



ANNUAL REPORT 2016

FACULTY OF FORESTRY AND WOOD SCIENCES



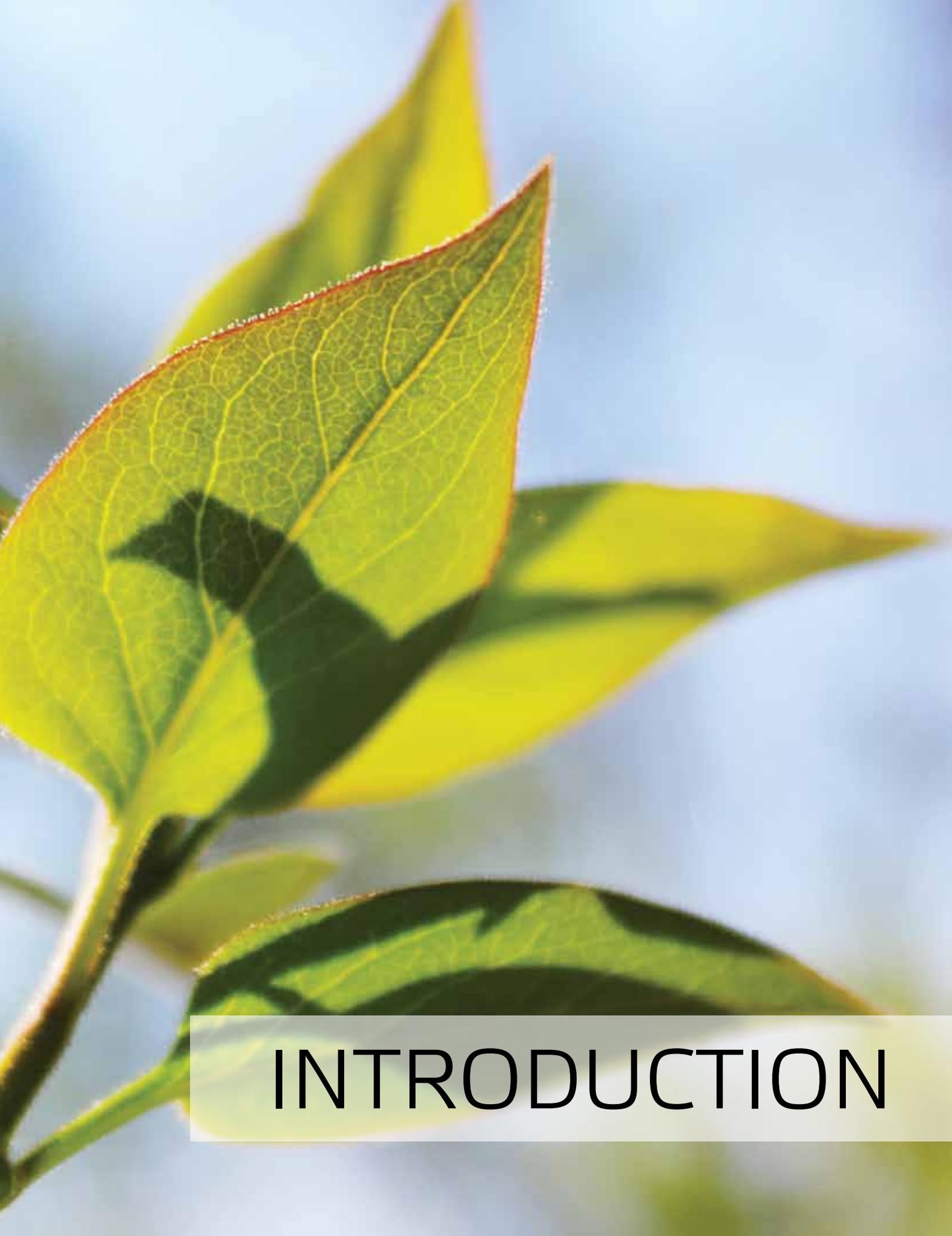
Czech University of Life Sciences Prague
**Faculty of Forestry
and Wood Sciences**



Czech University of Life Sciences Prague

**Faculty of Forestry
and Wood Sciences**

Faculty of Forestry and Wood Sciences
Czech University of Life Sciences Prague
Annual Report 2016



INTRODUCTION

1. Introduction

The Annual Report on the Activities of the Faculty of Forestry and Wood Sciences (FFWS) of the Czech University of Life Sciences in Prague (CULS) was discussed by the FFWS Advisory Board on 17 May 2017 and approved by the Academic Senate of the Faculty of Forestry and Wood Sciences of the CULS in Prague on 5 June 2017.

The year 2016 was very positive for the FFWS in many areas of the life of the Faculty. At the same time, it was also demanding due to the amendment to the rules governing the funding of universities without the same Ministry's taking into account the requirements for the performance of indicators under OP projects. The FFWS needed to maintain, or rather increase, the number of students of the Faculty in the sustainability period of the RDI project (the FFWS Pavilion of Wood Sciences) above the threshold of 2,200 for all the students and of 160 for PhD students. Therefore, in 2015, the Faculty admitted significantly more students than the stipulated subsidised numbers. Without any prior notice, the Ministry of Education, Youth and Sports stipulated these numbers of newly admitted students as a condition for the allocation of a subsidy also for 2016 in the same amount as for the year 2015! All of this happened in mid-2016 when the first round of the admission procedures had been already finished. That is why the Faculty had to admit also in 2016 about 200 students more



than originally planned. Despite the fact that it seemed almost impossible to complete this task, we finally admitted slightly more students than in 2015. It was, however, at the cost of enormous effort of the staff of the Faculty, the Marketing Department, and several other staff members from other departments. They all deserve our big thanks for that.

The FFWS Pavilion of Wood Sciences, whose grand opening was held at the end of January 2016, started fulfilling its chief task: further development and improvement of the teaching and research of not only wood sciences, but also forestry branches of study. The Pavilion served for teaching of not only FFWS students, but also a considerable number of the FES students. In the area of teaching, the 2015/2016 summer term and the 2016/2017 winter term brought about further improvement of educational work whereas preparation of another printed and electronic study materials became

a priority. In the spring of 2016, the structure of branches of study changed (within the granted accreditations) to better match the profiles of graduates and not to overlap at the same time. This created more space for teachers to be able to devote more time to teaching smaller groups of students. However, due to a significant decline in available students in the coming period, it will be important to pay even more attention to the marketing of studies. The number of unemployed graduates of the FFWS remained very low in 2016.

In the area of research and development, the number of publications with IF stabilised when reaching the number 171 in 2016. The number of articles in the SCOPUS database was somewhat lower than in 2015. In the area of S&R, the FFWS currently holds a leading position as regards the number of publications per full-time employment load at the entire CULS – for the third time in a row. FFWS PhD students succeeded in the competition for the “CULS Rector’s Award” for publishing activities when they were granted nine out of fifteen awards, including all three first places. Two PhD lady-students from the FFWS took first and second places and were given the Award of the Minister of Agriculture in the competition for the best young scientist publication output. The strategic objective for the period from 2016 to 2018 is a significant improvement of publishing outputs and replacement of less significant periodicals with excellent publications in each branch of study in which the Faculty carries out research activities. The incentive programme aimed at supporting excellent publication outputs, which took place for the second year in 2016, continues. As for the process of raising project funds, the strategy set out for the year 2016 was a priority focus on the preparation and submission of projects under the EU Operational Programmes. In November 2016, much hard work resulted in granting of the EXTEMIT-K project to the FFWS. The project commenced in December 2016 and its overall budget amounts to CZK 246 million for the period of XII/2016–X/2022 (CZK 43 million in 2016). On the other hand, work on project proposals for conventional grant agencies was intentionally inhibited. Support of student projects through the internal FFWS grant agency continued. The FFWS won recognition in the CULS internal grant agency (CIGA) when acquiring seven projects.

As regards new challenges in terms of possible drawing of funds from the Operational Programmes, a new Vice-Dean for Development and Operational Programmes was appointed in June. As regards the area of Faculty self-administration, in the autumn of 2016, the Faculty held elections for the FFWS Academic Senate for the period of 2016–2019. The new FFWS AS immediately started performing its duties by approving important documents for the activities of the Faculty in 2017.

FFWS management



BASIC DATA

2. FFWS basic data

2.1 Full name and address of the Faculty

Full name

Faculty of Forestry and Wood Sciences
Czech University of Life Sciences Prague

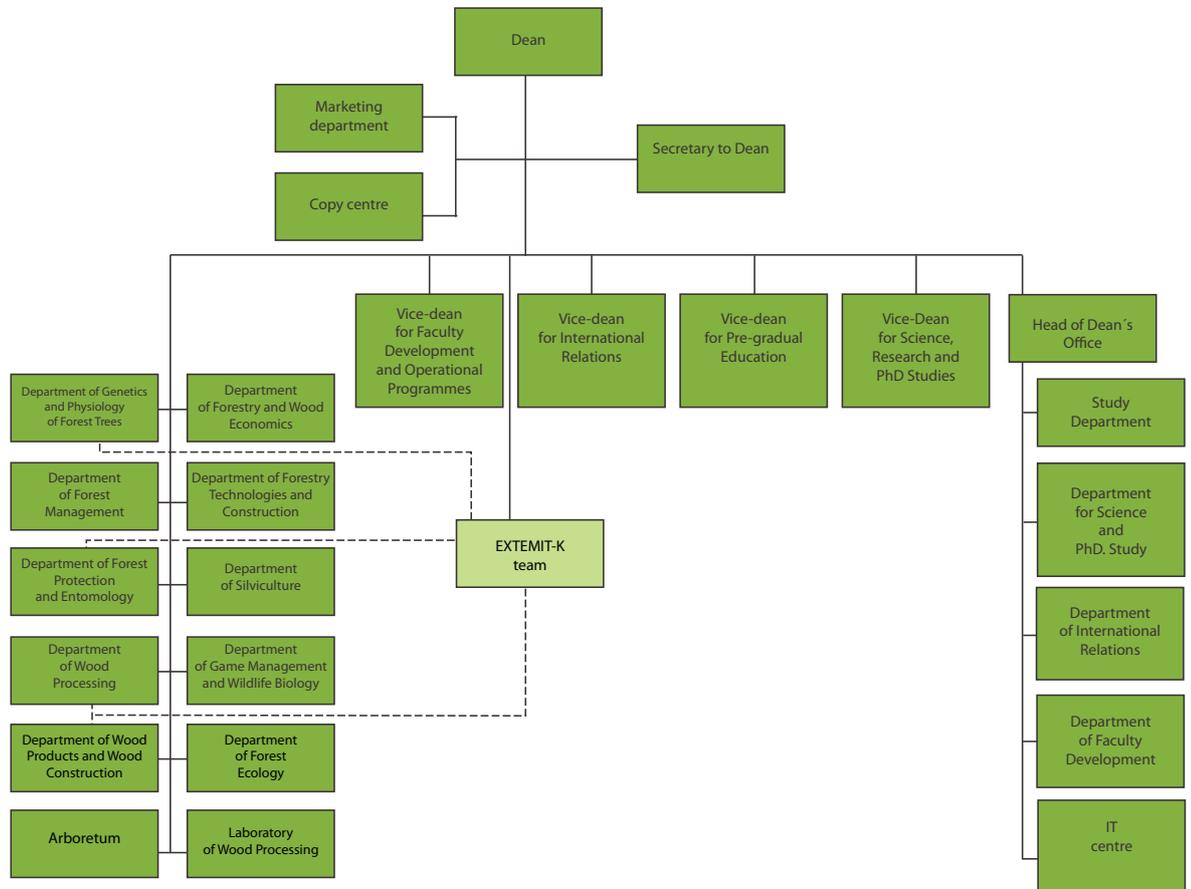
Faculty address

Czech University of Life Sciences Prague
Faculty of Forestry and Wood Sciences
Kamycka 129
165 21 Prague 6 -Suchdol

Commonly used abbreviations

FLD ČZU (in Czech)
FLD (in Czech)
FFWS CULS (in English)
FFWS (in English)

2.2 Organisational chart and structure of the FFWS



2.3. Composition of the Advisory Board, Academic Senate and other FFWS bodies

2.3.1 FFWS Academic Senate

a) Electoral period until October 2016

Academic staff:

doc. Ing. Martin Böhm, Ph.D., resigned from his mandate as at 29 3. 2016

doc. Ing. Aleš Zeidler, Ph.D., as of 30. 3. 2016

doc. Ing. Oto Nakládal, Ph.D.

Prof. Ing. Jaroslav Červený, CSc.

Prof. Ing. Miroslav Svoboda, Ph.D.

doc. Ing. Ivana Tomášková, Ph.D.

Ing. Jan Bomba, Ph.D.

Prof. Ing. Milan Lstibůrek, MSc., Ph.D.

Ing. Petr Vopěnka

Students:

Ing. Jiří Procházka

Ing. Tomáš Svoboda

Ing. Tereza Kolbabová

Ing. Hana Mrhalová

b) Electoral period from November 2016 to October 2019

Academic staff:

doc. Ing. Oto Nakládal, Ph.D.

Prof. Ing. Jaroslav Červený, CSc.

doc. Ing. Ivana Tomášková, Ph.D.

doc. Ing. Vítězslava Pešková, Ph.D. (appointed Associate Professor as of 5 12. 2016)

Priv.-Doz. Ing. Peter Surový, PhD.

doc. Ing. Milan Gaff, PhD.

doc. Ing. Vlastimil Hart, Ph.D.

Ing. Václav Bažant, Ph.D.

Students:

Ing. Radim Löwe

Ing. Monika Sedmíková

Bc. Lucie Hambálková

Ing. Jan Rohla

2.3.2 FFWS Advisory Board**Internal members – FFWS staff:**

Prof. Ing. Marek Turčáni, PhD., Chairman

doc. Ing. Martin Böhm, Ph.D.

Prof. Ing. Jaroslav Červený, CSc.

doc. Ing. Milan Gaff, PhD.

doc. Ing. Miroslav Hájek, Ph.D.

Prof. Ing. Jaroslav Holuša, Ph.D.

doc. Ing. Václav Kupčák, CSc.

Prof. Ing. Milan Lstibůrek, MSc., Ph.D.

Prof. Ing. Róbert Marušák, PhD.

doc. Ing. Ján Merganič, PhD.

Prof. Ing. Vilém Podrázský, CSc.

doc. Ing. Jiří Remeš, Ph.D.

Prof. Ing. Miroslav Svoboda, Ph.D.

Prof. Ing. Luděk Šišák, CSc.

doc. Ing. Ivana Tomášková, Ph.D.

Internal members – remaining CULS faculties and departments:

doc. Ing. Václav Hejnák, Ph.D.

doc. Ing. Milan Houška, Ph.D.

doc. Ing. Bohdan Lojka, Ph.D.

doc. Ing. Václav Malík, Ph.D.

doc. Ing. Jiří Mašek, Ph.D.

Prof. Ing. Pavel Pech, CSc. (membership terminated as at 22 April 2016)

External members:

doc. Ing. Radomír Klvač, Ph.D.

doc. RNDr. Bohumír Lomský, CSc.

Prof. Dr. Ing. Viliam Pichler

Ing. Petr Pražan, Ph.D.

Prof. Ing. Mikuláš Siklienka, PhD.

doc. Ing. Alois Skoupý, CSc.

Ing. Dušan Utinek, Ph.D. (membership terminated as at 23 November 2016)

Ing. Jaromír Vašíček, CSc.

Ing. Daniel Vlkanova, Ph.D., MBA

Ing. Josef Vojáček

doc. Ing. Petr Zahradník, CSc.

Ing. Martin Žižka, Ph.D.

Changes in the membership in the FFWS Advisory Board

As of 22 April 2016, the following was appointed member:

Prof. Ing. Petr Sklenička, Ph.D.

As of 28 November 2016, the following was appointed member:

Ing. Jiří Boháček

2.3.3 Management of the Faculty of Forestry and Wood Sciences

Dean:

Prof. Ing. Marek Turčáni, PhD.

Vice-Deans:

Prof. Ing. Róbert Marušák, Ph.D., First Vice-Dean, Vice-Dean for International Relations

doc. Ing. Jiří Remeš, Ph.D., Vice-Dean for Pre-gradual Education

doc. Ing. Tomáš Kušta, Ph.D., Vice-Dean for Science, Research and PhD Studies

Ing. Radek Rinn, Vice-Dean for Development and Operational Programmes

(as of 20 June 2016)

Head of the Dean's Office:

Ing. Bc. Martin Prajer, Ph.D.



EDUCATION ACTIVITIES

3. Education activities

Activities in the field of education carried out at the FFWS in 2016 were based on the priorities and operational objectives defined in the Update of the Long-term Plan of the Faculty and focused mainly on the following areas:

Fulfil the strategy for improving the quality of admitted students and consequently improve the quality of the educational process, both expected to result in an increase in the success rate of students not only in their studies, but also on the labour market.

Fully benefit from the system of support for gifted students and further develop the same. Introduce new forms of education for the gifted, high-quality students (generally, students with good academic results).

Continue to issue new paper textbooks and electronic study materials (including video recordings of lectures, which are considered the major source of information especially for students of the combined form of study).

Secure favourable conditions and environment for studies (modern premises, collection and teaching materials, state-of-the-art technology). Improve facilities for students' leisure time and studies outside the schedules. Continue in cultivating the culture of the environment at the Faculty (sanitary facilities, relax areas, student information desks) and enhancing communication with students – as a priority.

Shape the study programmes – to optimise advancement between the Bachelor's and the follow-up Master's degree branches of study without any serious obstacles in studies. Introduce and gradually develop transferable competences in teaching at the FFWS on the basis of elective subjects/seminars for basic scientific fields.

Intensify cooperation and mainly communication with the partners of the Faculty (Lesy ČR, s.p., Vojenské lesy a statky, s.p., private and municipal forests, wood processing and furniture manufacturing companies, state administration at both central and regional level), in particular, in the area of placeability of students on the labour market.

Continuously monitor and evaluate the placeability of FFWS graduates on the labour market per individual branches of study using the data from labour offices in the Czech Republic.

