic and social); however, the main focus has been put on economic and social aspects of forestry.
- Forestry goals formulated during the Forest Europe process find its reflection in strategic documents and legal acts of the European Union. Both processes – the EU and Pan-European – influence strongly on each other and complement each other.
- The key issues defined in the numerous documents of the Forest Europe and the European Union concern: the increasing role of forests in mitigating climate change, including production and wide use of wood, forest adaptation to climate change, conservation and protection of biodiversity in forests, increasing the role of forestry in development of rural areas and developing coordination and trans-sectoral cooperation of forestry.
- In almost all of the analysed documents of the Forest Europe process and in numerous documents of the EU the need for further development of forest research was indicated.

3. **Kaliszewski A.** 2018. Forest policy goals in Poland in light of the current forestry aims in Europe Part 3. European priorities for the forest policy in Polish programmes and strategies. *Leśne Prace Badawcze (Forest Research Papers)*, 79 (3): 211-227.

The aim of the paper is to review and evaluate Polish programmes and strategies directly and indirectly related to forests and forestry, as well as national and transregional development strategies in view of European priorities formulated within the last two decades. A starting point of the analysis are the priorities of the European forest policy identified in the second paper of the series. This work covers 29 strategies, policies and programmes representing various forest-related policy areas, including environmental and biodiversity protection, agriculture and rural development, climate and energy, special planning, as well as development strategies adopted in the period 1997-2017.

The study shows that many of the priorities of the European forest policy have not been reflected in the “National Forest Policy”. These include, among others, adapting forests to climate change and enhancing their mitigation potential, substitution of non-renewable

materials and products with wood, promoting use of wood as an energy source, supporting innovations in forestry, differentiating of sources of income in forestry and valuing forest and forest services. The document deals in very general terms with enhancing the economic contribution of forestry to rural development, securing the participation of all stakeholders in forest-related decision-making processes, improving communication in forestry and developing cross-sectoral cooperation.

However, many of these forest-related issues have already been included in numerous strategic documents of other policy areas. The content analysis of the national and transregional development strategies shows that the issue of forests and forestry is barely mentioned in any of them.

The study results showed the following:

- Numerous identified priorities of forest policy adopted on the European level since 1998 do not find their equivalents in the Polish “National Forest Policy”. However, many of them were expressed directly or indirectly in numerous strategic and programme documents of forestry-related sectors.
- Forest and forest management issues are completely omitted or brought up occasionally in almost all of the national and transregional development strategies that were developed within last 20 years. It leads to a conclusion, that forest resources, covering 30% of the country area, are not actually considered to be a factor of socio-economic development of the country.
- It should be assumed that lack of revision and update of the “National Forest Policy” and formulation of important goals of forestry in programme documents of other economy sectors may cause inconsistencies and contradictions in adopted goals and priorities in the field of forest resources management.
- Lack of revision and updating of the “Forest National Policy” and the avoidance of issues concerning forests and forestry in the development strategies may lead to gradual marginalization of the forest sector in social and political space.

4. **Kaliszewski A.** 2018. Forest policy goals in Poland in light of the current forestry aims in Europe. Part 4. Trends in forest policy of selected European countries. *Leśne Prace Badawcze (Forest Research Papers)*, 79 (4): 345-354.

The aim of this paper was to review and analyse the main forest policy documents in terms of the priorities formulated at the European level for Austria, the Czech Republic, Slovakia, Germany (federal level) and Brandenburg (federal state level), as well as Finland. In the research content analysis was done (same as in the second and the third part of the series), concentrated on policy goals and tasks formulated in the documents and their relation to the European forest policy priorities. A total of 14 documents was covered in this research.

The study results showed the following:

- In all of the studied countries, forest policy documents were periodically revised and updated. As a result, at some point during the examined 20-year period, in each country the forestry priorities and goals were defined by a national forest programme.

- In the studied countries current forestry programmes and strategies reflect the European forest policy priorities, adapted to the local natural, economic and social conditions.
- The priorities that have not been included in or have been included only in a few forest policy documents of the studied countries include combating illegal harvesting of forest products and related trade and ensuring the contribution of the forest sector to a green economy. The first one is a corner stone of the EU FLEGT Action Plan and extends beyond forest policy issues of EU member states, while the second one concerns the new concept of green economy still requiring a transfer to national policies.
- In the studied countries the priorities of European forest policy have been included in single policy programmes or strategies, which define aims and goals, as well as means of their implementation in a comprehensive and coherent manner. This promotes strengthening the position of the forest sector within the national socio-economic system and supports active shaping of its relations to other sectors of the economy.

5. **Kaliszewski A.** 2018. Forest policy goals in Poland in light of the current forestry aims in Europe. Part 5. Towards a new forestry development strategy in Poland. *Leśne Prace Badawcze (Forest Research Papers)*, 79 (4): 355-364.

The analysis of implementation of the “National Forest Policy” (PLP), carried out three years after its adoption by the Council of Ministers, showed that numerous objectives and tasks were not sufficiently implemented or were not implemented at all. PLP corresponded only to a limited degree with priorities defined by the “Forestry Strategy for the European Union” (1998), mainly in the area of wood promotion, integration with sectoral policies, rural development, strengthening research and the use of criteria and indicators for SFM. On the initiative of the Minister of the Environment, in the period 2000-2005 works aimed at formulating and implementing the National Forest Programme (NPL) were undertaken. They resulted in development of Regional Operational Programmes of the National Forest Policy (RPOPLP) and of a draft of the NFP, which was ultimately not approved as an official document. The works were initiated again in 2012 and resulted in drafting numerous recommendations to the NFP. However, to date, the NFP itself has not been formulated and adopted.

The aim of this paper was to review and evaluate Regional Operational Programmes of the National Forest Policy (RPOPLPs), the draft of the NFP (2005) as well as recommendations to the NFP (2012-2016) in terms of their compliance and consistency with the European forest policy priorities. The content analysis was based on the European forest policy priorities identified and described in the second paper of this series.

The research showed that almost all of the European priorities not included in PLP have been reflected in both the RPOPLPs and in the draft of NFP of 2005 as well as in the recommendations to the NFP developed in 2012-2016. The draft of the NFP (2005) and RPOPLPs did not meet the requirements set for NFP in the international documents, mainly due to the lack of its strategic approach and vision of forest development, as well as

the absence of social consultations during the development of the draft. However, a wide participation of various stakeholders was ensured during the works on NFP carried out in 2012-2016.

In all the studied policy documents high priority was given to the issues of adapting forests to climate change and enhancing their role in mitigating these changes, substituting non-renewable materials and products with wood and using wood as an energy source. The RPOPLPs and the draft of the NFP of 2005 put a very strong emphasis on enhancing a role of forestry in rural development, mainly by afforestation of post-agricultural lands. At that time, afforestation was one of the objectives of the “National Forest Policy”, it was going along with the priorities set by the “Forestry Strategy for the European Union” and supported management of vast areas of public farmlands that had not been cultivated since the early 1990s. The recommendations to the NFP (2012-2016) put emphasis on the need to revise the KPZL so that it would take into account climate change issues, but also the need to intensify wood production, shape ecological corridors and reduce fragmentation of forests.

The results of the studies presented in the whole series of papers lead to the conclusion that due to the absence of up-to-date forest policy document, adjusted to the current challenges of the forestry sector, it is recommended to develop a new vision for the forestry development Poland in the coming years. The program, regardless of its final formula, must be comprehensive, integrated with national development strategies and sectoral policies, developed with the participation of all stakeholders. It also must be given real financial, legal, institutional and political support.