The above stated priorities are driven by the effort to continue transforming the FFWS into a modern educational institution that stands on three pillars: gifted students, high-quality teachers and well employable graduates. Therefore, efforts focus on the gradual increasing of quality of applicants admitted to study at the FFWS (organisation of the admission procedure, sufficiently

diversified and attractive branches of study), further improving of the study conditions (including the application of all relevant motivational tools), improving of the educational process as such (through the improvement of teaching competences of teachers), and, ultimately, on the increasing of graduates' employability (among other things, also intensive cooperation with the sphere of application).

3.1 Organisation of studies at the FFWS

The Faculty of Forestry and Wood Sciences offers studies of branches and programmes in the field of forestry and wood sciences in their entirety, including matters related to public administration and business in this area or associated with game management and other forest and landscape components, including management of forests in protected landscape areas. The essence of all branches of study is the fulfilment of the principles of sustainable management of natural (renewable) resources aimed to harmonise the environmental principles of landscape management with the requirements of the society for all the forest products. Studies at the FFWS are governed by applicable legislative and internal regulations of the CULS. A fundamental change occurred in this area in 2016 when an amendment to the Higher Education Act was approved and came into effect on 1 September 2016. This amendment has some consequences which have been and will have to be reflected by adaptive measures at the level of both the University and the Faculty. In 2016, it was namely commencing the preparation of internal regulations of the CULS and subsequently also the FFWS (CULS statutes, study and exam codes). Furthermore, it was necessary to actively participate in the establishment of the National Accreditation Authority; first, the CULS had to nominate a representative of the agricultural (and forestry) branches for the NAA Council – it succeeded to appoint Prof. Ing. Jaroslav Petr, DrSc. Second, it was necessary to nominate suitable candidates for the list of NAA evaluators. Thanks the excellent cooperation of Prof. Petr and Prof. Marušák the CULS succeeded to approve total of 45 evaluators for the area of education in forestry and wood sciences (out of which 13 representatives came from the FFWS and 17 from the CULS). Adaptive measures include an analysis of existing branches of study and study programmes and their gradual transformation into the form meeting the requirements of the amendment to the Higher Education Act. This process also included a nomination of new guarantors/owners of individual branches of study and study programmes at all levels, which was prepared by the Dean and approved by the leadership of the Faculty.

3.1.1 Accredited study programmes and branches of study at the Bachelor's, follow-up Master's and postgraduate levels of degree taught in the Czech language

At present, the FFWS has six accredited Bachelor's degree branches of study and two follow-up Master's degree branches of study, which are taught in the Czech language (Table 1). All study programmes and branches of study have valid accreditation at least until 31 August 2019, as stipulated directly by the adopted amendment.

The FFWS has two accredited doctoral study programmes (DSP) in the Czech language: Forest Engineering, and Economics and Management. In 2016, the doctoral studies under the Forest Engineering DSP were pursued in seven branches: Forest Biology, Forest Management, Silviculture (3 years), Silviculture (4 years), Forest Protection and Game Management (3 years), Forest Protection and Game Management (4 years), Technology and Machinery in Forest Management (TMLH), and Wood Processing and Machinery in Forest Management (ZDTLH), whilst the accreditation of the TMLH branch terminated in May 2016 and the FFWS acquired a new accreditation of the ZDTLH branch, which better meets the current requirements for graduates. The Economics and Management DSP has one accredited branch of study, i.e. Economics and Management of an Enterprise. All branches are accredited for full-time and combined types of study. In 2016, we held admission procedure for the DSP for the academic year 2016/2017 in the framework of the general conditions for the branches of Forest Biology, Forest Protection and Game Management, Silviculture, Wood Processing and Machinery in Forest Management, and Economics and Management of an Enterprise for the standard period of study for 4 years, and for the Forest Management for 3 years. For all these branches we held admission procedure also for branches taught in the English language.

Table 1: Accredited study programmes and branches of study taught in the Czech language in 2016

Type of Study	Study Program	Study Specialization	Form of Study	Accreditation to:	Accredited study period
Bachelor Program	Wood Technology	Wood Technology	full-time, combined	30 August 2019	3
		Business in the Wood Processing	full-time	31 August 2019	3
	Forestry	Economic Administration Services in Forestry	full-time, combined	31 August 2019	3
		Forestry	full-time, combined	31 August 2019	3
		Operation and Game Management	full-time, combined	31 December 2023	3
		Preservation of Products of Nature and Taxidermy	full-time	31 August 2019	3
Master Program	Wood Engineering	Wood Engineering	full-time, combined	31 August 2019	2
	Forest Engineering	Forest Engineering	full-time, combined	31 January 2022	2
PhD Program	Forest Engineering	Dendrology and Forest Tree Breeding	full-time, combined	31 May 2020	3
		Forest Management		31 May 2020	3
		Silviculture		31 May 2020	3
		Silviculture		31 May 2020	4
		Technology and Mechanization in Forestry		31 May 2016	3
		Wood Processing and Forest Machinery		31. 3. 2024	4
		Forest Biology		31 March 2020	4
		Forest Protection and Game Management		31 May 2020	3
		Forest Protection and Game Management		31 July 2020	4
	Economics and Management	Economics and Management of an Enterprise	full-time, combined	31 May 2024	3

3.1.2 Accredited study programmes and branches of study at the Bachelor's, follow-up Master's and postgraduate levels of degree taught in the English language

At present, the FFWS has three accredited Bachelor's degree branches of study and four follow-up Master's degree branches of study, which are taught in the English language (Table 2). The branch of Forestry at the Bachelor's degree and the branches of Forestry, Water and Landscape Management, and Tropical Forestry and Agroforestry at the Master's degree are opened on a regular basis. Traditionally, most of the students study the Forestry, Water and Landscape Management branches of study (also in relation to the inclusion of this branch of study to the list of branches of study supported by the Ministry of Education, Youth and Sports of the Czech Republic in the framework of the House of Foreign Services programme for government scholarship holders). As regards the branches of study taught in English, the year 2016 saw an increased interest in studies. They were mainly applicants from African countries, in particular, from Ghana. That is why the admission procedure was held directly in the capital city of Accra (this time, for capacity reasons, outside the Embassy of the Czech Republic) in 2016. In majority of cases, however, the admitted students' failure to document the recognition of the required level of education considerably complicates their enrolment in the university. The applicants were able to apply for the recognition no sooner than after their arrival to the Czech Republic. The recognition of secondary education is provided by the regional authorities and takes a very long time (3–6 months), which prevents their timely enrolment in the university. Experience from 2016 shows that in many cases the recognition of secondary education is not realistically achievable for foreign students. For these reasons, the admission of foreign applicants to Bachelor's branches of study will be limited in the coming years, firstly, by means of a higher fee for teaching in the foreign language and, secondly, through the strict requirement for submission of the recognition of secondary education prior to the notification of admission to university studies.

As for doctoral studies held in the foreign language, the Faculty has two accredited study programmes with all branches of study as in the Czech language. It is the Forestry Engineering study programme, including the following branches of study: Silviculture (3 and 4 years), Dendrology and Forest Tree Breeding, Forest Protection and Game Management, Forest Management, Technology and Mechanisation in Forestry (accreditation terminated as at 31 May 2016), and Wood Processing and Forest Machinery. The second study programme is the Economics and Management with the Economics and Management of an Enterprise branch of study.

Table 2: Accredited study programmes and branches of study taught in the English language in 2016

Type of Study	Study Program	Study Specialization	Form of Study	Accreditation to:	Accredited Study Period:
Bachelor Program	Forestry	Game Management	full-time, combined	31 December 2023	3
		Forestry	full-time	31 August 2019	3
	Wood Technology	Wood Technology	full-time	31 August 2019	3
Master Program	Forestry Engineering	Forestry, Water and Landscape Management	full-time	31 July 2020	2
		Forest Engineering	full-time	31 January 2022	2
		Tropical Forestry and Agroforestry	full-time	31 March 2020	2
	Wood Engineering	Wood Engineering	full-time	31 August 2019	2
PhD Program	Forestry Engineering	Silviculture	full-time, combined	31 May 2020	3
		Silviculture		31 May 2020	4
		Forest Protection and Game Management		31 July 2020	4
		Dendrology and Forest Tree Breeding		31 May 2020	3
		Forest Management		31 May 2020	3
		Forest Biology		31 March 2020	4
		Technology and Mechanization in Forestry		31 May 2016	

3.1.3 Double degree programmes

For a long time, the double degree programmes (DD programmes) have been a stable part of the offer of studies at the FFWS. Up to now, three contracts have been concluded for the implementation of DD programmes. Two of them have been signed with the Faculty of Forestry (Escuela Técnica Superior de Ingenieros de Montes) of the Technical University of Madrid (for the Forestry, Water and Landscape Management, and the Forest Engineering branches of study) and one with the Volga State University in Russia (Wood Engineering).

In 2016, one student (Josef Gallo) from the FFWS successfully graduated under this contract in Madrid.

The DD programme was also used by four Spanish students from the Madrid University who commenced their studies in the branch of Wood Engineering at the FFWS in 2016.

3.1.4 Educational activities outside the scope of the accredited study programmes

In 2016, the Faculty of Forestry and Wood Sciences held (in Czech and English) A Lecture on the topic of Publishing strategies in the Publish or Perish! (Prof. Burda), which was also open for employees and students of the DSP. In 2016, we also organised a workshop focusing on: Working with WOS scientific databases, SCOPUS and citation managers (SIC staff). The DSP students were the target audience of the lecture on the topic: How to succeed in writing project proposals. A separate workshop was also dedicated to the issue of involvement of students in scientific research and project activities of FFWS departments. Other educational activities are related to the activities of FFWS student associations which, with the support of the FFWS, hold a number of lectures, interesting film projections with subsequent discussions and other events (e.g. Keeper of the Wilderness by Slovakian authors Robert Rajchl and Erik Baláž, Land without Shade, and Disappearing World of the Capercaillie). The International academic competition in hunting trumpeting and deer calling, which was held by the Technical University in Zvolen in 2016, took place under the Faculty's auspices. The Department of Game Management and Wildlife Biology in cooperation with the Ministry of Agriculture organised a workshop on the topic: Principles of correct game feeding and baiting in relation to the damage caused to crops, forest stands and game health. By tradition, the FFWS held the CULS Rector's Cup shooting competition. In addition, in 2016, the FFWS offered to students and educators lectures of both domestic and foreign lecturers. The Life Sciences Film Festival, including also discussions about the selected film projections, was

also a traditional component of educational activities. In 2016, the discussion centred around the theme *The Wooden Age is Coming* aroused great attention of both the FFWS students and staff. The main guest and moderator of the discussion was Prof. Horáček.

3.2 Interest in studies at the FFWS

The development of interest in studies at the FFWS over the past six years is documented in Table 3, which lists the number of applications in individual branches of study. The development of the number of registered applicants, admitted and finally enrolled students is given in Fig. 1. This overview makes it evident that the situation in this area has evolved quite significantly over the last seven years; over the last three years, however, there has been a stabilisation. The number of applicants and admitted students is influenced by several factors. Above all, the admission requirements have an impact as was obvious in the academic year of 2012/13 when the admission requirements were set so as to gradually achieve an increase in the number of students in higher grades. In later years, however, this procedure was not repeated and admission requirements are rendered stricter. Subsequently, there was a decline in the number of applications for study; nevertheless, in 2015, the number of applications increased again to 1,938. In 2016, there was again a slight decline in the number of applications for study (down to the level of 1,837) due to stricter admission conditions. The situation in the admission procedure is markedly influenced by the downward demographic curve (Fig. 2). It is obvious that freshman classes at universities touched the bottom of the demographic decline while the lowest level will be achieved for the students commencing their studies in 2018. Students born in years with the historically lowest fertility rate in the Czech Republic commence their university studies now (Fig. 2) and this adverse situation will last for another 4–5 years. Only then can we expect a gradual increase in the number of applicants for university studies. Thankfully, over the recent years, the birth rate has been rising slightly in the Czech Republic, which is documented by data for the year 2016, when 112,700 children were born.

In this period of demographic decline, the number of potential missing students needs to be complemented with applicants from abroad; this strategy has been successful to a large extent. In 2016, the proportion of foreigners in submitted applications amounted to 32%; however, only some of them have satisfied the conditions for admission and enrolment in the university.

Fig. 1: Development in the number of registered, admitted and enrolled students in the period from 2010 to 2016

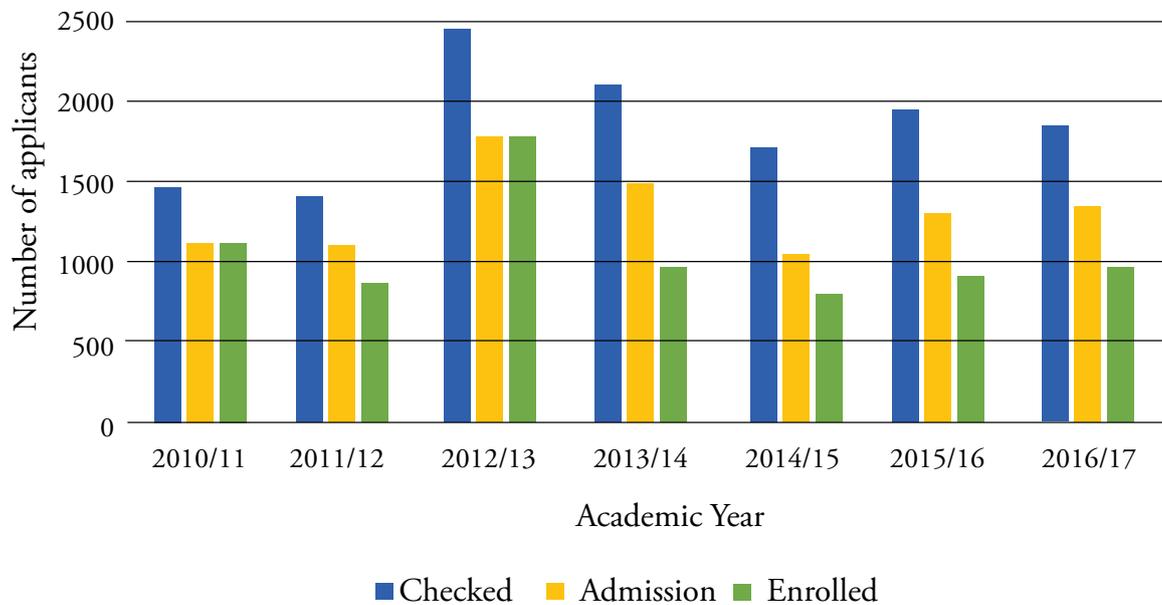


Fig. 2: Demographic transition curve in the Czech Republic after 1989

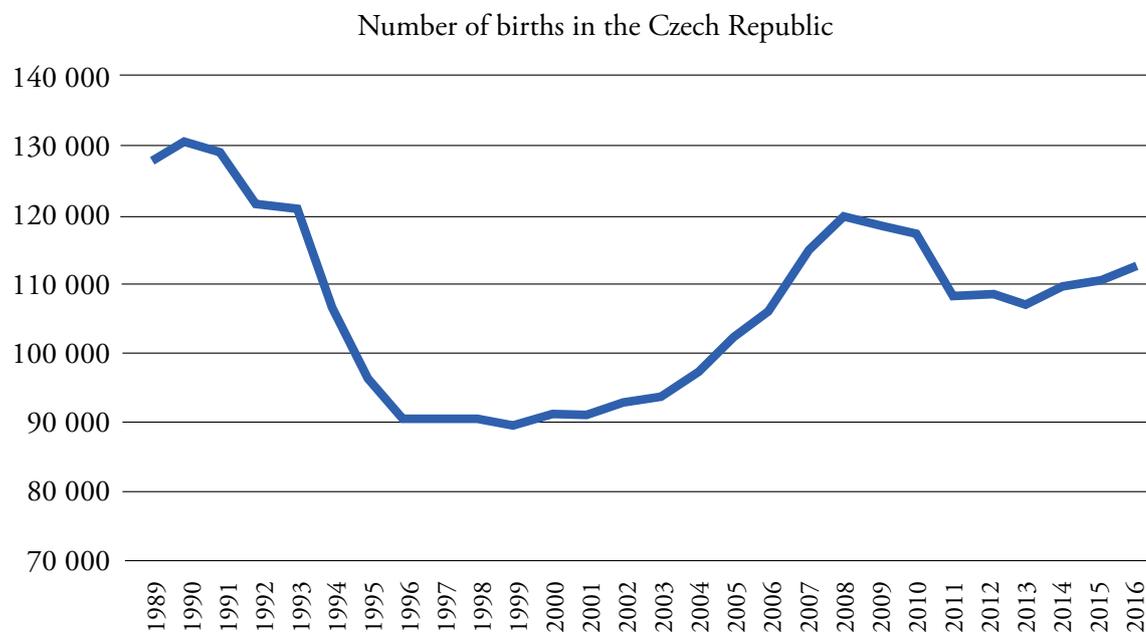


Table 3: Development in the number of applications for study in the FFWS branches of study

Type of Study	Study Specialization	Form of Study	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17
Bachelor Program	Forestry	full-time	230	454	418	355	402	544
		combined	103	150	118	110	115	195
	Economic Administration Services in Forestry	full-time	203	532	361	168	157	78
		combined	139	206	122	113	67	51
	Operation and Game Management	full-time	143	147	122	147	178	100
		combined	139	184	109	118	170	113
	Wood Technology	full-time	152	244	169	127	141	106
		combined	35	44	53	40	41	33
	Business in the Wood Processing	full-time			246	177	176	141
	Preservation of Products of Nature and Taxidermy	full-time				25	60	29
Forestry	full-time		7	7	18	45	35	
Game Management	full-time	1	2	1	1	9	15	
Master Program	Forestry Engineering	full-time	62	190	83	71	124	112
		combined	123	145	104	132	169	119
	Wood Engineering	full-time	27	81	126	43	35	33
		combined	21	35	45	45	25	31
	Forestry, Water and Landscape Management	full-time	11	25	11	15	17	47
	Forest Engineering	full-time					2	23
	Tropical Forestry and Agroforestry	full-time	6	1	0	1	5	25
Total			1 395	2 447	2 095	1 706	1 938	1 830

3.2.1 Student recruitment

The above-mentioned negative demographic trend increases the significance of activities aimed at recruiting students. The Faculty of Forestry and Wood Sciences therefore has a strategy of active addressing of prospective students through both direct and indirect (Internet) campaigns. These campaigns have been developed by the Marketing Department, which is also fully in charge of them. The direct campaign is focused on presenting the studies at the FFWS at selected secondary schools. Students from selected secondary schools are also invited to Open Days (in autumn and winter terms), which remain an important part of providing prospective applicants with information. In 2016, the Open Days were attended by approx. 350 visitors of which 250 were applicants for study. In 2016, an attention in promoting studies at the FFWS was also paid to some schools abroad (Slovak Republic), including personal visits to selected secondary schools of forestry (Prešov, Liptovský Hrádok). The FFWS was also active at some study and career fairs in the Slovak Republic (Academia Vapac Bratislava, Gaudeamus Nitra).

Besides these recruitment efforts, the cooperation with secondary schools in the area of educational and secondary specialised activities is of importance for the FFWS promotion. In 2016, it took the form of holding the YPEF international competition (Young People in European Forests), where the FFWS takes part in the organisation with selected secondary forestry schools (in Písek, Hranice na Moravě, Žlutice and Trutnov) and Česká lesnická společnost. In 2016, the FFWS again organised the regional round of this competition for Prague and the national round as well. Furthermore, the Faculty offers lectures and seminars on pressing and interesting topics to secondary schools, which is also a way to address other potential applicants. The FFWS has been cooperating with some secondary schools over a long period of time, presenting the Faculty to them and offering an opportunity of trial use of teaching laboratories to secondary school students. In 2016, the CULS FFWS concluded an agreement on partnership and cooperation with the Secondary School of Art and Crafts in Zlíchov, Prague. This agreement is aimed at cooperation in the implementation of educational projects and vocational training programmes.

To enhance the reputation of the FFWS, it is very important to foster the student-friendly environment at the Faculty. The questionnaires, which are distributed to new students upon their enrolment for the study and potential applicants during the Open Days, clearly show that information from family and friends is, besides the Internet, the main source of information about studying at the FFWS. The perception and evaluation of the Faculty by its students and graduates is thus of major importance. The Faculty management therefore makes great effort to communicate with students as much as possible, to support student associations and hold regular meetings. This work has been also reflected in the positive result of an analysis conducted by the Education Policy Centre of the Charles University where the FFWS achieved a high score in terms of studies, courses and teachers from the perspective of university students and graduates (Table 4).

Table 4: Evaluation of studies, courses and teachers from the perspective of university/faculty students and graduates (the more asterisks, the better evaluation). Source: Koutský, Bartušek 2016.

Evaluation of studies, courses and teachers				
*****	****	***	**	*
3. LF UK	UK	FF UK	PedF UK	FTVS UK
2. LF UK	1. LF UK	PF UK	JU	ZSF JU
LFP UK	FaF UK	FSV UK	ZF JU	EF JU
LFHK UK	FHS UK	PdF MU	PF JU	FZS UJEP
ETF UK	KTF UK	FSpS MU	UJEP	FSE UJEP
PŘF UK	HTF UK	ESF MU	FF UJEP	FŽP UJEP
MFF UK	TF JU	UP	PF UJEP	PF UP
FF JU	PŘF UJEP	FZV UP	FUD UJEP	PdF UHK
PŘF JU	MU	PdF UP	FVL VFU	SU
LF MU	FF MU	VFU	FVP SU	FPF SU
PřF MU	FSS MU	FVHE VFU	FS ČVUT	OPF SU
PřF MU	FI MU	OU	FA ČVUT	FD ČVUT
LF UP	FF UP	LF OU	FPE ZČU	FBMI ČVUT
FaF VFU	CMTF UP	FSS OU	TUL	FEK ZČU
FIM UHK	PŘF UP	FF OU	EF TUL	FS TUL
FEL ČVUT	FTK UP	PřF OU	FT TUL	FM TUL
FIT ČVUT	VŠCHT	PdF OU	FP TUL	FES UPa
FJFI ČVUT	FTOP VŠCHT	UHK	UPa	FZS UPa
FCHT VŠCHT	FAV ZČU	FF UHK	FF UPa	FEI UPa
FBBT VŠCHT	FChT UPa	PřF UHK	DFJP UPa	FP VUT
FCHI VŠCHT	FEKT VUT	ČVUT	FAST VUT	EkF VB-TUO
FEL ZČU	FIT VUT	FSv ČVUT	VŠB-TUO	FAI UTB
FPR ZČU	VŠE	ZČU	FAST VŠB-TUO	FLKŘ UTB
FSI VUT	FPH VŠE	FST ZČU	FBI VŠB-TUO	PEF MENDELU
FFÚ VŠE	FM VŠE	FZS ZČU	UTB	FRRMS MENDELU
FIS VŠE	FFWS CULS	FF ZČU	FT UTB	VŠTE
NF VŠE	AF MENDELU	VUT	FaME UTB	
		FCH VUT	FMV VŠE	
		FA VUT	CULS	
		FS VŠB-TUO	PEF ČZU	
		FEI VŠB-TUO	FAPPZ ČZU	
		HGF VŠB-TUO	TF ČZU	
		FMMI VŠB-TUO	MENDELU	
		FMK UTB	LDF MENDELU	
		FHS UTB	ZF MENDELU	
		FŽP ČZU		

3.3 FFWS students

3.3.1 Students in accredited branches of study at the FFWS

Students in accredited study programmes form the dominant part of all students at the FFWS. An overview of the number of students over the past seven years is shown in Table 5. In past, the number of students admitted to the first year was significantly influenced by the defined numbers of students financed by the Ministry of Education, Youth and Sports. Nevertheless, this procedure has changed during 2016 and balanced funding was conditioned, inter alia, by the achievement of an equal number of enrolled students in the first years of study as in the previous academic year (with a maximum allowed drop of 10%). Due to the relatively high dropout rate of first-year students at the FFWS in the long term, the number of admitted students was higher than the stipulated number of funded students until 2015 in order to ensure the necessary number of students in the higher grades. That is why along with the change of the financing system the necessary number of students enrolled to study in the first year suddenly increased significantly. In 2016, thanks to an increased effort the Faculty succeeded to meet this requirement (somewhat more students than in 2015 were enrolled); together with an increase in the academic success rate, this also meant an increase in the total number of students of Bachelor and Master study at the FFWS (Table 5). Over the past three years, the number of students in the Bachelor's branches has not changed significantly; by contrast, the number of students in the Master's branches has been slowly rising over the past three years.



Table 5: Development in the number of students in the FFWS branches of study, status as at 31 October 2016

Type of study	Study Specialization	Form of Study	2010	2011	2012	2013	2014	2015	2016
Bachelor Program	Forestry	full-time	239	216	396	313	329	350	393
		combined	151	137	175	122	102	127	172
	Economic Administration Services in Forestry	full-time	236	207	473	332	210	128	80
		combined	287	266	289	188	108	68	69
	Operation and Game Management	full-time	152	123	149	109	106	136	136
		combined	307	295	306	197	177	190	205
	Wood Technology	full-time	164	135	198	142	116	122	89
		combined	19	37	45	38	25	36	30
	Business in the Wood Processing	full-time				42	73	117	130
	Preservation of Products of Nature and Taxidermy						9	34	35
	Forestry				2	3	7	13	9
	Game Management				0	0	0	0	0
Master Program	Forestry Engineering	full-time	111	77	170	139	101	128	163
		combined	200	204	214	209	192	227	230
	Wood Engineering	full-time	40	41	79	106	78	43	42
		combined		15	48	62	57	46	51
	Forestry, Water and Landscape Management	full-time	14	9	19	19	13	5	9
	Forest Engineering	full-time							1
	Tropical Forestry and Agroforestry	full-time		3	1	0	0	1	4
Total			1920	1765	2564	2021	1703	1771	1848

An overview of trends in the number of students in the study branches of forestry and wood sciences is shown in Fig. 3 and 4. It is obvious that the proportion of students of the study branch of wood sciences at the Bachelor’s degree level is well balanced and stable in the long term and is not subject to such variations as the number of students in the forestry branches of study. The slight increase in the number of students of the study branches of wood sciences in recent years is related to the gradual commencement of the course “Business in the Wood Processing and Furniture Industry”. The number of students in the forestry branches of study has also stabilised over the last three years.

Fig. 3: Development in the total number of students of the Bachelor study of wood sciences and forestry branches of study in the period from 2010 to 2016.

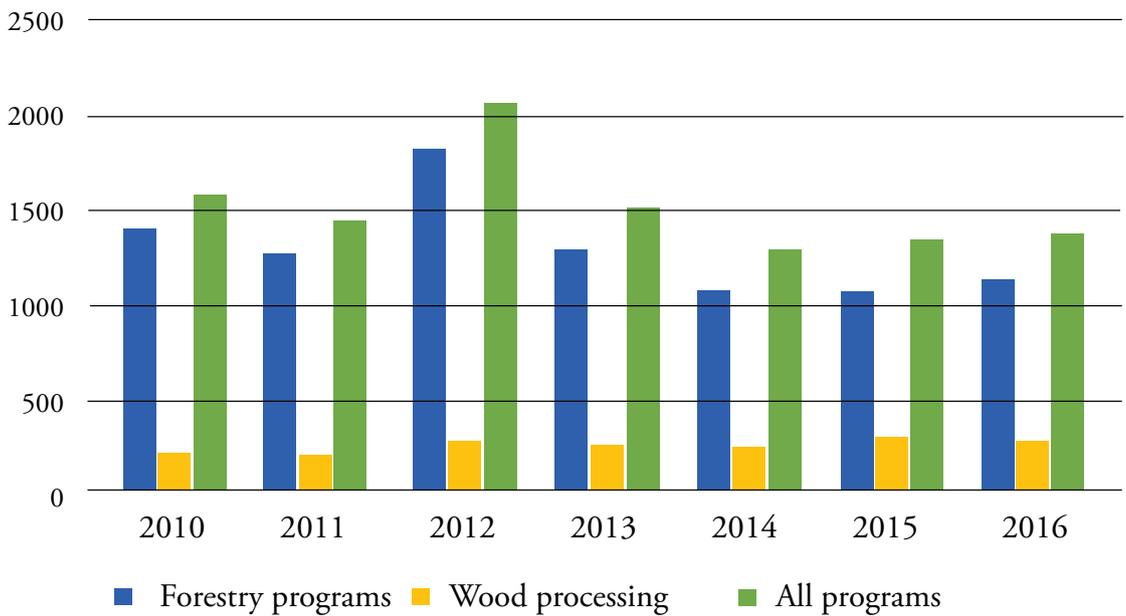
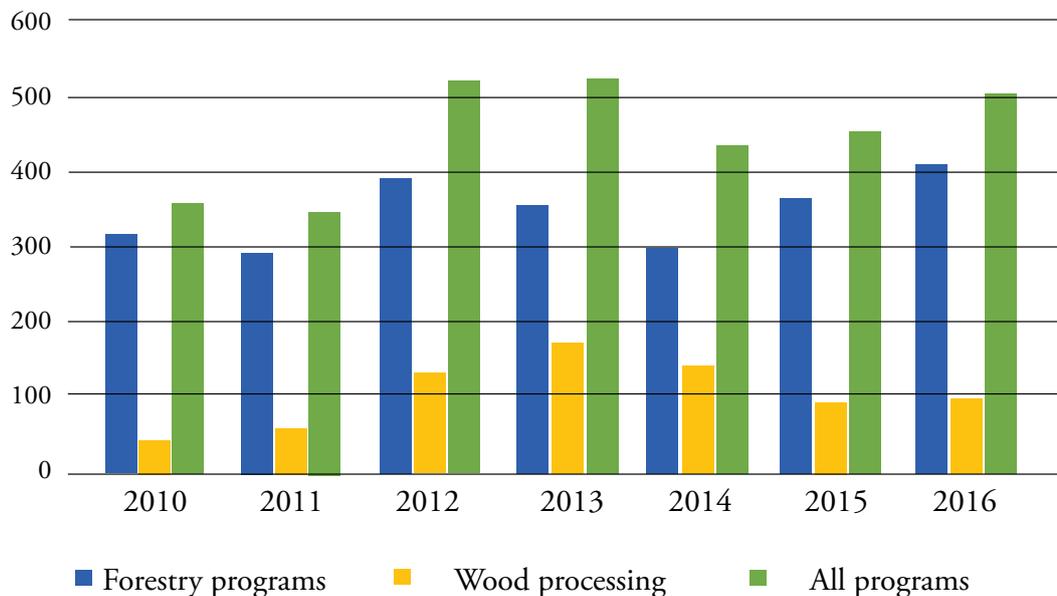


Fig. 4: Development in the total number of students of the Master study of wood sciences and forestry branches of study in the period from 2010 to 2016.



In the follow-up Master studies, there has been a greater volatility in the number of students over the past six years. The highest numbers were achieved in 2012 and 2013, whereas in 2014, a rather significant decline was recorded. In 2015, the decline was compensated and in 2016, the figure was boosted nearly up to the level of the years 2012 and 2013. The upward trend may be attributed to an increase in the number of students in the forestry branches of study. As regards Forest Engineering, although the number of students slightly increased in 2016, the situation is not stabilised yet.

Fig. 5 and 6 list the proportions between the students of the full-time or combined form of study in the last seven years. It is obvious that the shares and the development of the ratio between the number of students in the full-time and combined form of study differ. While at the Bachelor's degree level, the share of students in the combined form of study amounted to about 30–35% over the recent years, at the Master's degree level this share was rising between 2013 and 2015 and reached almost 61%. In 2016, we succeeded to significantly increase the number of full-time students while the share of students in the combined form of study dropped to

57%. In total, the proportion of students in the combined form of study equals approximately 41%. A relatively high proportion of students in the combined form of study is indicative of the attractiveness of FFWS branches of study as means of supplementing qualification of already employed people. Another reason is the offer of jobs for full-time students especially at the Master's level, which in many cases motivates students to change the form of study.

Fig. 5: Development in the total number of students of the Bachelor study in full-time and combined form of study in the period from 2010 to 2016

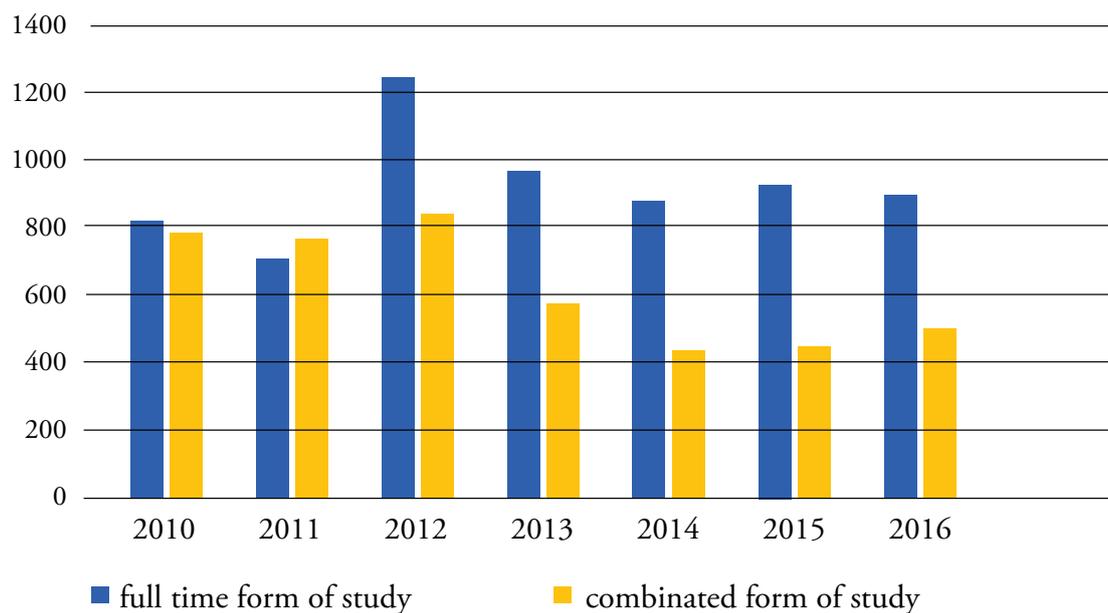
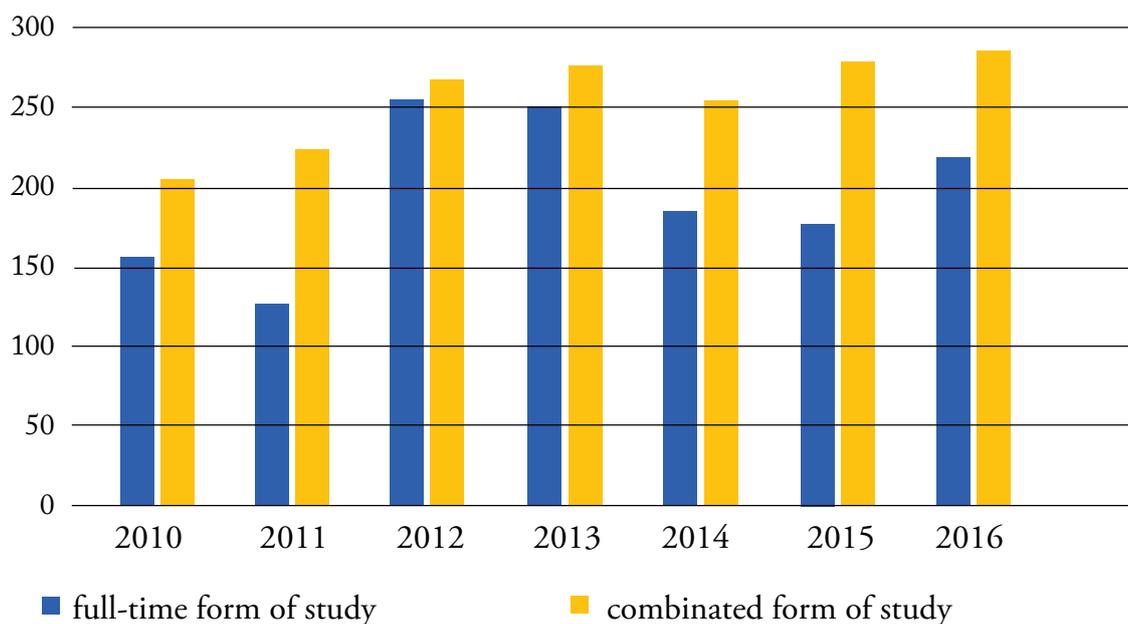


Fig. 6: Development in the total number of students of the Master study in full-time and combined form of study in the period from 2010 to 2016



The numbers of admitted DSP students in the first year split according to the form of study and individual branches of study over the last five years are shown in Table 6. As regards the S&R development strategy at the FFWS, a greater emphasis shall be put on quality and outcomes of doctoral students' studies. The publishing activity of PhD students of the combined form of study is still low, their involvement in site projects is minimum and a large number of these students interrupt their studies and eventually often drop out their studies.