6. **Kaliszewski A., Gil W.** 2017. Goals and priorities of the “National Forest Policy” in the light of the Forest Europe (formerly MCPFE) commitments. *Sylvan*, 161 (8): 648-658.

The aim of the paper is to analyse directions of forest policy development under the Forest Europe after 1997 and to indicate needs to update the Polish “National Forest Policy” (PLP) in this context. The study focuses on goals and priorities of the MCPFE defined in resolutions and decisions adopted on conferences held from 1998 (Lisbon) to 2015 (Madrid). Overall 15 main directions on forest policy development were identified. They were then compared with the priorities defined in the PLP to identify issues to be verified, updated or completed in the context of the European forest policy change.

The study results showed the following:

- Over the past two decades strong development of forest-focused and forest-related policies took place. The Forest Europe (MCPFE) is the most important policy process in this field at the European level.
- Most of the priorities of European forest policy after 1998 has not been reflected in the „National Forest Policy”. Many of the forest-related issues have been, however, included directly or indirectly in numerous strategic documents of other sectors connected with forestry.
- It can be assumed that the lack of any revision and an update of the “National Forest Policy” and formulation of important forest-related goals in strategic documents of other sectors may influence the ongoing marginalization of the forestry sector in socio-economic and political space.

- It seems necessary to develop and implement the National Forest Programme (according to recommendation of the UNCED of 1992), enabling the ongoing adjustment of forest policy to changing environmental, social, economic, institutional and legal conditions.

7. **Kaliszewski A.** 2012. Problems implementing the „National Program for Expanding of Forest Cover” following Poland’s accession to the European Union. *Leśne Prace Badawcze (Forest Research Papers)*, 73 (3): 189-200.

Increasing of forest cover is one of the most important goals of forest policy in Poland. Afforestation in Poland is formally performed under the „National Programme for Expanding of Forest Cover” (KPZL), approved by the Council of Ministers in 1995. The paper presents the status of the KPZL and its implementation during the period 2001-2010, along with the results of a survey on the major barriers to the Programme’s execution following Poland’s accession to the European Union in 2004. The study was carried out for the purpose of the revision of the KPZL in 2009.

The major barriers to the KPZL implementation were studied by the questionnaire survey carried out in 140 randomly-selected local public authorities (powiaty) all over the country. The study showed that from the beginning of the 1990s, the area of agricultural lands afforested annually was successively increasing, until it reached its peak in 2003 (26.5 thousand ha). Since 2004, however, the annual rate of afforestation rapidly decreased. The spatial distribution of afforestation has been very diversified and uneven. There have been too few new forests established in areas of the acute afforestation needs, i.e. in central and southern parts of the country. The most important obstacles for implementation of the Programme stem from: high competitiveness of direct payments for agricultural production compared to the afforestation premium, complicated procedures for granting financial support, the enlargement of minimal plot areas supported by the afforestation premium, exclusion of permanent grasslands from afforestation, a lack of financial support for afforestation of lands within Natura 2000, a lack of up-to-date local spatial management plans and a lack of trainings and promotion of afforestation among farmers.

The study results showed the following:

- The current rate of afforestation is insufficient to reach the target defined in the KPZL (30% of the country’s land-area covered by forests by 2020).
- The breakdown in program implementation seems to be an unexpected outcome of Poland’s accession to the EU resulting from the ongoing economic and social transformation of rural areas.
- The main factors influencing its lack of uptake appear to be long-term, thus it is rather unlikely that the unfavourable trends in the rate of afforestation may become reversed in the coming years.
- Spatial diversification of the Programme implementation is very large. In general, it is far insufficient in the areas of acute afforestation needs.
- It is recommended to simplify the procedures for granting financial support for afforestation and to eliminate numerous procedural and institutional barriers impeding implementation of the Programme.

- It is recommended to launch a wide training program for farmers in afforestation as well as in applying for financial support.

8. **Kaliszewski A.**, Młynarski W., Gołos P. 2016. Factors limiting afforestation of post-agricultural lands in Poland according to the survey results. *Sylvan*, 160 (10): 846-854.

The aim of the paper is to present the status of the implementation of the “National Programme for Expanding of Forest Cover” (KPZL) in the period 1995-2013, and to analyse the results of the survey on the major factors limiting the Programme's execution after Poland entered the European Union in 2004. The study was carried out for the purpose of the revision of the KPZL in 2014.

The barriers to the KPZL implementation were studied by the mail survey carried out in all local public authorities (powiaty) all over the country (altogether 314 rural and 66 municipal counties) with the use of 5-point Likert scale in each question. The main survey was preceded by a pilot survey conducted among 7 representatives of local authorities and the State Forests, who had been involved in the issues of afforestation. Their remarks were included in the questionnaire used in the main survey.

The results confirmed the main trends observed since 2004 and the presence of the main factors limiting afforestation on post-agricultural land. The breakdown of the KPZL implementation is of a lasting nature and it primarily results from dynamic socio-economic changes in rural areas after Poland's accession to the EU.

The study results showed the following:

- The current rate of afforestation is insufficient to reach the target defined in the KPZL (afforestation of 680 thousand hectares of lands in the period 2001-2020).
- The breakdown in the Programme has been observed since 2004 and it results from the Poland's accession to the UE and the connected social and economic changes in rural areas.
- The main factors limiting implementation of the KPZL are of a lasting nature and it is rather unlikely that the negative trends in the rate of afforestation may become reversed in the years to come.
- Spatial diversification of the Programme implementation is very large and, in general, it is far insufficient in the areas of the greatest afforestation needs.
- It is recommended to further simplify procedures for granting financial support and to remove procedural and institutional barriers that enable programme's implementation. It is also advised to launch wide training programs for farmers focused on afforestation as well as tending and protecting young tree stands.

9. **Kaliszewski A.**, Młynarski W., Gołos P. 2016. Prospects for agricultural lands afforestation in Poland until 2020. *Folia Forestalia Polonica, Series A – Forestry*, 58 (3): 163-169.

The aim of the paper is to present the potential for implementation of the “National Programme for Expanding of Forest Cover” (KPZL) in Poland in the period 2015-2020. The analysis is based on the ongoing social and economic changes in rural areas in the past decade as well as factors limiting implementation of the Programme. The results show that

in the discussed period the overall extent of afforestation on state-owned lands will not exceed 4,500–4,600 ha. In case of private lands, some 15,000 ha of agricultural lands will be afforested. In the whole period 2001-2020 the rate of KPZL implementation will reach some 27%.

The study results showed the following:

- According to the observed dynamics of afforestation, it may be assumed that it will not be possible to reach a goal formulated in the KPZL to afforest 680,000 ha of agricultural lands in the period of 2001-2020.
- Currently, the most important limiting factors are shortage of lands of state-owned property suitable for afforestation as well as insufficient financial resources available for afforestation and related compensations in private lands.
- It is recommended to restore the opportunity to transfer lands designated for afforestation free of charge from the ANR to the State Forests.
- In view of the limited resources allocated to the measure of “Afforestation and creation of woodland” under the RDP 2014-2020, it seems reasonable to consider the possibility of launching domestic aid for this purpose from the Forest Fund.

10. Wysocka-Fijorek E., **Kaliszewski A.**, 2017. Causes and directions of reclassification of non-forest lands into forest lands according to the survey results. *Sylvan*, 161 (6): 460-466.