Table 6: Number of admitted students in the first year of doctoral study programmes in the period from 2010 to 2016

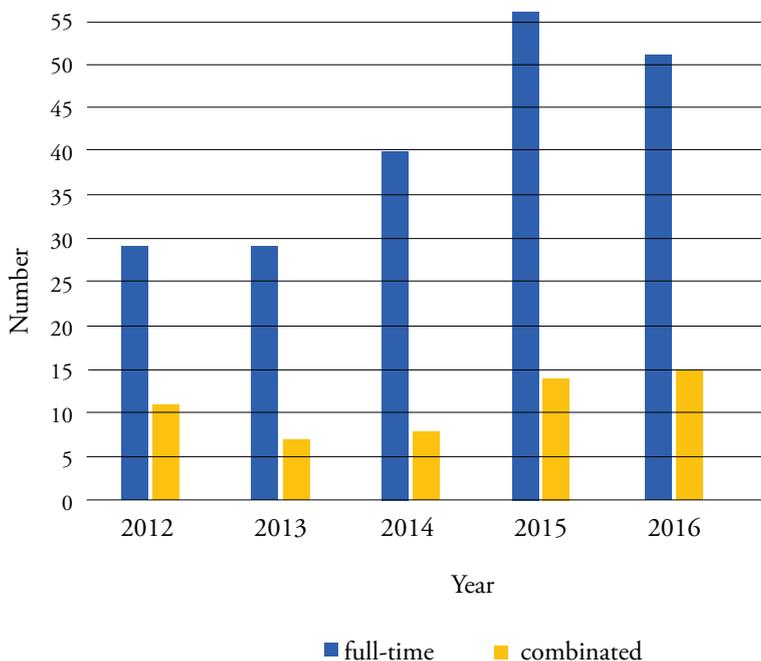
Study Specialization	Year									
	2012		2013		2014		2015		2016	
	Form of Study (F – full-time, C – combined)									
	F	C	F	C	F	C	F	C	F	C
DFTB	1	0	0	0	1	1	1	0	0	0
FM	2	1	3	0	2	1	8	1	2	2
FPGM	6	2	11	2	8	4	21	3	9	1
S	8	4	4	1	14	0	8	3	4	2
EME	5	2	3	3	5	2	7	5	12	6
TMF	5	2	8	1	10	0	11	2	0	0
WPMFM									10	4
FB									14	0
Total	29	11	29	7	40	8	56	14	51	15

In 2016, total of 198 PhD students studied at the FFWS (Table 7). This development was largely influenced by the change in the philosophy and focusing on full-time students; the number of students was gradually falling down in 2012 and 2013, it rose in 2014 and 2015 and remained the same in 2016 (Fig. 7).

Table 7: Development in the number of students of doctoral study programmes at the FFWS in the period from 2010 to 2016

Type of Study	2010	2011	2012	2013	2014	2015	2016
Full-time study	108	122	82	81	84	122	141
Combined study	82	72	43	35	22	35	45
Interrupted study	38	22	40	40	61	37	37
Graduates	8	12	22	14	20	16	12
Total number of students	198	206	147	130	126	173	198

Fig. 7: Development in the number of enrolled students of doctoral study programmes in full-time and combined form of study between 2010 and 2016 (S&R update)



3.3.2 Students' study results

The high failure rate has been a major problem of the FFWS over a long period of time. Highly demanding studies, insufficient motivation and often even a small learning potential of the FFWS students played their part. Close attention has been thus paid to the issue of reducing the study failure rate at the FFWS over the recent years. That is why, in 2014, we drew up an analysis of the causes of this failure rate. The following main causes have been identified: insufficient competence of newly admitted students for studies at the FFWS, the difficulty of some subjects, study structure (curricula) together with the strict conditions for advancement to higher grades, poor motivation of students to study, and conditions and technical equipment of premises where learning takes place.

The solution of this adverse situation has been pursued over the last two years and has been aimed at all selected areas:

- **Recruiting gifted students for studies at the FFWS**, i.e. those who have the learning potential for university studies. It includes the promotion of the Faculty and its branches of study together with graduates' employability, gradual increasing of demands in the admission procedure (another measure was taken in 2016 when the conditions of admission procedure became stricter), which will allow for gradual meeting the number of admitted students by admitting the group of applicants with the best competences, the educational counselling for students and intensification of the communication with students.

- Structuring of the studies so that the composition of the study subjects would correspond to the graduate's profile and the specificity of individual branches of study (diversification of studies) while the study load would be evenly and in a balanced manner distributed over all years of study. In order to achieve this goal, in 2016, restricted elective subjects were revised in both Master's branches of study – Forest Engineering and Wood Engineering. These courses/seminars were newly defined for the graduates from the Business in the Wood Processing and Furniture Industry branch of study.

Furthermore, we revised subjects with identical or similar content across all the branches of study and arranged for their current implementation through modification of curricula. At the same time, we modified the curricula for all the branches of study in order to respond to the current needs of individual branches.

In 2016, we elaborated the concept for the innovation of the FFWS study programmes (part of the prepared ESF SRD project), which includes the development of transferable competencies on the basis of elective subjects.

- **Increasing of the motivation and interest of students**, which is considered to be the main means in achieving better learning outcomes. The chief tools that are used to enhance the study motivation at the FFWS include: scholarship programmes, the development of active and talented students, which is supported also through extracurricular activities, the promotion of cooperation with the sphere of application increasing graduates' employability and thus making learning more attractive. In 2016, the FFWS used an extensive system of support of students comprised of several parts. It is a university scholarship with a two-stage level which is awarded for excellent educational attainment in the previous year of study. Furthermore, it is a university scholarship – scholarship programme “Young Scientist” whose capacity was in 2016 expanded to include 34 Bachelor's degree students from the 2nd and 3rd years and Master's de-

gree students. Students are selected for these positions on the basis of selection procedure announced by the Dean of the Faculty. This selection procedure is announced as necessary, at least once a year. Another type of scholarship is a sports scholarship (for athletes included at least in the performance category who at the same time achieve excellent academic performance) and a scholarship for gifted Bachelor's degree full-time freshmen (the scholarship is awarded in accordance with the Directive of the CULS Rector on "Support of talented applicants for studies at the CULS"), or it is a one-time scholarship based on the school-leaving exam results and meeting of other conditions.

- **Gradually improving study conditions** and optimising the process of teaching as such. It is key for all the necessary specialisations to be rendered by the best professionals with high-quality teaching capabilities. With the use of all available resources this includes: active support of updating and preparation of study materials, more active evaluation of the quality of teaching, the gradual enhancement of the pedagogical expertise of FFWS academics, gradual improving of the technical and material background of the educational process.

The most important step is the improvement of material and technical equipment. The new FFWS Pavilion of Wood Sciences has been built with teaching and laboratory premises boasting state-of-the-art equipment, which were already utilised for teaching in 2016. We also systematically replenish collections of osteological and dermoplastic preparations; in 2016, new rare exhibition pieces were added to the collections (e.g. an osteological and dermoplastic preparation of brown bear).

In 2016, we continued in activities associated with the preparation of high-quality learning materials (textbooks, teaching materials, electronic textbooks) where we again exploited cooperation with Lesy ČR, s. p. In the context of this cooperation, 11 new titles of textbooks have been produced. At the same time, the second editions of already sold out textbooks have been issued. All the textbooks are also available in electronic format. The Moodle system was upgraded in 2016. In 2016, the offer of elective subjects for students was extended with the aim to attract the audience's interest as much as possible.

3.3.3 Students on the lifelong learning courses

In 2016, the Faculty of Forestry and Wood Sciences hosted two courses of the University of the Third Age in the framework of lifelong learning:

- Trees and herbaceous vegetation in the city, in the garden and in the wide open space, which was terminated in 2016.
- Forests and nature conservation, which began in the autumn of 2016 and is planned as a two-year course.

Graduates who have passed these courses highly value this form of lifelong learning as evidenced by the high attendance on both courses, which were attended by total of 186 senior citizens.

3.4 FFWS graduates

The number of graduates of the Faculty of Forestry and Wood Sciences per individual branches of study in 2016 is given in Table 8. Unlike the number of students, the number of graduates is not subject to such fluctuations and remains stable in the long term. In recent years, however, it has been growing slightly; nevertheless, in 2016, compared to the year 2015, the number of graduates in Bachelor's and Master's degree branches of study slightly decreased and reached the level of 315 successful graduates while the number of graduates with both Bachelor's and Master's degree dropped moderately.

Very low numbers of graduates at the Bachelor's degree level have been seen for long term in the Wood Technology branch of study, which is probably related to highly demanding nature of the studies. In 2016, the first 16 students graduated from the Business in the Wood Processing and Furniture Industry branch of study, which is promising for the future as regards the growing number of potential applicants for the Master's degree wood engineering studies. Neither other branches of study have high numbers of graduates, especially if compared with the number of students who begin studying. An unfavourable situation is seen especially in the full-time form of study of the Operation and Game Management branch, in particular, in the last two years, when in both years only 11 full-time students successfully graduated from this branch.

The balanced and reasonably high numbers of graduates of the Master's degree study programme (in particular, in the case of full-time studies where the number of graduates in the Forest Engineering ranges between 30 and 40 and in the case of the Wood Engineering between 16 and 24) contribute to their relatively low unemployment and good employability.

Table 8: Number of graduates of individual FFWS branches of study in 2016

Type of Study	Study Specialization	Form of Study	Number of graduates
Bachelor Program	Wood Technology	full-time	12
		combined	3
	Forestry	full-time	57
		combined	9
	Economic Administration Services in Forestry	full-time	43
		combined	13
	Business in the Wood Processing	full-time	16
	Operation and Game Management	full-time	11
		combined	25
	Forestry	full-time	2
Master Program	Wood Engineering	full-time	23
		combined	10
	Forestry Engineering	full-time	32
		combined	57
	Forestry, Water and Landscape Management	full-time	2
PhD Program	Dendrology and Forest Tree Breeding	full-time	0
		combined	0
	Forest Management	full-time	2
		combined	0
	Silviculture	full-time	8
		combined	0
	Technology and Mechanization in Forestry	full-time	0
		combined	0
	Wood Processing and Forest Machinery	full-time	1
		combined	0
	Forest Protection and Game Management	full-time	1
		combined	0
	Economics and Management of an Enterprise	full-time	0
		combined	0

3.4.1 Employability of graduates

The FFWS monitors the unemployment of graduates on the regular basis according to the available data provided by labour offices and the Ministry of Labour and Social Affairs. According to these data, the unemployment rate of our graduates has been consistently low so far. An analysis of available data by the Ministry of Labour and Social Affairs provides a detailed insight into the unemployment of FFWS graduates (Table 9 and 10). According to this analysis the labour offices registered as at 30 April 2016 (which is the reading that captures unemployment 11 months after graduation) only six unemployed graduates of the FFWS of which five were fresh graduates (in the case of the FFWT MENDELU this ratio was 14/5). Nevertheless, out of this number only one was a graduate with Bachelor's degree in the Forestry branch (in the case of graduates with Bachelor's degree it is not certain whether they are actually unemployed or not). Nonetheless, four unemployed graduates of Master's branches of study represent a slight increase in unemployment compared to the previous year.

As at 30 September 2016 (which is the reading that captures unemployment four months after graduation), labour offices registered overall seven unemployed graduates of the FFWS of which five were fresh graduates and only three of them graduated with Master's degree (in the case of the FFWT MENDELU this ratio was 40/35/13).

These data show the total unemployment rate of FFWS graduates. The graduates who graduated in 2015 reported as at 30 April 2016 (11 months after graduation) the unemployment rate of 1.5% (4 months after graduation the unemployment rate was 2.1%). The unemployment rate of graduates who graduated in 2016 as at 30 September 2016 (4 months after graduation) equalled 1.6%. The above comparison makes it clear that unemployment of graduates between 2015 and 2016 even slightly decreased and remains consistently at a very low level (while being markedly below average when compared to related branches of study in the Czech Republic).



Table 9: Graduates registered by labour offices of the Czech Republic by universities and branches of study as at 30 April 2016 (Source: Ministry of Labour and Social Affairs).

Name of district	Name of School	Study programme	Graduates registered at labour offices of the Czech Republic, who ended study in 1 May 2015 - 30 April 2016
Prague (the capital city)	FFWS	Forest Engineering	1
Prague West	FFWS	Forest Engineering	1
Prachatice	FFWS	Forest Engineering	1
Tábor	FFWS	Wood Engineering	1
Hradec Králové	FFWS	Forestry	1
Total			5

Table 10: Graduates registered by labour offices of the Czech Republic by universities and branches of study as at 30 September 2016 (Source: Ministry of Labour and Social Affairs)

Name of district	Name of School	Study programme	Graduates registered at labour offices of the Czech Republic, who ended study in 1 May 2016 - 30 September 2016
Prague	FFWS	Wood Engineering	1
Benešov	FFWS	Forest Engineering	1
Beroun	FFWS	Wood Technology	1
Kladno	FFWS	Wood Engineering	1
Kolín	FFWS	Forestry	1
Total			5

In order to enhance employability of graduates, the CULS holds events focusing on career consulting or events directly aimed at job acquisition. The Job Fair may serve as an example of an opportunity for students to establish contacts with potential employers. In 2016, there were nine exhibitors on behalf of the FFWS: Agrowald s. r. o., the Archbishopric of Prague, FX MEILLER, Haas Fertigbau, Less & Timber, a. s., Lesy České republiky, s. p., MATRIX a.s., the Forest Management Institute in Brandýs nad Labem, and Vojenské lesy a statky, s. p. Throughout the day, the presentation stands in the circular hall were frequently visited by students and teachers from the whole of the CULS. The attendance has been estimated at 1,500–2,000 persons. From this point of view, the common space sharing of exhibitors from several faculties had a positive effect. According to the information from FFWS exhibitors, students from other faculties were interested in the activity of the above companies as well.

During and after the Job Fair those interested among FFWS exhibitors could take a tour round the new FFWS Pavilion of Wood Sciences, which was evaluated positively. At the end, the Job Fair was also attended by a representative of the Ministry of Agriculture of the Czech Republic, Ing. Tomáš Krejzar, Ph.D. The trade fair was evaluated by the FFWS exhibitors mostly positively both in terms of attendance of students as well as in terms of organisation as such. The debates with individual exhibitors have shown an increasing demand for high-quality graduates on the labour market.

3.5 Cooperation with the sphere of application

The cooperation with representatives of potential future employers takes place at the Faculty of Forestry and Wood Sciences at several levels. It is cooperation in scientific and research activities (the current PhD students get ready for their future professions, inter alia, through such projects). Well evaluated cooperation mainly with Vojenské lesy a statky, s.p., Matrix, a.s., and Městské lesy Doksy, s.r.o. continued in 2016. Further cooperation with future employers of FFWS graduates takes place primarily in the area of education, chiefly in implementation of practical training and in the solution of students' diploma theses. Cooperation is also executed when organising extracurricular activities (specialised seminars, activities under the "Forest Pedagogy"). In 2016, cooperation was developing well also with Lesy České republiky, s.p., as a contract was signed and then performed (likewise as in 2015), allowing for extension of the publishing activities of the FFWS in the field of teaching materials. The work of the Council for Cooperation with Practice and the participation of companies at the Job Fair serve as examples of cooperation with future employers of the FFWS graduates.

3.5.1 Council for Cooperation with Practice

Undoubtedly, the Council for Cooperation with Practice, which includes representatives of major employers, is an important form of cooperation with representatives of potential future employers of FFWS graduates. The Council acts as a link between the academic and educational life of the Faculty and real-life practice and comments mainly on the curricula with respect to the employability of graduates on the labour market, practical training of students, lifelong learning programmes and cooperation in science and research. It therefore provides a feedback necessary to improve the quality of studies at the FFWS, but also presents new ideas and possibilities for scientific and expert cooperation. Applying science and research results into practice is an important and integral part of all activities of the Faculty. Through the Council for Cooperation with Practice a debate has been launched on the theme of the needs and requirements of the practice in the field of standard and lifelong learning with a perspective of longer term employment. At the first stage of this debate, the Council distributed a questionnaire to the employers in order to identify the strengths and weaknesses of graduates and to have a better overview of the positions they occupy. Cooperation in defining the needs and requirements of the practice was also incorporated into the project to innovate the FFWS curricula.

3.5.2 Cooperation in education

Cooperation with the application sphere in the formation and implementation of study programmes at the Faculty of Forestry and Wood Sciences is centred in particular around the above-mentioned Council for Cooperation with Practice. The Council comments mainly on the curricula with respect to the better employability of graduates on the labour market, practical training of students, lifelong learning programmes and cooperation in science and research. Some experts from the sphere of application are also directly involved in the educational process through external teaching; in 2016, there were 22 of them at the FFWS. The sphere of application is directly involved in the implementation of programmes of study in the form of consultations of Bachelor's and diploma theses, and especially the performance of individual practical training sessions and other vocational education (field trips and excursions). Overall, 134 individual practical training sessions at external partners took place in 2016. The sphere of application is also engaged in improving and extending of study support of FFWS students. As mentioned above, this activity was funded by Lesy ČR, s. p. in 2016.



SCIENCE AND RESEARCH

4. Science and research

The FFWS strategic objective in the area of research and development (S&R) is namely the continuation of the intensive support of excellence. The activities of the Faculty have been directed in that way in the long run. In 2016, these activities in line with the Update of the Long-term Plan of the Faculty focused primarily on enhancing the publishing activities (focus on publishing in excellent journals), activities aimed at fund-raising from project resources, development of young scientists and scientific teams, enhancing the quality of doctoral studies and development of international cooperation in the field of research and development.

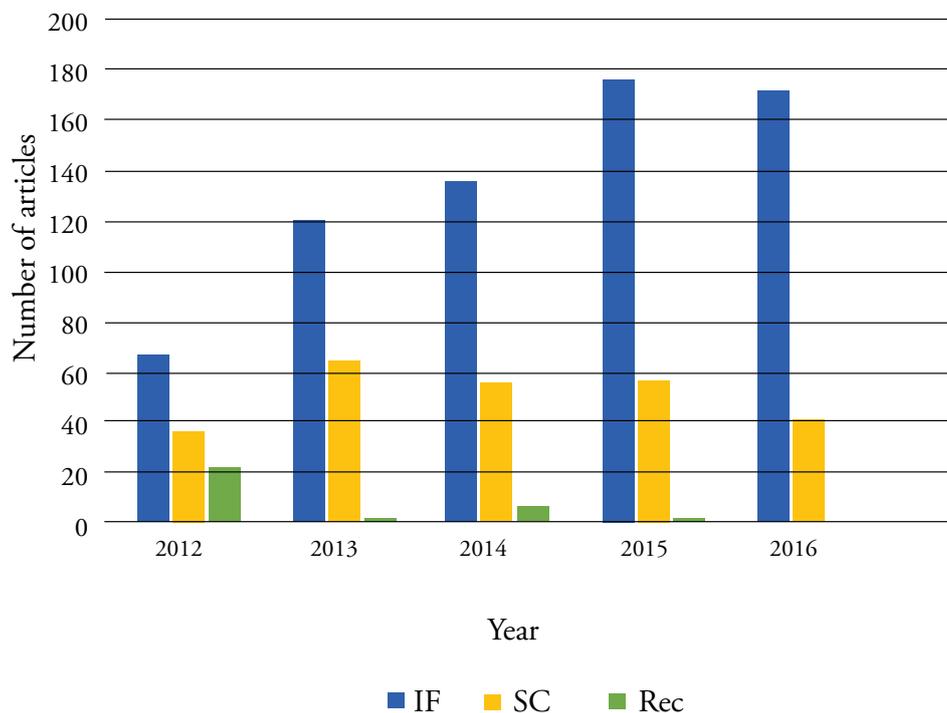
4.1. Publishing activities and S&R results

Quality and excellence in the first place

Publication outputs serve as one of quantitative and qualitative S&R evaluation standards. The main goal of the Faculty in this area is primarily publishing in journals with an impact factor (IF), mainly in the TOP 10% journals in each category, or annual publishing of several articles in TOP3 journals in individual categories on WOS. The trend in the number of various types of articles since 2012 is evident from Fig. 8. The staff members published total of 171 scientific articles in IF journals in 2016.



Fig. 8: Number of individual articles of the FFWS between 2012 and 2016 (IF – IF article, SC – Scopus article, Rec – peer-reviewed article).



The aim of the Faculty, however, was not only to maintain a large number of publications in journals with IF in 2016, but the main priority was above all – as mentioned above – increasing the number of outputs in the highest quality journals with IF. It must be noted that there has been a boost of publishing activities of the Faculty employees even in the top IF journals. In accordance with this objective, the FFWS continues in its incentive programme to support publishing and publication activities of the most competent staff members. For the second year, an internal call was announced for the support of staff to produce projects with excellent outputs whose outputs are exactly those articles published in IF journals of excellence. Another measure of the Faculty in the framework of this activity is the recruitment of excellent staff members in the field of forestry and timber research, mainly from abroad. In 2016, much attention was directed towards the preparation of projects that were strategically targeted at building excellence at the FFWS (EVA 4.0, EXTEMIT-K) fully in line with the strategy of the Czech Republic in the area of improving the quality of science and research. According to statistics provided to the FFWS by Dan Binkley, the visiting professor from the SLU Faculty of Forest Sciences (editor-in-chief of *Forest Ecology and Management*), the FFWS ranked eighth in the world rating list in the field of forestry research. The statistics rests on data from the Scopus database for the peri-

od of 2011–2016 and is based on the number of publications and citations. The first place went to the USDA (US Department of Agriculture), which has a network of research institutes throughout the United States and has much better resources at its disposal than, for example, the SLU (Swedish University of Agricultural Sciences), which ranked first among universities. It is very good news that the SLU considers us a partner university and intends to continue in intensive cooperation with the FFWS in the field of forestry and timber research as well as in educational/teaching activities.

Table 11: The world rating list in the field of forestry research

Organization	Publications	Citation
U.S. Department of Agriculture	2 433	13 754
Swedish University of Agricultural Sciences	817	4 838
Natural Resources Canada	623	3 868
INRA, Institut National de La Recherche Agronomique	612	4 000
Oregon State University	584	3 841
University of Göttingen	465	2 285
University of British Columbia	463	2 322
Czech University of Life Sciences Prague	431	1 128
University of Helsinki	412	2 554
Wageningen University and Research Center	404	3 426
Finnish Forest Research Institute	384	2 715
North Carolina State University	355	1 684
University of Florida	355	2 312
University of Eastern Finland	309	1 689
University of Natural Resources and Applied Life Sciences	304	1 521

Due to the general upward trend of rising quantity and quality of publications in journals of the highest quality, it is increasingly difficult to win recognition in these journals. We thus find it even more encouraging that 41.5% of published IF articles appeared in journals in the first quartile of the given WoS sector while in multidisciplinary journals their average quartile is lower than 1.5. Fig. 9 shows the proportion of the number of articles published by the IF journal quartile and the share of expected RIV points for these articles in 2015 while Fig. 10 shows the state in 2016. A significant percentage increase in the publication of articles in the second

quartile at the expense of the third and fourth quartiles may be seen as success as it clearly indicates a rising quality of FFWS publication outputs. Overall, more than 73% of articles were published in the top two quartiles of WOS journals in 2016, which is an excellent result.

Fig. 9: Share of (a) articles published in 2015 and (b) expected RIV points per IF journal quartile

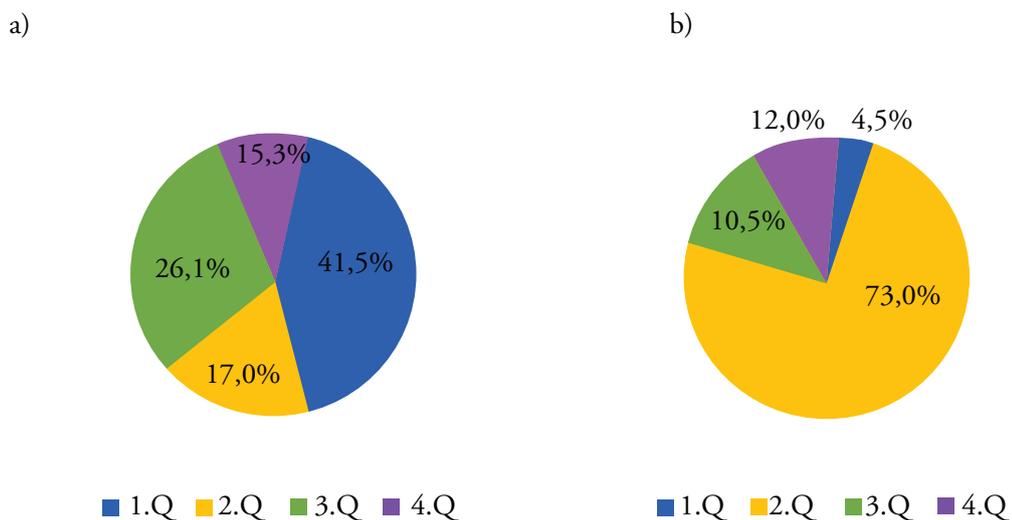
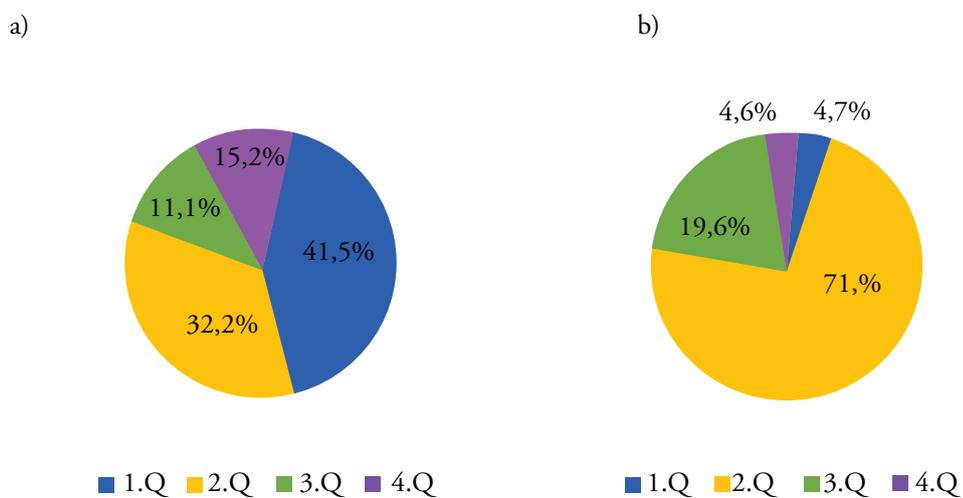
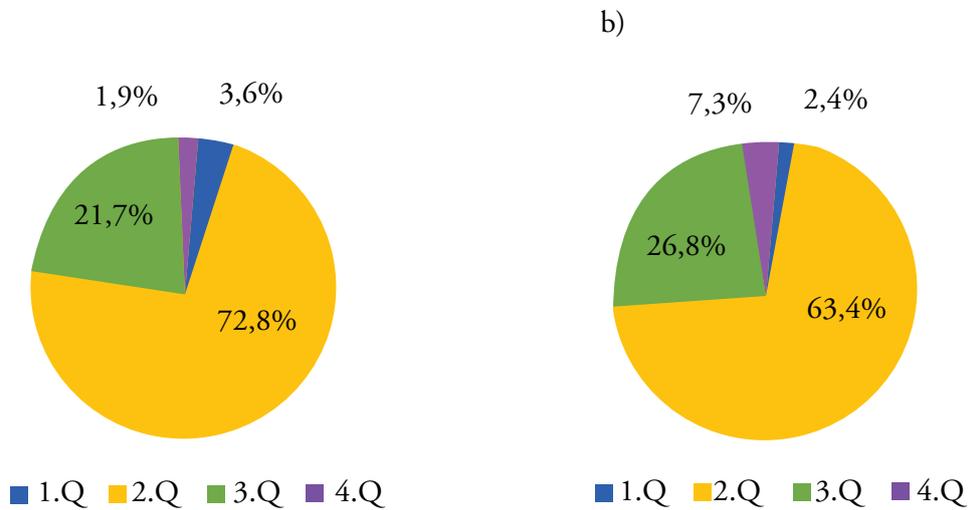


Fig. 10: Share of (a) articles published in 2016 and (b) expected RIV points per IF journal quartile



Within Scopus journals, most articles were published in the second quartile (Fig. 11). It is necessary to explain that in this section we have only analysed journals that are not included on the WOS. The vast majority of WOS journals are in SCOPUS in the first and/or second quartile. Therefore, the share of articles in SCOPUS is actually substantially higher than that shown in the picture.

Fig. 11:



Share of (a) articles published in 2015 and (b) expected RIV points per Scopus journal quartile. Another proof of an increasing quality of FFWS outputs is the fact that in 2015, 10 articles were published in the most prestigious journals (top 10% category on the Web of Science), while in 2016, there were even 15 articles. This is a 50% increase in these results in rather prestigious journals. It is also important to note that every year the number of articles published in various high-quality journals went up.

The improving publishing activity of PhD students is also a positive factor. In annual competition for the Rector's Award for publishing activity of PhD students, nine PhD students from the FFWS ranked among 15 award recipients and our PhD students took the first three places. Our students have been at the forefront not only thanks to publishing of a large number of publications, but also to publishing in high-quality journals, which is particularly appreciated.

Table 12: Rector's Awards for the best publishing outputs from research of PhD students

Position	Candidate	Faculty
1.	Ing. Peter Hlaváč	FFWS
2.	Ing. Zdeněk Vacek	FFWS
3.	Ing. Martin Mikoláš	FFWS
4.	Manzoor Hussain, MSc.	FAFNR
5.	Ing. Volodymyr Trotsiuk	FFWS
6.	Ing. Jakub Čedík	FE
7.	Ing. Lenka Matějů	FFWS
8.	Ing. Zdeňka Náglová	FEM
9.	Ing. Jozef Pajčík	FFWS
10.	Ing. MUDr. Martin Häckel	FFWS
11.	Mgr. Petr Baňář	FFWS
12.	Ing. Jiří Trombik	FFWS
13.	Ing. Filip Mercl	FAFNR
14.	Ing. Jitka Schmidová	FAFNR
15.	Mgr. Elena Kuzmenko	FEM

For his overall publishing activity during doctoral studies and for his dissertation Ing. Zdeněk Vacek, Ph.D. was granted by the CULS Rector the Award of Prof. Stoklasa.

In 2016, the FFWS PhD students also ranked first (Ing. Tereza Kolbabová) and second (Ing. Michaela Holá) in the competition for the Award of the Minister of Agriculture for Young Scientists for the best implemented output of research and experimental development in 2015.

Professor Jaroslav Červený from the Department of Game Management and Wildlife Biology has received an award for outstanding creative contribution of an original Czech non-fiction publication. The Publishers' Prize has been awarded for his book titled GAME from the Otto's Encyclopaedia edition.

Statistics of publishing activity at the FFWS and evaluation of results

Overall, the FFWS articles were published in 96 various journals with an IF, most often in *Bio-Resources*, *Zootaxa*, *Forest Ecology and Management*, *Wood Research*, and *Forests*. The most common sectors according to the Central Register of S&R Projects in which the scientific outputs of the FFWS staff were published included *Zoology* and *Forestry* and according to the Web of Science categories the sectors included *Zoology*, *Forestry*, *Entomology* and *Materials Science*.

The Scopus articles, which totalled 41 in 2016, were most often published in the *Journal of Forest Science*, the *Forestry Journal* and *Zprávy lesnického výzkumu* (Reports of Forestry Research). These were mainly publications in the field of forestry.

In 2016, besides the publication outputs, the FFWS also produced non-publication outputs, which included certified guidelines and maps, software, outputs with legal protection and research reports. The total number of these outputs amounted to 56 in 2016. In most cases these were the application outputs of current projects of the National Agency for Agricultural Research (NAZV) or the Technology Agency of the Czech Republic (TACR) and contractual research.

Acceptance of incentive elements and greater emphasis on publishing in high-quality scientific journals is also reflected in the evaluation with RIV points. The fact that these measures are correct is obvious from Fig. 12, which shows the development of RIV points since 2011. Given the fact that the RIV points have more than one-year delay, the year 2016 cannot be evaluated yet because the final CRDI results are not known yet. No sooner than in 2017, the 2015 RIV data were published, where the FFWS reached 17,873 points and ranked second at the CULS. The RIV data for 2016 in Fig. 12 are estimated based on the known values of RIV points for the period of 2011–2015 and scoring of publications of IF and Scopus category, excluding the unknown values for pillars II and III. Thus, the actual score will be even greater. The development of the Faculty's score for publications of IF category (Fig. 13) for the period of 2011–2015 is supplemented by the expected RIV score for 2016.

In the relative terms (RIV points per full-time employment load of an academic staff member and scientist), the FFWS ranked first at the CULS with 185 points. Overall, out of all public university faculties, the FFWS ranks 12th, the FES (158 points) ranks 18th and the FAFNR (137 points) 22nd.

Fig. 12: RIV values for 2011–2015. The figure for 2016 is based on the number and types of results.