More than half of the official increase in the area of forest lands in 2009-2013 was caused by activities other than afforestation, including activities related to the updating of land and building register, that enable to reveal afforestation carried out even several dozen years earlier<sup>6</sup>. Discrepancies between the land register and the actual state result to a large extent from the unsatisfactory updating of the land registry. The aim of the paper is to define the major causes of reclassification of non-forest lands into forest lands and to determine the origin of forests on those lands.

Information on the area of artificial afforestation and natural regeneration and the area of lands reclassified into forest lands over the period 2009-2013 was delivered by a mail questionnaire survey carried out in 2014 in all local public authorities all over the country (powiaty; altogether 314 rural and 66 municipal counties). The results showed general trends and changes in terms of land reclassification. The decreasing area of lands reclassified into forest lands as a result of afforestation reflected a general trend in afforestation of post-agricultural lands. At the same time, the share of lands reclassified as a result of developing forest management plans for non-state owned forests is increasing.

The study results showed the following:

- The key factor of land reclassification over the discussed period were works related to forest management planning in non-state owned forests.
- Afforestation carried out within the Rural Development Programme, co-financed from EU funding, was also an important factor of land reclassification. In this case

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<sup>6</sup> Jabłoński M. 2015. Powierzchnia gruntów leśnych – przyczyny zmian i spójność źródeł danych. *Wiadomości Statystyczne* 40 (11): 54–68.

reclassification by the local authority is obligatory no later than in the fifth year after a new forest was planted.

- Forests regenerated as a result of natural succession on agricultural lands are an issue of concern. Due to a lack of legal regulations forest owners are not obliged to register afforested areas as forests and – as a result – to reclassify the land to forest one.
- It is recommended to seek to cover all non-state owned forests with forest management plans and to obtain the compliance of land registries with the real situation in the field.

### **Practical importance of the results**

The main task of research in forest policy is to update and extend empirical knowledge about the way the political system works in forestry, which aims at solving or mitigating conflicts of various interest groups in relation to forest resources<sup>7</sup>. The subject of forest policy research is the formulation, implementation and evaluation of the policy, starting from defining its objectives, through the stage of defining ways for achieving these objectives, to analysis and evaluation of the implemented activities based on selected criteria<sup>8</sup>. Each of the stages of this process may, however, be a separate subject for research using specific scientific approaches from different disciplines<sup>9</sup>.

Studies in forest policy are relatively rarely undertaken in Poland. The works presented above focus mainly on issues related to the revision and updating of forest policy objectives as well as the analysis and evaluation of fulfilment of selected policy objectives. The area of research and the nature of the studies make that the obtained results may have a significant practical significance, as it is summarily discussed below.

- The presented papers provide the first comprehensive analysis of the “National Forest Policy” in terms of reflecting the priorities of European forest policy. The research results have revealed far-reaching inadequacy of the national policy objectives concerning management and protection of forest resources to these priorities.
- Due to the absence of common forest policy in the UE the forestry sector has been subordinated to objectives set in different policy areas. This dependence is clearly apparent also at the national level, as exemplified by difficulties in achieving significant forest policy goals (increase in forest cover) in case of confrontation with the strong and actively implemented agricultural policy.
- The EU Member States have considerable autonomy in shaping their own forest policy. The ongoing environmental, social and economic changes as well as rapid development in other policy areas that affect the forestry sector support the necessity to undertake a revision of forest policy in Poland and to set directions for forestry development in the medium- and long-term.

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<sup>7</sup> Glück P. 1995. Alternatives for a common research design. W: Forest Policy Analysis – methodological and empirical aspects. EFI Proceedings No. 2, Joensuu, Finland.

<sup>8</sup> Fraser A. I. 2002. Making Forest Policy Work. Kluwer Academic Publishers, Dordrecht

<sup>9</sup> Weimer D. L., Vining A. R. 2011. Policy Analysis. Pearson, Boston.

- The key role of forests in ensuring ecological safety and living conditions and their importance for the socio-economic development of the country emphasize the need to integrate objectives and instruments of forest policy with other sectoral policies as well as national and transregional development strategies.
- The national forest programme is a proven instrument for integrating forest policy with national development strategies and sectoral policies. It is recommended to resume works aimed at formulating the programme or developing a forestry strategy for Poland. This instrument should get real financial, legal, institutional and political support.
- Objectives of climate and energy, spatial, ecological and rural development policies emphasize the need to revise and update the afforestation programme and to keep supporting activities aimed at increasing the forest cover in Poland. Verification of the current assumptions and objectives of the “National Programme for Expanding of Forest Cover”, its updating and developing new implementation instruments needs, first and foremost, to be based on up-to-date information on area of forests in Poland and their spatial distribution. Therefore, it is recommended to enhance efforts to update land registers and to obtain their compliance with the real situation in the field.

## 5. Overview of other scientific and research achievements

My research interests in forest policy go back to my higher studies. In 1995, I begun studying at the Inter-Faculty Studies in Environmental Protection at the University of Warsaw. In 1997, I took up parallel full-time studies at the Faculty of Forestry at the Warsaw University of Life Sciences (SGGW). In 2000, I completed my study course at the University of Warsaw and wrote – under the supervision of dr Hanna Machińska (Faculty of Law and Administration, University of Warsaw) – my master’s thesis entitled „Protection of forests against atmospheric pollution in Polish and the European Union law with particular focus on preservation of forest ecosystems in the area of the so-called «Black Triangle»”, which I defended in January 2001. In the same year, I graduated from the Faculty of Forestry at SGGW. In December 2001, I defended my master's thesis entitled „Aspects of forest utilization in the Kyoto Protocol”, which I wrote under the supervision of prof. dr hab. Piotr Paschalis. I graduated from both study courses with a very good grade (the highest score).

In September 2001, I started working at the Forest Research Institute, in the Forest Economics and Policy Department, later transformed into the Department of Forest Resources Management. My research included forest economics and policy issues. So far, I was involved in 1 international and 34 national research projects, 8 of which as a project manager **(II.I)**<sup>10</sup>. The results of the completed projects have been presented in research reports **(II.E)**.

My research and scientific work resulted in publishing 45 research and review papers, including 37 papers in scientific journals (11 of which indexed by Thomson Reuters<sup>TM</sup>),

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<sup>10</sup> Numeration in parenthesis refer to the division adopted in the „Specification of published research papers and information on didactic achievements, scientific cooperation and promoting scientific knowledge” (Annex 6).

1 research monograph and 7 chapters in research monographs. Moreover, I was a scientific editor in 1 monograph (**I.B**, **II.A**, **II.D**). I also presented results of my research during 6 international and 8 national conferences and scientific seminars, 3 of which as posters (**II.K**).

An important area of my research activity is international cooperation. In 2003, I completed a nearly three-month scientific internship (as a visiting researcher) at the European Forest Institute in Joensuu (Finland) as part of the research project “Evaluating Financing of Forestry in Europe” (EFFE) (**III.L**). In addition, I participated in 4 consortia and research networks (2 COST Actions, 1 ERA-NET project and 1 EFI Network Fund project) (**III.E**). I also performed scientific supervision on 6 students and trainees from foreign research and academic institutions (**III.J**).

Since 2018, I have been an auxiliary supervisor in one doctoral dissertation and a tutor of one PhD student (**III.K**).

I was a reviewer of 1 research project application (**III.O**) and 16 research papers, including 3 for international scientific journals (**III.P**).

Since 2010 I’ve been a section editor (forest economics and forest management planning) in the “Leśne Prace Badawcze” (“Forest Research Papers”) journal (**III.G**).

In the period 2008-2012 I was a member of the Scientific Council at the Forest Research Institute (**III.Q**).

In the period 2014-2015, I cooperated as an expert with the Centre for Forestry and Nature Conservation Statistics in the Statistical Office in Białystok. I was responsible for development of the methodology for forestry satellite accounts. In the period 2005-2006 I was a member of the UNECE/FAO Team of Specialists on Support and Contribution to Sustainable Development of the Forest Sector in Central and Eastern Europe and the CIS, and since 2017 I have been a substitute of the National Correspondent for Global Forest Resources Assessment – FRA 2020. In addition, I participated 3 times in international expert meetings on forest policy as an expert of the Ministry of the Environment (**III.N**, **III.Q**). I am also an author or co-author of 13 expert opinions for several institutions, including the Ministry of the Environment, the Ministry of Agriculture and Rural Development and the Centre for Forestry and Nature Conservation Statistics in Białystok (**III.M**).

My scientific work at IBL was accompanied by organizational, didactic and popularizing activities. I was a member of organizational committees of 3 international and 6 national scientific conferences (**III.C**). In the period 2002-2003 I lectured on “Environmental Management” for students of “Nature conservation and landscape management” at the Warsaw University of Life Sciences. I also lectured occasionally at the Forestry Research Institute, the Polish Centre for Accreditation and the Mokotów University of the Third Age (**III.I**). I also published about 50 popular articles and short communications (**III.Q**).

My scientific and organizational activity has been awarded five times by the Director of the Forest Research Institute (**II.J**).

My research at the Forest Research Institute has been focused on three main thematic areas:

1. Forest policy goals and instruments,

2. Prospects for development and use of wood resources as renewable raw material and source of energy,
3. Forest resources management and analysis of forest management efficiency.

## 1. Forest policy goals and instruments

I have been involved in projects concerning forest policy objectives and instruments analysis since the beginning of my work at the Forest Research Institute. I conducted research in this field within one international (EFFE) and 14 national research projects (Annex 6, part II.I, List of scientific achievements, part II.I, No.: 1, 2, 8, 9, 11, 12, 18, 19, 20, 21, 24, 25, 31, 32). My publications in this area focus mostly on the analysis of economic instruments of sustainable forest management, primarily related to provision of non-wood forest services, and publications on legal aspects of forest conservation. An important issue I was dealing with were comparative analyses of policy instruments in various European countries. A part of the papers characterized below results from research conducted by me while working on my PhD dissertation.

### Forest policy economic instruments

- **Kaliszewski A.** 2004. Financing of forestry from public funds in the Czech Republic, Estonia, Poland and Slovenia – policy context, organisation and supported activities. *Journal of Forest Science*, 50 (4): 181-189.

The paper describes the policy, legislative and organisational context and structure of financing sustainable forest management from public funds in the Czech Republic, Estonia, Poland and Slovenia in the 1990's. The study has shown that in all the discussed countries except Slovenia financing was unstable and differed significantly year-to-year. Subsidies were the most important instruments of support. In Poland, however, tax exemptions and concessions were significantly higher than the value of financial means allocated from the public funds. Relatively the highest support was granted to forestry in the Czech Republic, while the lowest in Estonia.

- **Sisak L., Kaliszewski A.** 2013. Economic instruments for promoting the multifunctional forest management in the Czech Republic and Poland. *Sylvan*, 157 (9): 703-711.

The paper presents results of comparative analysis of direct economic and financial instruments used for promoting multifunctional forest management in the Czech Republic (CR) and in Poland. The research has shown the complexity of the forestry support system in the Czech Republic, which is reflected by many different types of instruments. Their relatively large number may suggest that forest management is granted high support, but in fact the funds transferred are rather low. In Poland, subsidies from national sources are directed primarily to the State Forests. Private forest owners may apply for subsidies for afforestation, co-financed from the EU funds. However, there is no program of supporting provision of non-wood forest services in private forests. In both countries there is no explicit formal distinction between subsidies, compensations and payments for non-wood forest

services. Their separation could significantly contribute to raising the standards of decision-making concerning distribution of funds.

- **Kaliszewski A.** 2007. The role of the National Fund for Environmental Protection and Water Management in supporting the State Forests activities in relation to co-financing from the state budget. *Leśne Prace Badawcze (Forest Research Papers)*, 3: 81–97.

The paper aims at defining the role of the National Fund for Environmental Protection and Water Management (NFOŚiGW) in supporting activities of the State Forests National Forest Holding in Poland in the period 2000-2005 in relation to co-financing from the state budget. Over the analysed period, the NFOŚiGW made 163 financial agreements with organizational units of the State Forests totalled around 150.9 million PLN. The largest support was granted for activities concerning increasing of forest resources and protection of forests, as well as nature and landscape conservation. The total value of support from the National Fund accounted for as much as 2/3 of the total subsidies received by the State Forests from the state budget. However, in the following years the share of allocations from the National Fund in the total income of the State Forests was gradually increasing, unlike the share of financial support from the state budget. The subsidies also helped to mobilize the State Forests' own resources for implementation of ecological projects.

- **Kaliszewski A.** 2011. Policy instruments for provision of public goods – review of selected topics based on an example of forest conservation. *Leśne Prace Badawcze (Forest Research Papers)*, 72 (3): 273–283.

The review paper discusses issues concerning provision of appropriate level of public goods on the example of forest conservation. Due to the nature of public goods no market incentives exist to implement which results in reduction in supply of public goods. Four main categories of measures taken by the state for the provision of public goods are illustrated using the example of forest conservation. These categories are: private provision legally regulated by the state, direct provision by the government, subsidies and fiscal policy, and an institutional framework for creating markets for public goods. The article concludes that optimal forest conservation policy needs to be based on a mix of different instruments so as to reduce the risk of failure and help in achieving conservation goals.

- **Kaliszewski A.** 2011. Public financing of nature conservation from the state budget in Polish forests compared with other selected European countries. *Leśne Prace Badawcze (Forest Research Papers)*, 72 (4): 367–380.

The paper aims at comparing the scope and controls on the public funding of nature conservation by the state in the state forests of Poland and in other selected European countries (Austria, Finland and Germany – using the regions of Saxony and Bavaria as examples). The study found that the scope of activities in nature conservation funded by public means in the discussed countries is very diversified. In all the selected cases except Poland, reasonable protocols are in place to ensure adequate and long-term allocation of public finances to meet the requirements of nature conservation in state forests. In Poland, the current regulations allow the Minister of the Environment to arbitrary define the amount

of financial support for nature conservation. The article concludes that it is necessary to develop and implement a new procedure for allocating the state budget for nature conservation in the Polish State Forests, which would tie the range of protective measures implemented with the size of the grant budgets, and to explicitly identify in the state budget the finances intended for nature conservation in the State Forests.

- **Kaliszewski A.** 2010. Financing the conservation of nature in the State Forests in Poland as compared to other European countries. Proceedings of the Center for Nature and Forestry Education in Rogów, Year 12 Vol. 2 (25): 114-135.

The paper discusses the scope, the most important sources and principles of financing nature protection in state forests in Poland and in selected European countries (Austria, Saxony, Bavaria and Finland). The financing of nature conservation in the State Forests in Poland is distinguished by the following features: a lack of mechanisms guaranteeing a stable level of financing from the state budget and a very low level of financing from this source, the dominant role of earmarked funds in financing, a significant share of indirect subsidies (tax concessions and exemptions). The results allowed for the formulation of proposals for changes in the financing of nature conservation in the State Forests, including: separation of resources for nature protection in the state budget, linking the amount of subsidies with the scope of tasks performed, limiting the role of ecological earmarked funds (giving them a status of additional to budget financing) and considering the possibility of introducing compensation for municipalities for the loss of tax revenues due to the establishment of some forms of nature conservation.