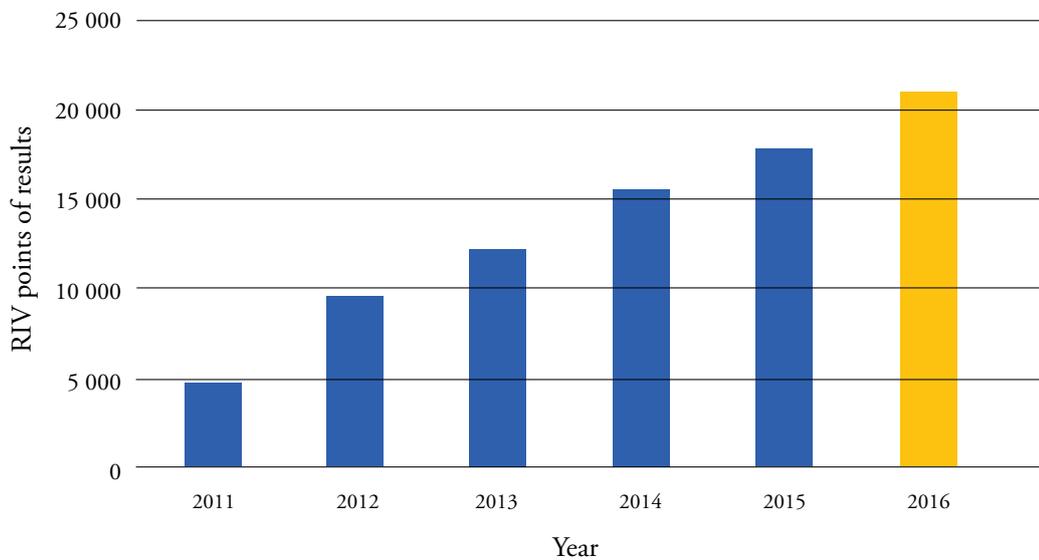
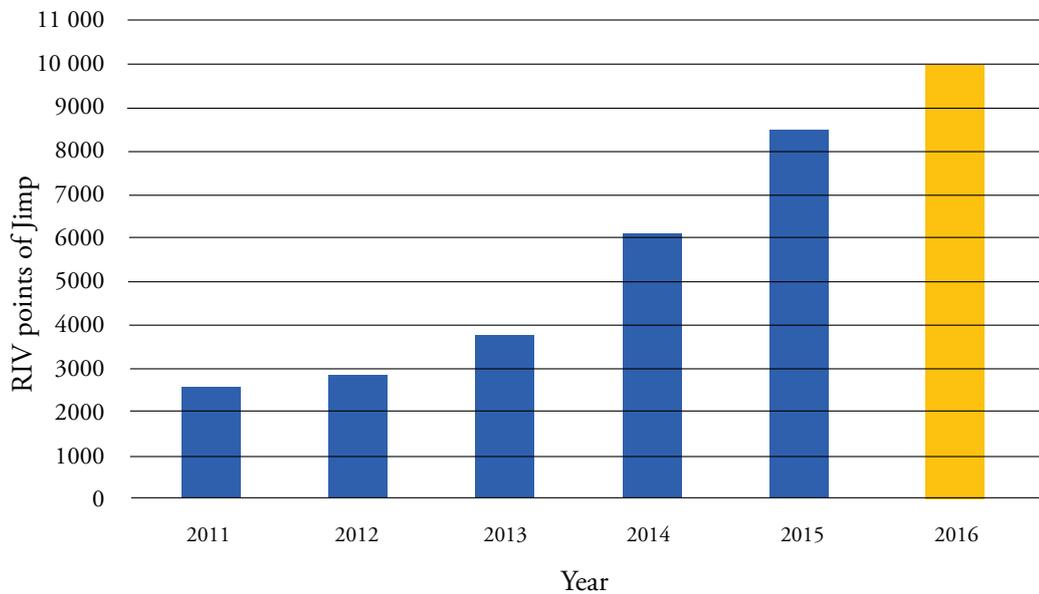


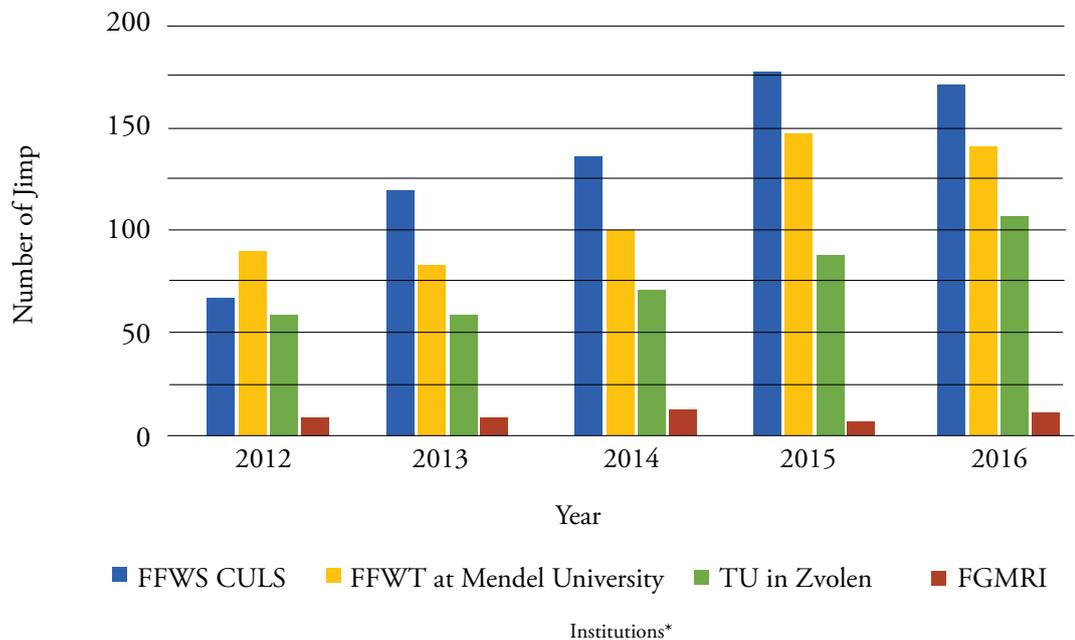
Fig. 13: Number of RIV points of articles in IF journals between 2011 and 2015. The figure for 2016 is an estimate based on the number and types of IF publications.



Comparison with similar institutions and faculties of the CULS

All the above presented graphic developments indicate that the trend, which the Faculty started pursuing in 2010, was clearly positive, as reflected in an increase in publishing activities of the Faculty. These positive results of increased publishing activities of the Faculty staff are obvious even in comparison with other forestry and wood-oriented faculties. In comparison with similar institutions the Faculty’s publishing activities have pursued a very good trend over the last two years. Fig. 14 illustrates the number of IF articles of four major forestry institutions in the Czech Republic and in the Slovak Republic. The values have been taken from the public RDI IS database and the WoS database. The table shows the upward trend of the FFWS, which has taken the leading position and has thus switched the position with the FFWT MENDELU in Brno since 2013.

Fig. 14: Number of IF articles per given institution for the period of 2012–2016



*Institutions

FFWS CULS = Faculty of Forestry and Wood Sciences CULS

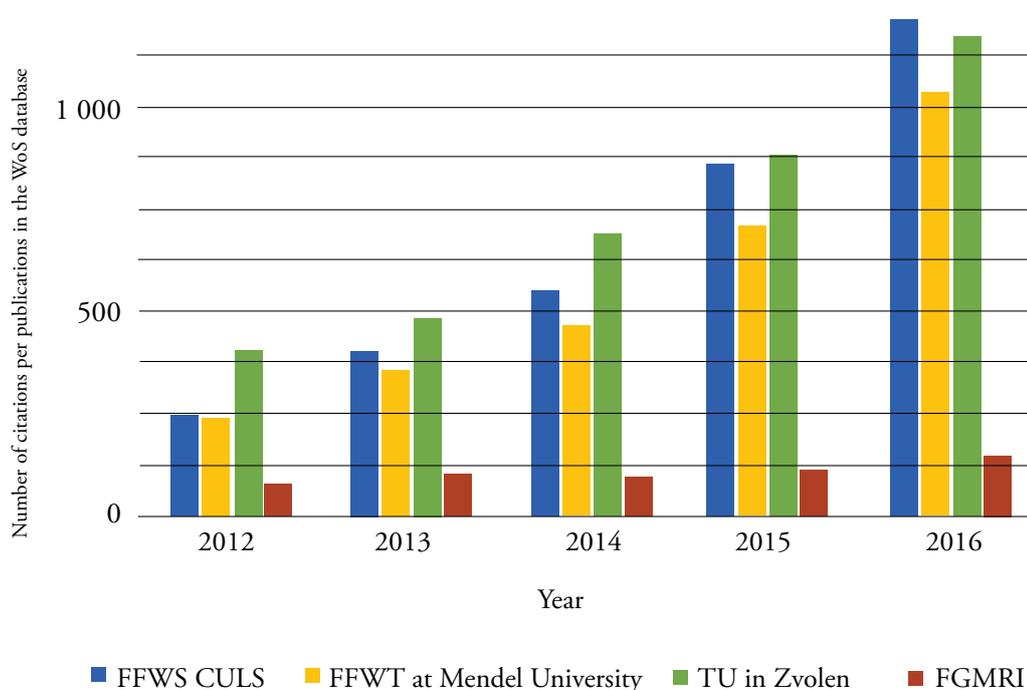
FFWT at Mendel University = Faculty of Forestry and Wood Technology at Mendel University

TU in Zvolen = Technical University in Zvolen

FGMRI = Forestry and Game Management Research Institute

The FFWS also did very well in citations in the WoS database. The total number of citations of all publications in the WoS database for the given institution is given in Fig. 15. The WoS database still does not contain all the articles published in 2016. At the same time, this database is a „living organism“ that is constantly changing, e.g., with the increasing number of citations; therefore, the actual data presented in these charts may vary slightly. However, the development trend and some differences between forestry institutions are obvious. In both presented cases the correctness of measures and the trend pursued by the FFWS have been confirmed. By maintaining this trend the Faculty wants to reinforce its scientific level and quality among forestry- and wood-technology-oriented faculties.

Fig. 15: Number of citations of all publications of the given institution in the WoS database



The upward trend in the publishing activity is seen even in comparison with other CULS faculties. While in 2011, the performance of the FFWS in terms of the number of these publications corresponded to 35% of the FAFNR, in 2016, it was more than 90% (with regards to the fact that the FFWS has half the number of academic staff when compared with the FAFNR). In addition, since 2014, the FFWS has been the second faculty in terms of publishing in IF journals (Fig. 16). The FFWS' upward trend in publishing activities within the University is even more evident in the expression of the number of publications with an impact factor per staff member. In this representation, the FFWS has attained the best position within the CULS for the third year in a row (Fig. 17).

Fig. 16: Number of publications with an impact factor at individual faculties of the CULS in Prague from 2012 to 2016

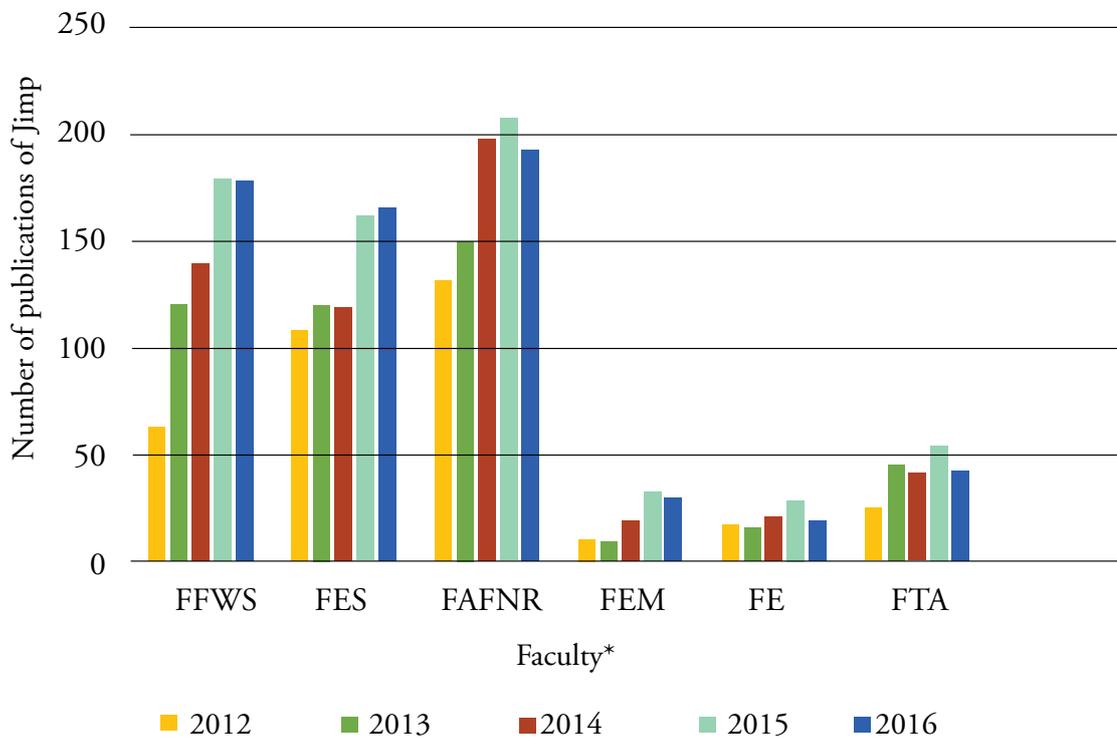
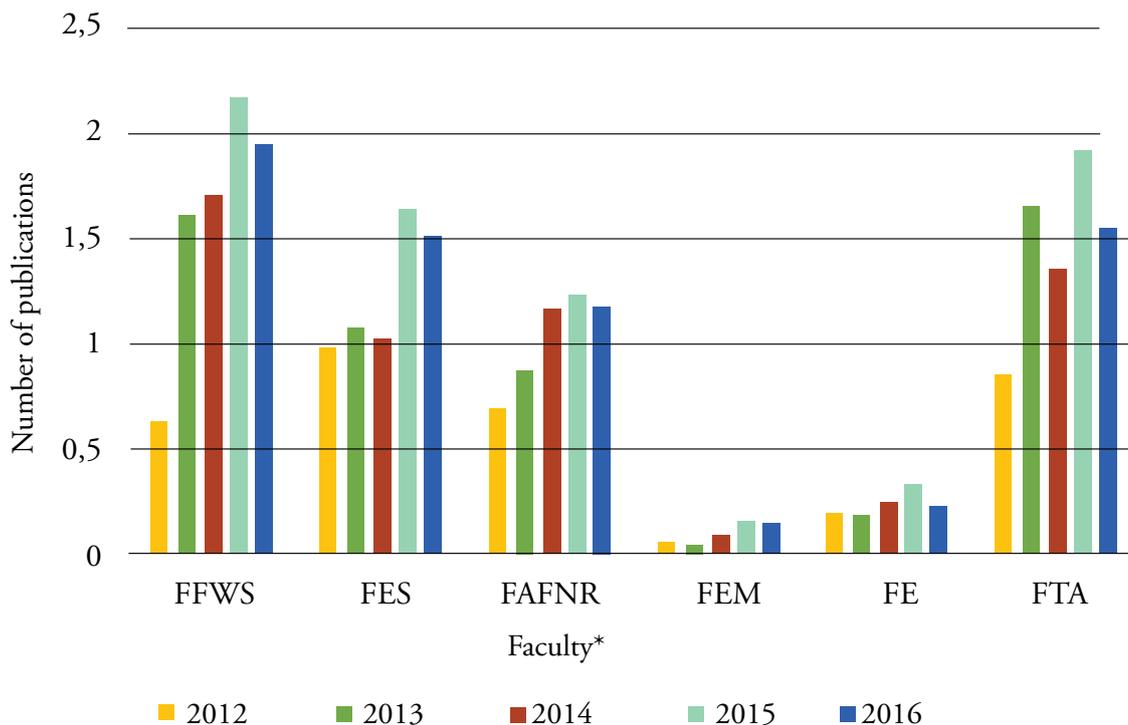


Fig. 17: Number of publications with an impact factor at individual faculties of the CULS in Prague per member of academic staff from 2012 to 2016



*Faculties

FFWS = Faculty of Forestry and Wood Sciences

FES = Faculty of Environmental Sciences

FAFNR = Faculty of Agrobiolgy, Food and Natural Resources

FEM = Faculty of Economics and Management

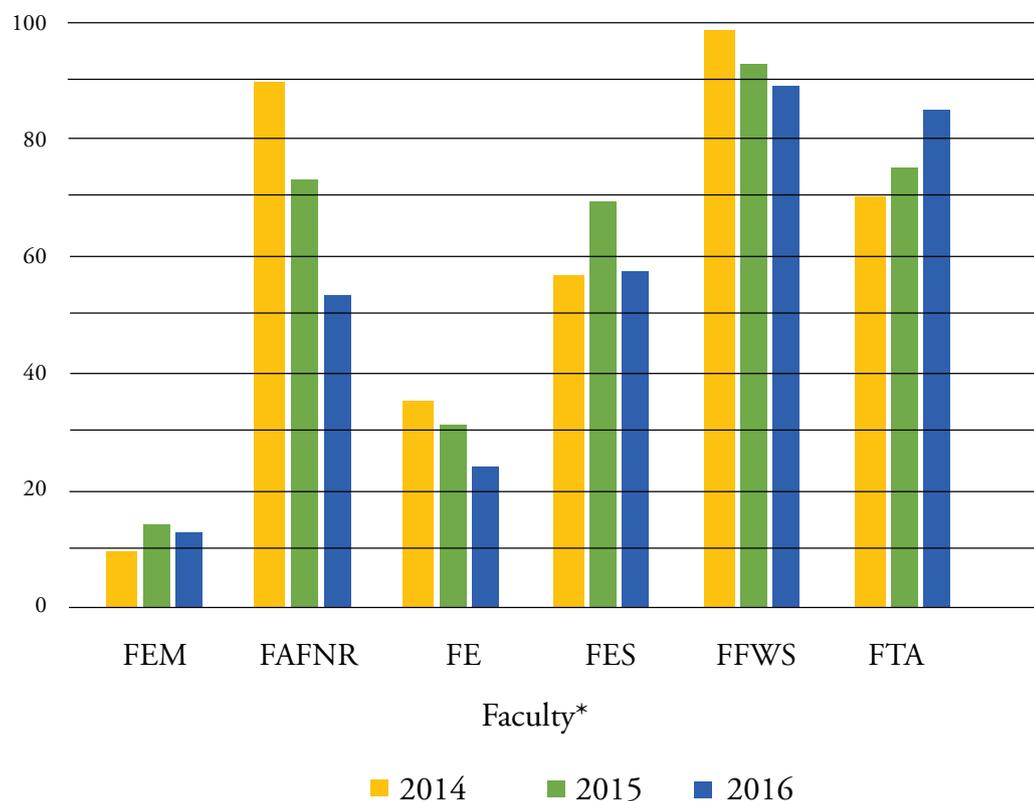
FE = Faculty of Engineering

FTA = Faculty of Tropical AgriSciences

Figure 18 illustrates that the FFWS has also been at the top of the Faculties of the Czech University of Life Sciences in Prague over the three past years as regards the share of academic staff members publishing in Jimp-type journals.

Fig. 18: Share of academic staff members publishing in Jimp-type journals: articles in journals with IF (% of total staff) in 2014–2016

In 2016, the most prolific staff members of the Faculty were as follows: doc. Ing. Jakub Horák, Ph.D., doc. Ing. Milan Gaff, PhD., Thomas Bourguignon and Ing. Vojtěch Čada, Ph.D., and PhD students Ing. Peter Hlaváč, Ing. Volodymyr Trotsiuk and Ing. Zdeněk Vacek, and post-doctoral students doc. RNDr. Tomáš Hlásny, PhD. and MSc. Ram Prasad Sharma.



Overview of FFWS publications in top quality journals:

The list below details the most significant publications in 2016 in which the Faculty staff took part. There is the entire citation of the publication while the point value according to RIV is provided in parentheses.