- **Gołos P., Kaliszewski A.** 2016. Social and economic conditions for providing public forest services in the State Forests National Forest Holding. *Sylvan*, 160 (2): 91-99.

The objective of the study was to present the social and economic conditions needed for provision of public forest functions by the State Forests National Forest Holding (PGLLP). The analysis was restricted to the selected protection functions (water and soil protection, protection of air and wildlife) and to the social functions (recreational and educational). The results indicate that in the nearest decades the PGLLP will implement forest management close to the limits of economic efficiency. After exceeding the limits the Holding may be forced to search for external sources of financing of public forest services. Maintenance of economic indicators of forest management in 2020 and 2030 at the 2009 level would be possible, if alternatively: 1) wood prices increase to the level of 200 and 294 PLN/m<sup>3</sup>, respectively, timber harvesting and sales increase up to at 45 and 61 million m<sup>3</sup> annually, while the employment is maintained at the level of 25,000 persons and the dynamics of average salary increase is maintained at the level of 2000-2009; or 2) employment is reduced to 18 and 13 thousand persons, respectively, while the volume of timber sales is maintained at the level of 33 million m<sup>3</sup> and the growth rate of timber prices at the average level for the period 2000-2009.

- Kaczmarek K., **Kaliszewski A.** 2007. Evaluating efficiency of assistance programmes in forestry. *Leśne Prace Badawcze (Forest Research Papers)*, 2: 105-114.

The paper is devoted to the issue of assessing efficiency of financing programmes in forestry from public funds from in view of experience gained during participation in the international research project of “Evaluating Financing of Forestry in Europe” (EFFE). The EFFE project was one of the first to provide extensive information on forestry support programmes on an international basis. The results, including those regarding evaluation of efficiency and effectiveness of support programmes, can be used to identify real effects of the economic incentives undertaken by governments. They are also an important source of information in view of possibility of their practical use for formulating of new programmes in the area of forest policy. The research has shown the need for further improvement of monitoring systems, including collecting of data on support programmes at the local level and their aggregation at the regional and national levels. Also the lack of information on the effects of the measures have been apparent, especially in the medium- and long-term.

- **Kaliszewski A.** 2006. Forest economics and nature conservation. In: Gwiazdowicz D. J. (red.), *Forest management and nature conservation*. Ornatus, Polish Forest Society, Poznań, p. 75-85.

In this chapter of the monograph issues of value of natural resources and their valuation, as well as issues related to financial support of nature conservation in forests are discussed. Different categories of values of environmental goods, methods for determining the non-use value of natural resources and the most important limitations of their application in practice are characterized. In the second part, the issues of effective supply of non-productive forest services in light of market failures, as well as importance of subsidies in nature protection in forests are discussed.

#### Forest policy legal instruments

- **Kaliszewski A.**, Sikora A. 2009. Legal aspects of nature conservation in forests in Poland in the context of membership in the European Union. *Forest Research Institute, Sękocin Stary*, pp. 262.

This monograph reviews, puts in order and analyses existing legal regulations in the field of nature conservation in forests in the context of alignment them to European Union regulations (legal status as of November 15, 2008). The study includes, inter alia, characteristics of the most important legal acts related to nature conservation in forests at the international (conventions), supranational (EU regulations and directives) and national (acts and regulations) levels, analyses program documents, analyses judicial decisions of national courts and the European Court of Justice, examines of compliance of Polish laws in the field of nature conservation in forests with the European Union regulations, describes organization nature conservation system in Poland and analyses the duties and competences of the head of a forest district in the State Forests in relation to particular forms of nature protection. The results have shown some inaccuracies and deficiencies in Polish regulations, resulting

from insufficient transposition of all provisions of the Birds and Habitats Directives into the Polish legal system.

- Geszprych M., **Kaliszewski A.**, 2010. Legal and axiological relations between nature conservation and forest management. In: „Problems of nature conservation in forests”. Winter Forest School at IBL, II Session, Sękocin Stary, 16-18 March 2010. Forest Research Institute, Sękocin Stary, p. 38-50.

The paper analyses legal and axiological relations between nature conservation and forest management. These issues are dispersed in numerous national and EU regulations, and also constitute study area for law enforcement bodies, including the European courts. The paper focuses on issues related to environmental impact assessment obligation and the problems of forest ownership rights in the context of nature conservation, as well as the existing shortcomings in the national regulations on nature conservation and forest management. The results show, among other things, that it is necessary to resolve the legal duality in forest management supervision related to private forests within national parks and to specify competences of institutions performing tasks in the Natura 2000 areas. It is also recommended to widen and improve possibilities of private forest owners to establish their associations in order to manage and protect forests more efficiently.

- **Kaliszewski A.** 2012. Responsibilities of forest owners in terms of nature conservation in forest areas – comparison of arrangements in selected European countries. In: Górski M., Niedziółka M., Stec R., Strus D. (eds.), Public administration and nature conservation. Economic, social and legal issues. Siedlce University of Natural Sciences and Humanities, Siedlce, pp. 125-138.

The chapter of the monograph analyses the scope of duties imposed on forest owners in Poland and in selected European countries (Germany, on the example of Saxony and Bavaria, Austria, Finland). The statutory scope of duties of forest owners is based on compliance with the principles of sustainable forest management. In all countries, these principles are transferred into practice by forest management plans (or other relevant plans). Special additional tasks in provision social and environmental services in forests are imposed on state forest enterprises, including heavily commercialized ones in Austria (joint stock company) and Bavaria (public law institution).

- Sarvašová Z., **Kaliszewski A.** 2005. The policy process on climate change. *Journal of Forest Science*, 51 (3): 108–114.

The paper discusses the course of the political process and the provisions of the United Nations Framework Convention on Climate Change and the Kyoto Protocol in relation to forests and forest management. Three types of mechanisms introduced by the Kyoto Protocol are also characterized: Joint Implementation (JI), Clean Development Mechanism (CDM) and Emissions Trading. The reduction of CO<sub>2</sub> emissions and the increase in the amount of carbon stored in forest biomass and soils requires forest management to be sustainable. The environmental-oriented timber harvesting technologies in tropical regions can play a significant role in this respect. Capturing of the atmospheric CO<sub>2</sub> may be intensify by planting fast-growing trees and developing agroforestry systems. Specified goals in this

area and means of their implementation must be adapted to local conditions in individual countries.

## **2. Prospects for development and use of wood resources as a renewable raw material and a source of energy**

The second important area of my scientific activity is the issue of using wood as a renewable raw material and a source of energy and developing plantations of fast growing tree species. In particular, my research in this area focused on assessing the potential for increasing timber supply in short- and long-term, with particular emphasis on wood for energy purposes, and analysing implementation of forest policy in the promotion and supporting of timber use. This issue was studied within 4 research projects which I took an active part in (Annex 6, part II.I, No.: 3, 12, 14, 32).

The discussed matter is closely related to the issue of efficiency and energy value of different poplar varieties, as well as evaluation of economic efficiency of setting up plantations of fast growing tree species in Poland. My research in this area is currently conducted under the project entitled “Determination of production capacities of wood for energy and paper purposes in poplar plantations of short- and medium rotation cycles” (Annex 6, part II.I, No. 3).

The most important publications related to the use of wood as a renewable raw material and energy source as well as possibilities of developing fast-growing trees in Poland are described below.

- Jonsson R., Mustonen M., Lundmark T., Nordin A., Gerasimov Y., Granhus A., Hendrick E., Hynynen J., Johannsen V. K., **Kaliszewski A.**, Miksys V., Nord-Larsen T., Polley H., Sadauskiene L., Snowdon P., Solberg B., Sollander E., Snorrason A., Valgepea M., Ward S., Zalitis T., 2013. Conditions and Prospects for Intensive Forest Management in Northern Europe. Working Papers of the Finnish Forest Research Institute 271.

The objective of the study is to assess the short-term and long-term potential for increasing sustainable wood supply in the EFINORD countries. The analysis focuses on forest resources development, silvicultural practices, the current and future amount of wood harvested, development of forest and wood-processing industry as well as development of renewable energy production given the current economic, legal and political restrictions. The study indicates that there is a striking variation in the intensity of utilisation of the wood resources within the EFINORD countries. Given the increased demand for wood-based energy more intensive forestry practices to meet that demand in the future may be needed.

- **Kaliszewski A.** 2012. The use of wood and increase of its resources as a forest policy goal - the European and national contexts. In: Strykowski W., Gałecka A., Pawłowska J. (eds.), Wood – a strategic raw material? Wood Technology Institute, State Forests Information Centre, Poznań-Warsaw, p. 33-42.

The aim of the monograph chapter is to analyse the content of the most important forest policy documents at the European, EU and national levels in light of considering

the importance of wood as a natural renewable resource. The issue of the use and promotion of wood is repeatedly emphasized in many documents of the Forest Europe process. It was also one of the essential elements of the “Forestry Strategy for the European Union” (1998) and the “EU Forestry Action Plan” (2006). The Polish “National Forest Policy” emphasizes the fact that wood is a renewable, human-friendly and ecological resource, which establishes a basis of many professions, traditions and cultures, as well as creates conditions for development of many industries. For sustainable timber supplies while maintaining forest use at sustainable level functional integration of forestry and wood buyers need to be developed.

- Zajac S., **Kaliszewski A.**, Mlynarski W. 2014. Forests and forestry in Poland and other EU countries. *Folia Forestalia Polonica, Series A – Forestry*, 56 (4): 185-193.

The paper provides general data on forests and forestry in Poland as compared to other EU Member States. It presents the information of forest resources, forest health condition, protection of forests, occurrence of forest fires, employment in forestry and related sectors, as well as selected aspects of production and trade of wood and wood products and also generation and use of renewable energy. The paper concludes that Poland is characterized by vast forest and timber resources, however share of forest lands in the total area of the country and the average forest area per inhabitant are low. Polish forests are characterized by rather average healthiness, but due to their species composition and climatic conditions of the country they are very vulnerable to fires. Poland is a significant producer of wood-based panels, sawn wood and pulpwood, as well as paper and cardboard.

- **Kaliszewski A.** 2016. National Program for Expanding of Forest Cover – implementation and its difficulties from a local view. *Proceedings of the Center for Nature and Forestry Education in Rogów, Year 18 Vol. 49B (5): 7-19..*

The aim of the paper is to analyse the main obstacles in afforestation of agricultural lands in Poland after 2004. They include competitiveness of direct payments for agricultural production, shortage of public lands for afforestation, a ban for afforestation of permanent grassland and restrictions on introducing afforestation in Natura 2000 areas, complicated procedures for granting financial support, a lack of efficient instruments for controlling spatial arrangement of new forests and insufficient procedures for land reclassification. The article summarizes proposals for broader activities in the long-term to rationalize the structure of land use and creating order in the spatial management of the country.

- **Kaliszewski A.**, Gołos P. 2014. Predictions on availability and possibilities of the use of wood for energy purposes in Europe and in Poland. *Folia Forestalia Polonica, Series A – Forestry*, 56 (2): 71-78.

The review paper presents the results of studies concerning the availability and possibilities of the use of wood for energy purposes in Europe and in Poland. It describes in detail the current use of wood for energy production purposes, as well as predictions on volume, composition, and sources of energy wood. It also presents the results concerning potential impact of energy wood harvesting on wood industries. The paper concludes that the

question of utilization of forest biomass for large-scale energy generation is very complex and has far-reaching consequences for environment, society and economy. So as to be effective, wood resources management should give a priority to wood-based production of the greatest added value, and energy generation should be a closing-down stage in the wood value chain.

- Gołos P., **Kaliszewski A.** 2015. Aspects of using wood biomass for energy production. *Leśne Prace Badawcze (Forest Research Papers)*, 76 (1): 78-87.

This article presents the most important aspects relevant to forest-derived biomass utilization for the purposes of energy production by professional energy providers. The issues discussed here are divided into four groups: environmental, social, economic and technological aspects of biomass utilization in energy production. The environmental part focuses on the effects of intensive use of residues from timber harvest on forest ecosystems as well as the problem of ash utilization. Economic and social problems include the costs of energy production from wood, consequences of intensified fuel wood demand for the state of the timber and paper industry as well as the impact on the labour market. The technology section of the article covers questions related to the harvest and transport of forest-derived biomass. The paper concludes that before regarding it as an energy source, wood should be mainly used for the production of timber due to the necessity and difficulty of considering all of the above-mentioned diverse aspects of energy production.

- Niemczyk M., Wojda T., **Kaliszewski A.** 2016. Biomass productivity of selected poplar (*Populus* spp.) cultivars in short rotations in northern Poland. *New Zealand Journal of Forestry Science*, 46: 22.

The aim of the paper is to test and compare 10 poplar cultivars from the *Aigeiros* or *Tacamahaca* sections in terms of biomass production. Additional aims were to preliminarily identify a suitable rotation length and evaluate the sprouting capacity of various cultivars. The cultivars ‘NE-42’ and ‘Fritzi Pauley’ showed the best growth characteristics and highest biomass production (7.6 and 7.7 t/ha/year, and 5.2 and 6.9 t/ha/year, respectively, for cultivars in the 5- and 6-year cycles). These cultivars were also distinguished by a large number of coppice shoots and a high shoot length. Eight cultivars did well enough to produce worthwhile data, and five of these gave higher biomass production (t DM per 1 ha per year) during the 6-year, as opposed to the 5-year cycle. The results indicate the importance of testing cultivars under local climatic conditions before planting on a commercial scale.

- Niemczyk M., **Kaliszewski A.**, Jewiarz M., Wróbel M., Mudryk K. 2018. Productivity and biomass characteristics of selected poplar (*Populus* spp.) cultivars under the climatic conditions of northern Poland. *Biomass and Bioenergy*, 111: 46–51.

The study aimed to determine the productivity and energy values of 10 poplar cultivars for use as potential fuel sources in Poland. The cultivars belonged to clones traditionally used for timber production, as well as new clones specific to short-rotation coppice (SRC) practices. Biomass production and biomass properties were measured, including elemental composition, the gross and net calorific values (heating value) of wood, and envelope density.

For each cultivar, the synthetic fuel value index (FVI) was calculated. Biomass dry matter (DM) production differed noticeably between cultivars, and it was the highest for traditional cultivars ('NE-42' and 'Fritzi Pauley', amounting to 8 t/ha/yr), and the lowest for new cultivars. Overall, poplar plantations with short rotations could be considered as a potential additional source of renewable energy in Poland. However, the key factor is selection of appropriate genotypes for the specific climatic conditions.