ČEPL, J. – HOLÁ, D. – STEJSKAL, J. – KORECKÝ, J. – KOČOVÁ, M. – LHOTÁKOVÁ, Z. – TOMÁŠKOVÁ, I. – PALOVSKÁ, M. – ROTHOVÁ, O. – WHETTEN, R. – KAŇÁK, J. – ALBRECHTOVÁ, J. – LSTIBŮREK, M. *Genetic variability and heritability of chlorophyll a fluorescence parameters in Scots pine (Pinus sylvestris L.)*. TREE PHYSIOLOGY, 2016, roč. 36, č. 7, s. 883-895. ISSN: 0829-318X (238,73)

BOURGUIGNON, T. – ŠOBOTNÍK, J. – BRABCOVÁ, J. – SILLAM-DUSSES, D. – BUČEK, A. – KRASULOVÁ, J. – VYTISKOVÁ, B. – DEMIANOVÁ, Z. – MAREŠ, M. – ROISIN, Y. – VOGEL, H. *Molecular Mechanism of the Two-Component Suicidal Weapon of Neocapritermes taracua Old Workers*. MOLECULAR BIOLOGY AND EVOLUTION, 2016, roč. 33, č. 3, s. 809-819. ISSN: 0737-4038 (229,86)

UHRIN, M. – HUTTMEIR, U. – KIPSON, M. – ESTOK, P. – SACHANOWICZ, K. – BUECS, S. – KARAPANDŽA, B. – PAUNOVIČ, M. – PRESETNIK, P. – BASHTA, A. – MAXINOVÁ, E. – LEHOTSKÁ, B. – LEHOTSKÝ, R. – BARTI, L. – CSOSZ, I. – SZODORAY PARADI, F. – DOMBI, I. – GORFOL, T. – BOLDOGH, S. – JÉRE, C. – POCORA, I. – BENDA, P. *Status of Savi's pipistrelle Hypsugo savii (Chiroptera) and range expansion in Central and south-eastern Europe: a review*. MAMMAL REVIEW, 2016, roč. 46, č. 1, s. 1-16. ISSN: 0305-1838 (209,93)

BOŠEĚA, M. – ŠTEFANČÍK, I. – PETRÁŠ, R. – VACEK, S. *The effects of climate warming on the growth of European beechforests depend critically on thinning strategy and site productivity*. AGRICULTURAL AND FOREST METEOROLOGY, 2016, roč. 2016, č. 222, s. 21-31. ISSN: 0168-1923 (176,02)

PRIMICIA, I. – CAMARERO, J. – ARAGÓN, J. – MIGUEL, S. – BONET, J. *Linkages between climate, seasonal wood formation and mycorrhizal mushroom yields*. AGRICULTURAL AND FOREST METEOROLOGY, 2016, roč. 228, č. 11, s. 339-348. ISSN: 0168-1923 (176,02)

DOBOR, L. – BARCZA, Z. – HLÁSNY, T. – ÁRENDÁS, T. – SPITKÓ, T. – FODOR, N. *Crop planting date matters: Estimation methods and effect on future yields*. AGRICULTURAL AND FOREST METEOROLOGY, 2016, roč. 223, č. 6, s. 103-115. ISSN: 0168-1923 (176,02)

HLÁSNY, T. – TROMBIK, J. – HOLUŠA, J. – LUKÁŠOVÁ, K. – GRENDÁR, M. – TURČÁNI, M. – ZÚBRIK, M. – TABAKOVIĆ-TOŠIĆ, M. – HIRKA, A. – BUKSHA, I. – MODLIN-

- GER, R. – KACPRZYK, M. – CSÓKA, G. *Multi-decade patterns of gypsy moth fluctuations in the Carpathian Mountains and options for outbreak forecasting*. JOURNAL OF PEST SCIENCE, 2016, roč. 89, č. 2, s. 413-425. ISSN: 1612-4758 (170,9)
- WILSON, R. – ANCHUKAITIS, K. – BRIFFA, K. – BUNTGEN, U. – COOK, E. – D'ARIGO, R. – DAVI, N. – ESPER, J. – FRANK, D. – GUNNARSON, B. – HEGERL, G. – HELAMA, S. – KLESSE, S. – KRUSIC, P. – LINDERHOLM, H. – MYGLAN, V. – OSBORN, T. – RYDVAL, M. – SCHNEIDER, L. – SCHURER, A. – WILES, G. – ZHANG, P. – ZORITA, E. *Last millennium northern hemisphere summer temperatures from tree rings: Part I: The long term context*. QUATERNARY SCIENCE REVIEWS, 2016, roč. 134, č. 2, s. 1-18. ISSN: 0277-3791 (166,71)
- BOŠEĽA, M. – POPA, I. – GOMORY, D. – LONGAUER, R. – TOBIN, B. – KYNCL, J. – KYNCL, T. – NECHITA, C. – PETRÁŠ, R. – SIDOR, C. – ŠEBEŇ, V. – BUNTGEN, U. *Effects of post-glacial phylogeny and genetic diversity on the growth variability and climate sensitivity of European silver fir*. JOURNAL OF ECOLOGY, 2016, roč. 2016, č. 104, s. 716-724. ISSN: 0022-0477 (165,61)
- HOREMANS, J. – BOŠEĽA, M. – DOBOR, L. – BARNA, M. – BAHÝĽ, J. – DECKMYN, G. – FABRIKA, M. – SEDMÁK, R. – CEULEMANS, R. *Variance decomposition of predictions of stem biomass increment for European beech: Contribution of selected sources of uncertainty*. FOREST ECOLOGY AND MANAGEMENT, 2016, roč. 2016, č. 361, s. 46-55. ISSN: 0378-1127 (165,49)
- TROTSIUK, V. – SVOBODA, M. – WEBER, P. – PEDERSON, N. – KLESSE, S. – JANDA, P. – BENITO, D. – MIKOLÁŠ, M. – SEEDRE, M. – BAČE, R. – MATĚJŮ, L. – FRANK, D. *The legacy of disturbance on individual tree and stand-level aboveground biomass accumulation and stocks in primary mountain Picea abies forests*. FOREST ECOLOGY AND MANAGEMENT, 2016, roč. 373, č. 8, s. 108-115. ISSN: 0378-1127 (165,49)
- KONOPKA, B. – PAJTÍK, J. – MARUŠÁK, R. – BOŠEĽA, M. – LUKÁČ, M. *Specific leaf area and leaf area index in developing stands of Fagus sylvatica L. and Picea abies Karst.*. FOREST ECOLOGY AND MANAGEMENT, 2016, roč. 364, č. 3, s. 52-59. ISSN: 0378-1127 (165,49)
- PRETZSCH, H. – RÍO, M. – SCHUTZE, G. – AMMER, C. – ANNIGHOFER, P. – AVDAGIC, A. – BARBEITO, I. – BIELAK, K. – BRAZAITIS, G. – COLL, L. – DROSSLER, L. – FABRIKA, M. – FORRESTER, D. – KURYLYAK, V. – LOF, M. – LOMBARDI, F. – MATOVIC, B. – MOHREN, F. – MOTTA, R. – OUDEN, J. – PACH, M. – PONENTE, Q. – SKRZYŹEWSKI, J. – SRAMEK, V. – ŠTERBA, H. – SVOBODA, M. – VERHEYEN, K. – ZLATANOV, T. – BRAVO-OVIEDO, A. *Mixing of Scots pine (Pinus sylvestris L.) and European beech (Fagus sylvatica L.) enhances structural heterogeneity, and the effect increases with water availability*. FOREST ECOLOGY AND MANAGEMENT, 2016, roč. 373, č. 8, s. 149-166. ISSN: 0378-1127 (165,49)

SHARMA, R. – VACEK, Z. – VACEK, S. *Individual tree crown width models for Norway spruce and European beech in Czech Republic*. FOREST ECOLOGY AND MANAGEMENT, 2016, roč. 2016, č. 366, s. 208-220. ISSN: 0378-1127 (165,49)

ČADA, V. – MORRISSEY, R. – MICHALOVÁ, Z. – BAČE, R. – JANDA, P. – SVOBODA, M. *Frequent severe natural disturbances and non-equilibrium landscape dynamics shaped the mountain spruce forest in central Europe*. FOREST ECOLOGY AND MANAGEMENT, 2016, roč. 363, č. 3, s. 169-178. ISSN: 0378-1127 (165,49)

HORÁK, J. – KOUT, J. – VODKA, Š. – DONATO, D. *Dead wood dependent organisms in one of the oldest protected forests of Europe: Investigating the contrasting effects of within-stand variation in a highly diversified environment*. FOREST ECOLOGY AND MANAGEMENT, 2016, roč. 363, č. 3, s. 229-236. ISSN: 0378-1127 (165,49)

NEUMANN, M. – MORENO, A. – MUES, V. – HÄRKÖNEN, S. – MURA, M. – BOURIAUD, O. – LANG, M. – ACHTEN, W. – THIVOLLE-CAZAT, A. – BRONISZ, K. – MERGANIČ, J. – DECUYPER, M. – ALBERDI, I. – ASTRUP, R. – MOHREN, F. – HASENAUER, H. *Comparison of carbon estimation methods for European forests*. FOREST ECOLOGY AND MANAGEMENT, 2016, roč. 2016, č. 361, s. 397-420. ISSN: 0378-1127 (165,49)

Publishing activity of the departments

The publication performance of the Faculty in 2016 was satisfactory and attained the objectives of the long-term plan. However, the substantial disparity of publishing activities of individual departments still remains an issue at the Faculty level (Fig. 19). In 2016, the largest share of the total publication output was attributed to DFPE (26.9%), DFM (14.4%), DWP (14%) and DFE (11%). Other departments contributed to the Faculty's publication output with less than 10%. The real increase or decrease of the publication performance of the given department is illustrated by Fig. 20, which shows the performance of individual departments of the FFWS in 2015 and 2016 measured by the number of points for IF and Scopus publications. The highest increase in publishing performance in 2016 is unmistakably exercised by DFPE while a stable, long-term superior performance is seen in DFM. Since 2014, these departments have been joined by DFE and DWP with their above-average performance, which confirms that, in terms of R&D, their establishment has been beneficial for the Faculty.

Nevertheless, performance of departments also depends on the number of academic staff. That is why Fig. 21 shows the number of points in publishing activities per full-time employment load of one academic staff member in 2015 and 2016.

Fig. 19: Share of individual departments in the overall publishing output of FFWS S&R in 2015 and 2016

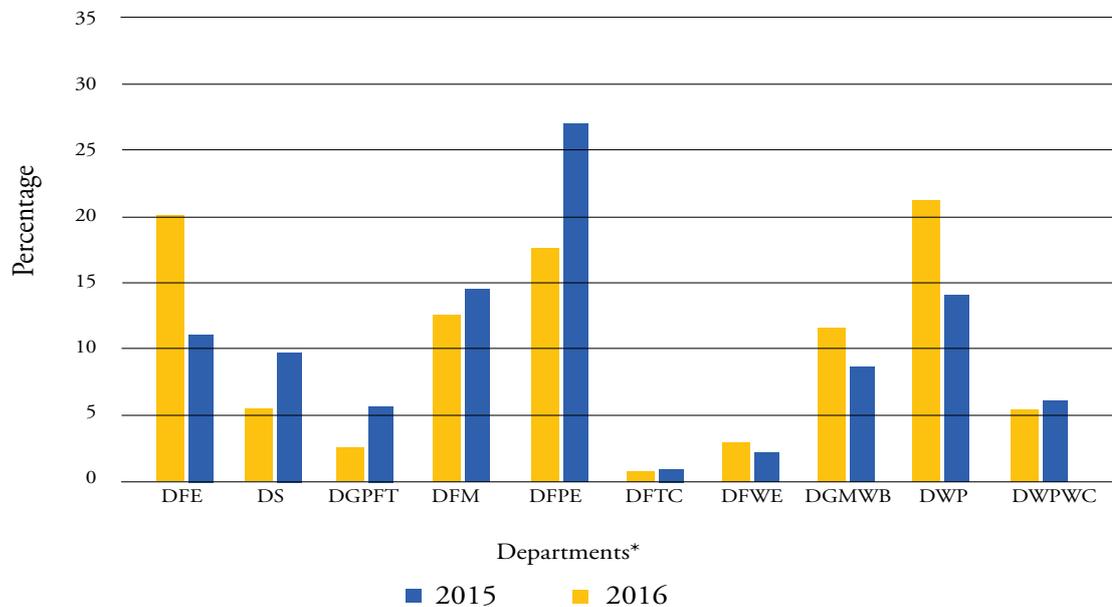


Fig. 20: Output of FFWS departments in 2015 and 2016 in number of points for IF and Scopus publications

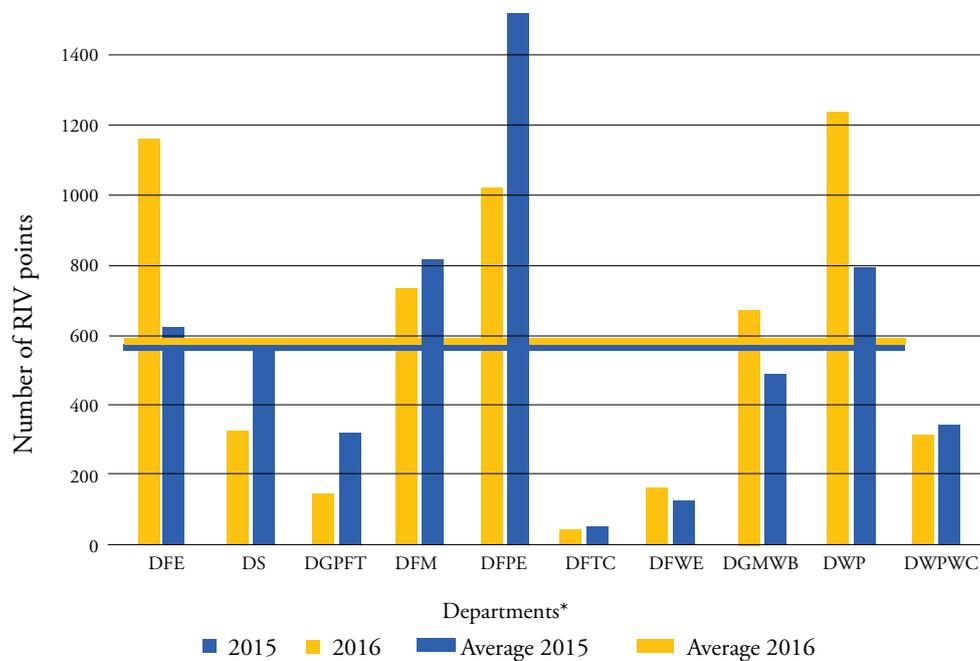
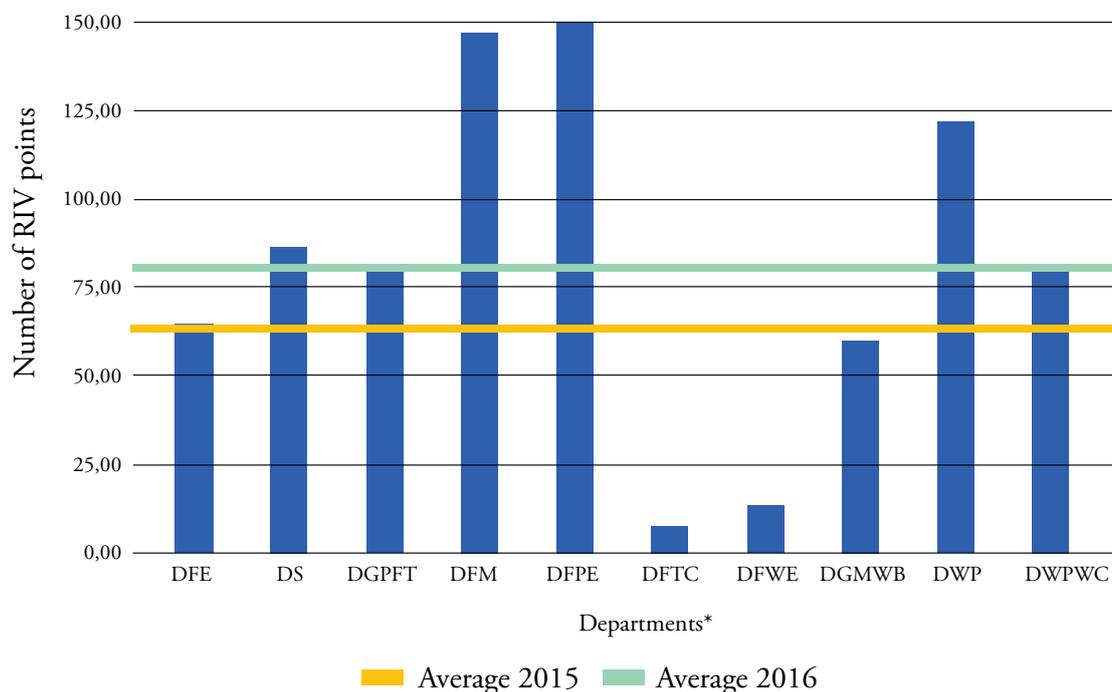


Fig. 21: Average number of points in publishing activities per full-time employment load of one academic staff member in 2016



*Departments

DFE = Department of Forest Ecology

DS = Department of Silviculture

DGPFT = Department of Genetics and Physiology of Forest Trees

DFM = Department of Forest Management

DFPE = Department of Forest Protection and Entomology

DFTC = Department of Forestry Technologies and Construction

DFWE = Department of Forestry and Wood Economics

DGMWB = Department of Game Management and Wildlife Biology

DWP = Department of Wood Processing

DWPWC = Department of Wood Products and Wood Constructions

Comparison of an increase in the average number of RIV points per full-time employment load of one academic staff member indicates a steadily increasing point value of the FFWS results, which can be considered as a sign of a progressive positive development in publishing quality.