### 3. Forest resources management and analysis efficiency in forestry

This area includes diverse but interrelated issues. My research concerning forest management efficiency focused on economic consequences of natural disasters in forests, at the example of a windstorm in the Puszcza Piska in 2002 and biotic tree stand damage in the Beskidy Mountains. I also researched benefits and distributional effects of afforestation in Poland, as well as cost analysis of natural regeneration of selected forest tree species.

An important issue raised in my research was the analysis of economic consequences of nature conservation in forests. The research projects I carried out in this area focused on the issues of direct costs of biodiversity protection and selected aspects of close-to-nature forest management, as well as the analysis of opportunity costs of nature conservation in forests.

My studies in the discussed area also concerned determining the economic significance of selected non-wood forest products in Poland, as well as analysing the possibilities of diversifying incomes in forestry, including the comparison of solutions applied in this area in several European countries. An important part was also research in the field of effective management of forest resources in urban areas.

The description of the most important publications in the discussed area is presented below.

- Nájera T., **Kaliszewski A.**, Riera P. 2007. Integrating Efficiency and Equality considerations in the Evaluation of Public Policies: The Case of an Afforestation Programme in Poland. *Revista de Administración, Finanzas y Economía (Journal of Management, Finance and Economics)*, 1 (1): 45-55.

This paper presents the results of applying the efficiency and distributional cost-benefit analysis to the afforestation programme in Poland in the period 1992-1999. A traditional social cost-benefit matrix is extended with a matrix showing changes in the distribution of income in the population. The procedure is applied to the afforestation programme on both public and private lands. For the distributional effects of externalities, two cases were studied: the first one, assuming that they benefited all the population equally without regard of their income (income elasticity = 0), and the second one, assuming that the benefit of the externality is used proportionally to the income distribution (income elasticity = 1). The results showed that afforestation increased social welfare when it is assumed that the net externalities benefits are valued equally by all members of the society.

- **Kaliszewski A.**, Lech P. Oszako T. 2007. The occurrence of, and economic losses caused by *Armillaria* in the Western Carpathian Mountains. *Acta Mycologica*, 42 (2): 1-16.

The paper presents and discusses the results of the cost analysis of protective measures against *Armillaria* root rot in spruce tree stands and possible reduction of losses caused by it. The results indicate that cessation of the disease control in LMG (mountain forest) habitat may result in some 30% loss the total timber production for stands at the age of 100, or 38% at the age of 120. The highest losses may occur in stands at the age of 30-40 years, assuming that the harvest age exceeds 100 years. In monetary terms, discontinuation of preventive measures may lead to some 4.6 thousand zł loss per 1 ha of forest (according to 2004 prices).

- Zachara T., Gil W., **Kaliszewski A.** 2012. Wind damage in forests of Poland. Natural and economic characteristics, forecasts of occurrence. In: Lorenc H. (ed.), *Impact of climate change on the environment, economy and society (changes, effects and ways to reduce them, conclusions for science, engineering practice and economic planning)*. Vol. 3 – Natural disasters and internal security of the country. Institute of Meteorology and Water Management – National Research Institute, Warsaw, p. 230-242.

The chapter of the monograph presents the results of the study on economic effects of a hurricane in the Puszcza Piska in July 2002. The research focused on determining losses due to premature felling of stands completely and partially damaged on the area of nearly 1,085 ha, located in the Wilcze Bagno District. In addition, the losses resulting from lower quality of timber harvested in damaged stands have been estimated. The overall losses resulting from premature felling of stands in the studied area amounted to 33.6 million PLN (2002 prices). About 75% of all the losses (25.1 million PLN) were registered in completely damaged stands. In partially damaged stands, the total losses reached the equivalent of over 8.6 million PLN. It was estimated that the value of timber harvested in stands completely damaged by the wind was about 36% lower than the average value of wood harvested from undamaged stands.

- **Kaliszewski A.** 2017. Cost analysis of artificial and natural oak regeneration in selected forest districts. *Leśne Prace Badawcze (Forest Research Papers)*, 78 (4): 315-321.

The aim of the paper is to present the results of a cost analysis for initiating, tending and protecting artificial and natural oak regeneration in selected forest districts in Poland. The results confirmed that the total costs of silvicultural and protective measures in natural oak regeneration were considerably lower as compared to artificial regeneration. The cumulative costs of artificial regeneration amounted to 6,543 PLN/ha and were over five times higher than for natural regeneration (1,216 PLN/ha). Financial benefits of natural oak regeneration resulted mainly from the complete lack of expenditures on seedlings and planting. Higher costs of natural regeneration occurred in pre-commercial thinning due to its higher intensity, as well as chemical wildlife damage control measures. However, they did not significantly affect the measurable financial benefits of natural regeneration.

- Młynarski W., **Kaliszewski A.** 2014. Direct costs and sources of financing of nature conservation and biodiversity protection in forest districts in the Mazowieckie Province. *Sylvan*, 158 (7): 491-498.

The paper analyses direct costs of nature conservation and biodiversity protection incurred by forest districts of the State Forests in the Mazowieckie Province in the period 2008-2011. It also examines sources of their financing. The study shows that the largest amount of money was spent on a wide range of activities related to biodiversity protection (65.0% of all direct costs) and development of strategic impact assessments for forest management plans (12.9%). The most significant fund donors were forest districts themselves (65.5% of all funds) and the EU funds (26.2%). The research indicates that the current system of financing nature conservation tasks may be disrupted in a situation of economic slowdown or crisis, because the reduction of operating costs primarily affects activities that do not bring direct incomes to the State Forests.

- **Kaliszewski A.**, Młynarski W. 2015. Opportunity costs of establishing bird protection zones in selected forest districts. *Sylvan*, 159 (7): 558-564.

The aim of the paper is to present the results of research on the opportunity costs related to establishment of perennial bird protection zones in forests located in two randomly selected forest districts of the Mazowieckie Province. The analysis included calculation of profits lost by forest districts due to termination of timber harvest in bird protection zones and also estimation of work places lost as a result of introduction of new limitations (social costs). The estimated total opportunity costs calculated over a 10-year period amounted to 1113 PLN annually per 1 hectare of bird protection zones or 11.56 PLN per 1 hectare of forests within the forest districts. The estimated loss in work places was 0.85 full-time jobs annually per every 100 ha of perennial bird protection zones.

- **Kaliszewski A.**, Młynarski W. 2014. Opportunity costs of establishing nature reserves in selected forest districts of the Mazowieckie Province. *Leśne Prace Badawcze (Forest Research Papers)*, 75 (1): 89-99.

The aim of the paper is to estimate opportunity costs related to establishing nature reserves in four randomly-selected forest districts located in the Mazowieckie Province. The analysis included calculation of profits forgone by the forest districts due to the cessation of timber harvesting in nature reserves and an estimation of work places lost as a result of introduction of new limitations (social costs), as well as the expenses incurred by municipalities related to introduction of forest tax concessions in nature reserves. The establishment of nature reserves incurred losses related to timber harvest of about 1502-1605 PLN/ha of nature reserve annually or 50-60 PLN per unit of forest area, during the period of 10 years. The estimated loss in work places was 98.8 working days annually per 1000 ha of forest area in forest districts. Total expenses incurred by municipalities related to establishment of forest tax concessions in nature reserves reached about 18.1 thousand PLN in 2011.

- Zając S., **Kaliszewski A.** 2014. Economic aspects of close-to-nature forest management. In: „Natural, social and economic conditions, goals and methods of silviculture”. Winter Forest School at IBL, VI Session, Sękocin Stary, 18-20 March 2014. Forest Research Institute, Sękocin Stary, p. 195-209.

Close-to-nature forest management entails the necessity to change the way of managing a forest holding and may significantly impact its economic condition. A number of activities undertaken in this area give a chance to significantly reduce costs of operations. Some practices, however, cause an increase in costs of forestry operations, especially at the stage of forest utilization. The study presents the results of research conducted in recent years regarding costs of silviculture and forest utilization taking into account different methods of forest regeneration (artificial and natural ones) and selection of species composition (deciduous or coniferous trees), as well as different methods of forest stands utilization.

- Młynarski W., **Kaliszewski A.** 2018. Efficiency evaluation in forest management – a literature review. *Leśne Prace Badawcze (Forest Research Papers)*, 79 (3): 289–298.

The aim of this paper was to give an overview on efficiency evaluation in forest management as described in the literature. It presents definitions for efficiency and productivity of economic entities as well as categories of efficiency evaluation methods and discusses ratio analysis, parametric and non-parametric approaches to measure efficiency in forestry. The study shows that in the Polish literature clearly there is a shortage of studies presenting applications of parametric and non-parametric approaches for analysing efficiency in forestry. Those methods are more mathematically and statistically advanced, which also opens up more opportunities to analyse the efficiency of forest management.

- Młynarski W., **Kaliszewski A.** 2018. Application of Data Envelopment Analysis to efficiency evaluation in forestry and wood-based industry. *Sylvan*, 162 (10): 808-818.

The paper presents the literature review concerning the general assumptions of the Data Envelopment Analysis (DEA) and its applications in forest management and wood industry evaluation. DEA was applied to measure efficiency in forest management in Poland only recently. Its application should be considered as a good step towards improvement of research quality in this field in Poland and should provide comprehensive results of forest management efficiency evaluation. The method should be used more widely to evaluate efficiency of various aspects of forestry and wood-based industry in Poland.

- **Kaliszewski A.** 2006. Urban forests – a literature review on selected topics. *Leśne Prace Badawcze (Forest Research Papers)*, 1: 103-118.

The aim of the paper is to analyse the results of a literature review on selected aspects of urban forests and urban forestry. It presents a historical background of urban forests and their contemporary concept, functions of forests in urban areas, as well as forest management issues. It also discusses the most important economic aspects of urban forestry. The paper concludes that multidimensional and interdisciplinary approach to urban forest

management is not only a theoretical model, but it has been widely used and practiced in many countries.

- Młynarski W., **Kaliszewski A.** 2013. The current state of forest management in cities and associated problems in the Mazowieckie Province. *Leśne Prace Badawcze (Forest Research Papers)*, 74 (4): 315-321.

The aim of the paper is to present research on the management and supervision of forests located within cities in the Mazowieckie Province. It focuses on questions related to organization and supervision of forests, forest management and protection, recreational management and financing of forests. The research indicated, *inter alia*, that due to natural and social importance of forest ecosystems coherent management of forests of various ownership types located within each given urban area should be undertaken. This task should be taken by local authorities in cooperation with as wide as possible circle of interested stakeholders. It is also recommended to develop recreational infrastructure in urban forests and strengthen supervision over forest resources.

- Gołos P. **Kaliszewski A.** 2016. Economic importance of selected non-wood forest products in Poland. *Sylvan*, 160 (4): 336-343.

The paper aims at analysing results of survey conducted in 2013 on a random group of 1000 Polish individuals with regard to bilberry (*Vaccinium myrtillus* L.) and selected species of mushrooms harvest. The research also evaluated the annual harvest value of selected non-timber forest products in Polish forests. The harvest of bilberries was indicated in the survey by 18.0% of all respondents, who harvested on average 4.69 kg of berries per 1 person. The harvest of bilberries from the whole territory of Poland was estimated to 26.2 thousand tones and about 340.6 million PLN. The harvest of mushrooms was declared by 54.1% of respondents. They estimated the average annual harvest of 4.26 kg of mushrooms per person. In relation to the whole population of adults in Poland, the volume of mushrooms harvested in 2013 is estimated to about 71.4 thousand tones. The value of wild mushrooms harvested in Poland was evaluated to 763 million PLN. The value of the studied non-timber forest products estimated per forest area was about 121 PLN/ha, which is about 13% of the mean harvested timber value in forests managed by the State Forests Holding in 2013.

- **Kaliszewski A.**, Młynarski W. 2018. Selected aspects of diversification of incomes from auxiliary activities in forestry. *Postępy Techniki w Leśnictwie (Advances in Technology in Forestry)*, 143: 11-19.

The article discusses selected issues concerning diversification of sources of income in forestry. The paper focuses in particular on the State Forests and analysing the share of incomes from auxiliary activities in light of incomes from timber sales. The analysis also covered the structure of incomes in state forest enterprises in Germany (on the example of Bavaria and Lower Saxony) and in Austria. The presented examples show that non-wood forest use in the broad sense, including both harvesting of non-wood forest products, and forest ecosystem services, gives an opportunity to diversify sources of income in forestry.

The possibility of extending commercial activity of the State Forests should become the subject of discussion among foresters and decision-makers.

## Summary of scientific achievements

Summary of scientific achievements according to the journal scoring by the Ministry of Science and Higher Education (MNiSW; as of 12.02.2019) and the Impact Factor in a year of publication

Journal title	Publication years	Number of publications	MNiSW scoring in a given year (pts)	Total number of points	Total IF according to a year of publication
<b>Scientific journals with IF</b>					
Sylvan	2013-2018	9	15	135	4.339
Biomass and Bioenergy	2018	1	35	35	3.358
New Zealand Journal of Forestry Science	2016	1	20	20	0.921
<b>Other peer-reviewed journals</b>					
Leśne Prace Badawcze (Forest Research Papers)	2015-2018	8	13	104	-
	2013-2014	2	7	14	-
	2011-2012	3	9	27	-
	2006-2007	3	6	18	-
Folia Forestalia Polonica, Series A - Forestry	2016	1	14	14	-
	2014	2	8	16	-
Journal of Forest Science	2004-2005	2	5	10	-
Studia i Materiały CEPL w Rogowie (Proceedings of the Center for Nature and Forestry Education in Rogów)	2016	1	7	7	-
	2010	1	6	6	-
Acta Mycologica	2007	1	0	0	-
Working Papers of the Finnish Forest Research Institute	2013	1	5	5	-
Revista de Administración, Finanzas y Economía (Journal of Management, Finance and Economics)	2007	1	5	5	-
<b>Monographs, chapters in monographs, monograph scientific editing</b>					
Monographs	2009	1	12	12	-
Chapters in monographs in Polish	2012-2013	5	4	20	-
	2006	1	5	5	-
Chapters in monographs in English	2006	1	10	10	-
Monograph editing	2013	1	4	4	-
<b>TOTAL</b>		<b>46</b>		<b>467</b>	<b>8.618</b>

Number of all scored publications (including 1 monograph editing): **46**  
 - of which after the PhD: **36**

Number of publication in journals indexed by Thomson Reuters™: **11**  
 - of which after the PhD: **11**

Total IF according to a year of publication: **8.618**

Total IF as of 12.02.2019: **10.298**

MNiSW scoring according to a year of publication: **467**

MNiSW scoring as of 12.02.2019: **563**

Number of citations (as of 12.02.2019):

- according to the Web of Science: **11**
- according to Scopus: **19**
- according to Google Scholar: **149**

Hirsch index (as of 12.02.2019)

- according to the Web of Science: **2**
- according to Scopus: **3**
- according to Google Scholar: **7**

Sękocin Stary, 16 February 2019