4.2 Finance for science and research

Internal grants co-financed from the EU sources and grants from domestic grant agencies

The Czech University of Life Sciences as a university located in the capital city of Prague has been almost excluded from the possibility of drawing European subsidies from the Czech Operational Programmes in the previous programming period of 2007–2013. In spite of that the FFWS managed to obtain from the Science and Research for Innovations Operational Programme a subsidy in the amount of almost CZK 300 million for construction of the new FFWS Pavilion of Wood Sciences. The new programming period of 2014–2020 (actually commenced two years later) already allows for participation of Prague universities; the FFWS is thus applying for a number of projects, mainly from the Operational Programme Research, Development and Education (OP RDE), Operational Program Prague – Growth Pole of the Czech Republic (OP GPCR) or the Operational Programme Enterprise and Innovations for Competitiveness (OP EIC). Up to now, the Faculty has submitted 6 own projects.

In 2016, the EXTEMIT-K project was approved (for the period from 1. December 2016 to 31 October 2022) with a total subsidy of CZK 246 million. As for the results, it ranked 23rd with 32 projects financed (out of 105 projects). The primary objective of the project is to create a seventeen-member team of scientists (a key foreign scientist plus 15 scientists and one technician) to form the core of an excellent team as part of the FFWS even in the post-project phase. The FFWS plans to secure the necessary modern infrastructure through this project (CZK 80 million). The project focuses on the solution of current and future problems in forest ecosystems in the Czech Republic caused by the climate change and the search for scientific solutions for the protection of forests as carbon absorbers. The project has three sub-projects that are aimed at fulfilment of specific objectives and are also mutually interrelated in terms of staffing and professional expertise. It emphasises the most significant disturbance factors (bark beetle and related abiotic factors – mainly climatic extremes) at three levels: the level of a gene (sub-project G), the level of trees (sub-project T) and the level of a landscape (sub-project L). The project also has an ambitious goal of effective transfer of knowledge from abroad to regions in the Czech Republic. All of this should be implemented in cooperation with a leading institution from Sweden (Swedish University of Agriculture Sciences – SLU). The project officially commenced on 1 December 2016. Six positions for postdocs/junior researchers are planned to be opened for the project and we expect that they will be partially recruited from Czech and foreign young researchers.

Overall, for more than five years, the Faculty succeeds in acquiring new projects in all domestic grant agencies and calls and increasing the amount of funds from these external sources every year. Nevertheless, in 2014, the volume of these sources decreased slightly as against the year 2013 (Fig. 22) mainly due to the fact that some grant agencies did not open calls for proposals in 2013. The Faculty gained only smaller projects, which in terms of financial volume did not compensate for the projects that were completed as at the end of 2013. In 2015, however, the volume of funds increased again to more than double the amount from 2011 (Fig. 22) and in 2016, it further rose by more than CZK 47 million. Part of these funds (CZK 43 million will be transferred to 2017 in relation to implementation of the EXTEMIT-K project.

Overall, in 2016, the Faculty had 43 projects of which 22 were projects of the National Agency for Agricultural Research (NAZV), 8 of the Grant Agency of the Czech Republic (GACR), 7 of the Ministry of Education, Youth and Sports (MEYS), and 5 of the Technology Agency of the Czech Republic (TACR). The number of projects per year has significantly increased since 2011. In the long term most of the projects have been supported by the NAZV (Fig. 23). Especially the acquisition of funds from the Ministry of Education, Youth and Sports is very positive as these funds more than doubled the total volume of funds obtained by the FFWS for external scientific projects as against the year 2015 (Fig. 24). Augmentation of funds in projects granted under the GACR calls is also of importance.

Fig. 22: Development of funds acquired by FFWS for external scientific projects between 2012 and 2016

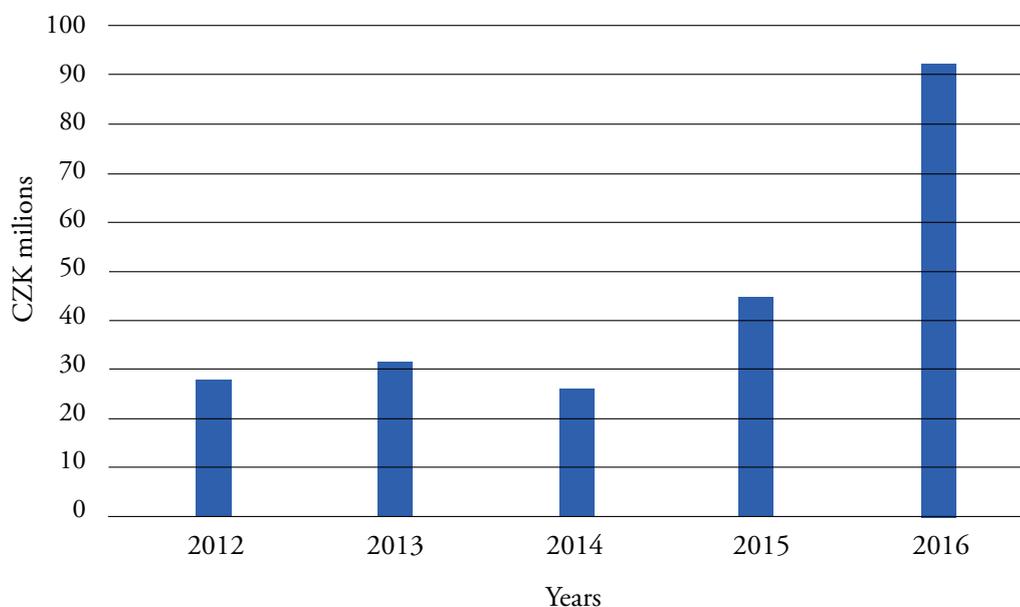


Fig. 23: Number of projects as per grant providers between 2012 and 2016

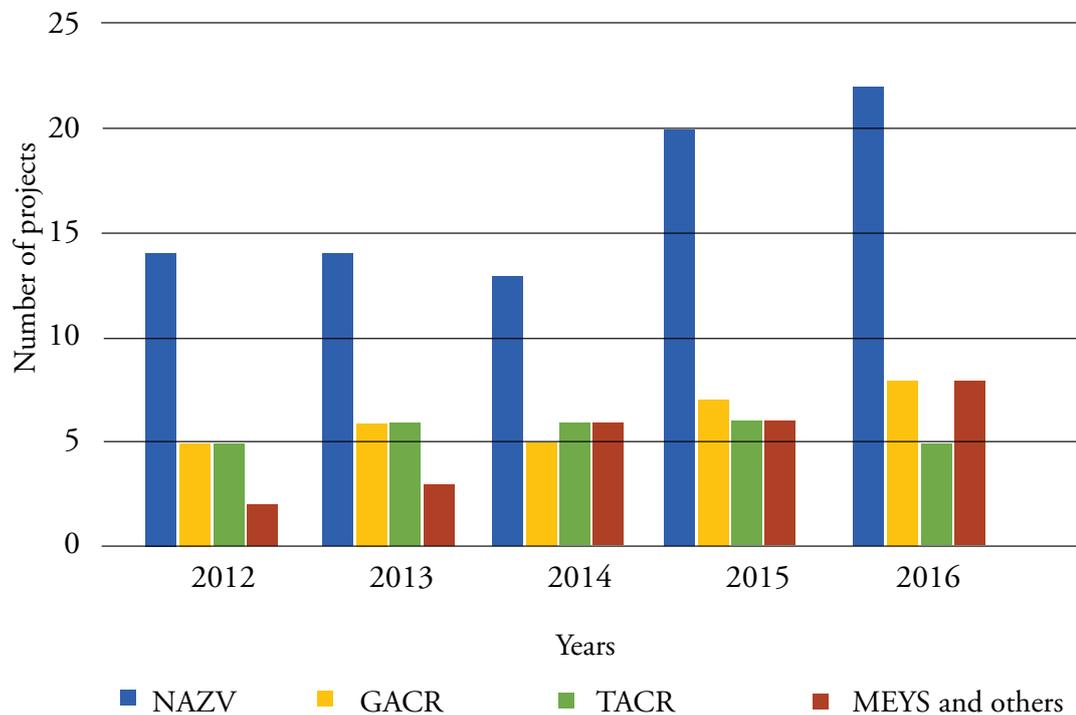
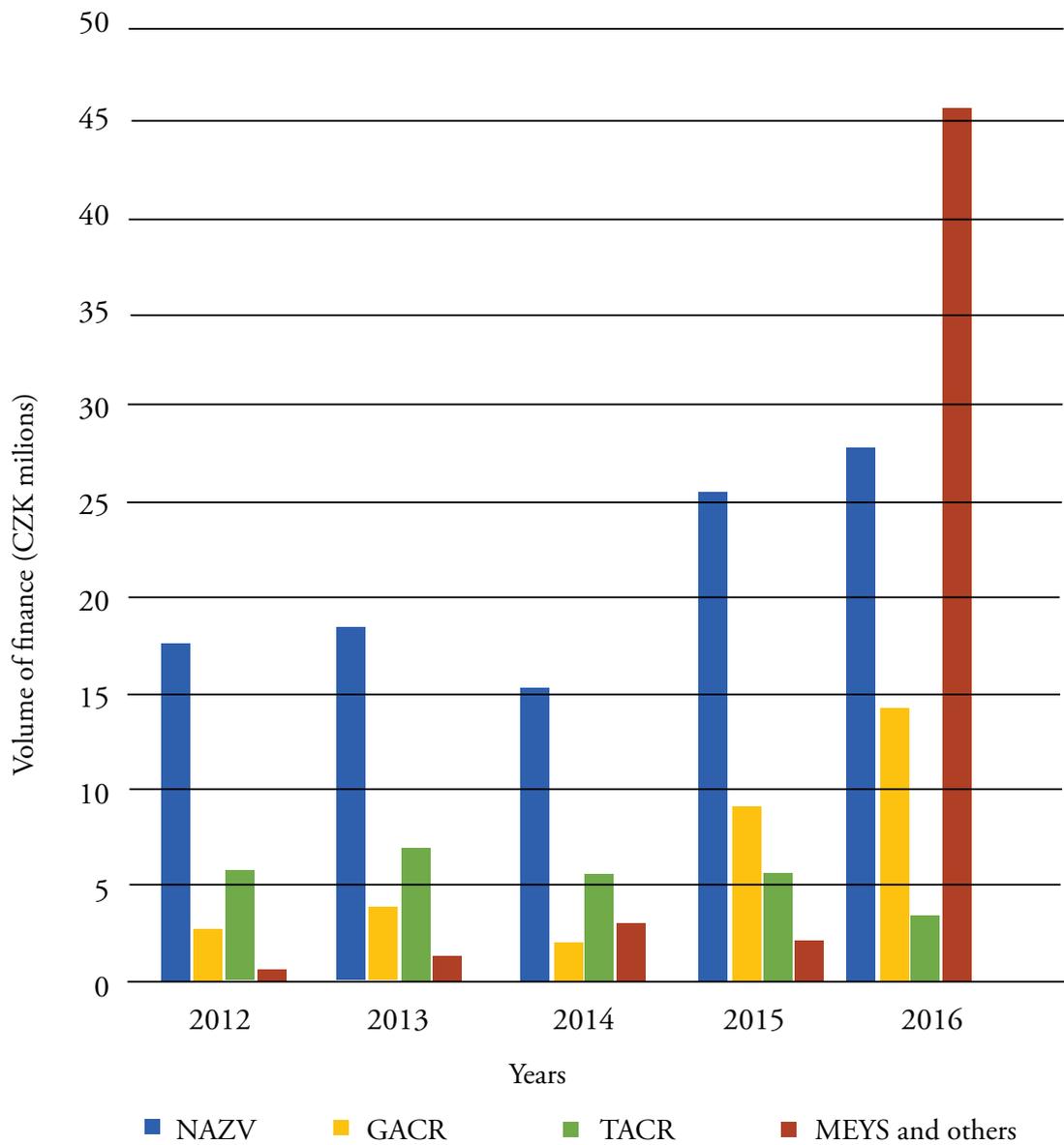


Fig. 24: Volume of finance in the projects as per grant providers between 2012 and 2016

Internal grants of the FFWS and CULS in Prague (IGA and CIGA)

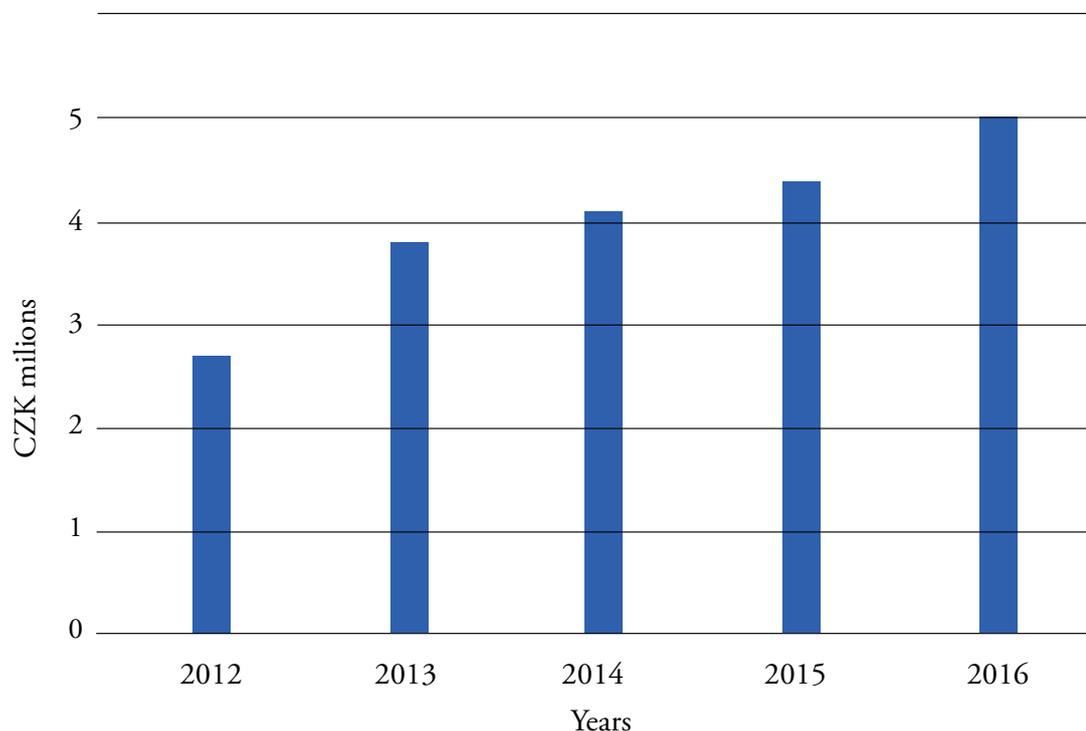
For many years, the Internal Grant Agency (IGA) at the Faculty has organised an internal grant competition for students, during which the students of doctoral study programmes have had an opportunity to get a grant for their research. Exclusively the specific university research funds have been used for these internal grants. Out of the total subsidy for specific research, 65% of the funds are provided through Faculty grant competitions and 35% of the funds are distributed within the University grant competition (CIGA). In 2016, out of the total subsidy in the amount of CZK 5.5 million for specific research CZK 5.1 million was used for IGA projects in total, which is more than a two-fold increase in comparison with 2012 (Fig. 25). This positive trend is a result of increased scientific research and publication activities of the entire Faculty. In 2016, the IGA supported total of 29 standard projects and 8 team projects. These projects involved 52 PhD students. The funds were drawn in accordance with the rules for the provision of support for the specific university research pursuant to the Act on the promotion of research, experimental development and innovation, according to the IGA 2016 contract documents and the FFWS IGA Statutes. The quality of completed projects, especially of their outputs, has been increasing every year. It is evidenced by an increased number of outputs. In 2016, the outputs of IGA projects constituted total of 61 publications that had already been published or accepted for publication in journals with an impact factor and 10 publications in journals included in the Scopus database. Students of doctoral study programmes compete for IGA



projects every year within a uniform procedure defined by the IGA competition documentation. The competition is organised by the IGA commission whose members are the representatives of various FFWS departments. Each proposal is evaluated by two reviewers and on the basis of their opinions, the Commission recommends eligible projects for funding either in full or proposes project budget cuts. The success rate of student proposals averages 80–85%. In recent years, project researchers have been presenting interim reports during the project period, not only thus providing for both technical and financial performance of the project, but also ensuring the planned outputs. This guarantees an effective use of specific research resources. IGA funds thus greatly assist students of doctoral study programmes and enable them to carry out high-quality scientific work. Funds not used for project support were drawn for organising of the student grant competition and for organising of five student conferences, which took place at the Faculty, out of which the most important was the Master 2016 conference.

In addition to support from the Faculty IGA, students of doctoral study programmes have an opportunity to receive a university-wide multi-annual grant from the University Grant Agency (CIGA). In recent years, the financial share of CIGA projects of FFWS PhD students amounted to less than 35% of the specific research contributed to CIGA by the Faculty. The total annual financial aid reached about CZK 1 million. In 2016, the FFWS obtained and addressed 16 new projects that increased the volume of funds to more than CZK 4 million, which significantly changes the ratio of invested and granted funds. Up to now the FFWS PhD students thus from the specific research have acquired more than CZK 9 million.



Fig. 25: Development of funds supporting IGA projects

External/foreign grants

The participation of researchers in international projects is an integral part of enhancement of scientific activities at the Faculty. In 2016, the Faculty continued in the project of the 7th EU framework programme titled „FORest management strategies to enhance the MITigation potential of European forests“ (FORMIT). The Wageningen Universiteit from the Netherlands was the project coordinator. Staff members from three departments (DFE, DFM and DFPE) participated in the project on behalf of the FFWS. For the second year in a row, the EEA/Norway Financial Mechanism was used for the project titled “Management Plan for European Lynx, Grey Wolf and Brown Bear” in which the DGMWB staff participated on behalf of the FFWS, and for the DFM project “Framework and options for the forestry adaptation measures and strategies related to climate change”.

Over the recent years, the Faculty of Forestry and Wood Sciences has been more and more involved in various international projects. In 2016, the FFWS also successfully acquired three projects from the Interreg CENTRAL EUROPE international operational programmes (1 project)

and the Cross-border cooperation programme between the Czech Republic and the Free State of Bavaria Target (ETC Objective) between 2014 and 2020 (2 projects).

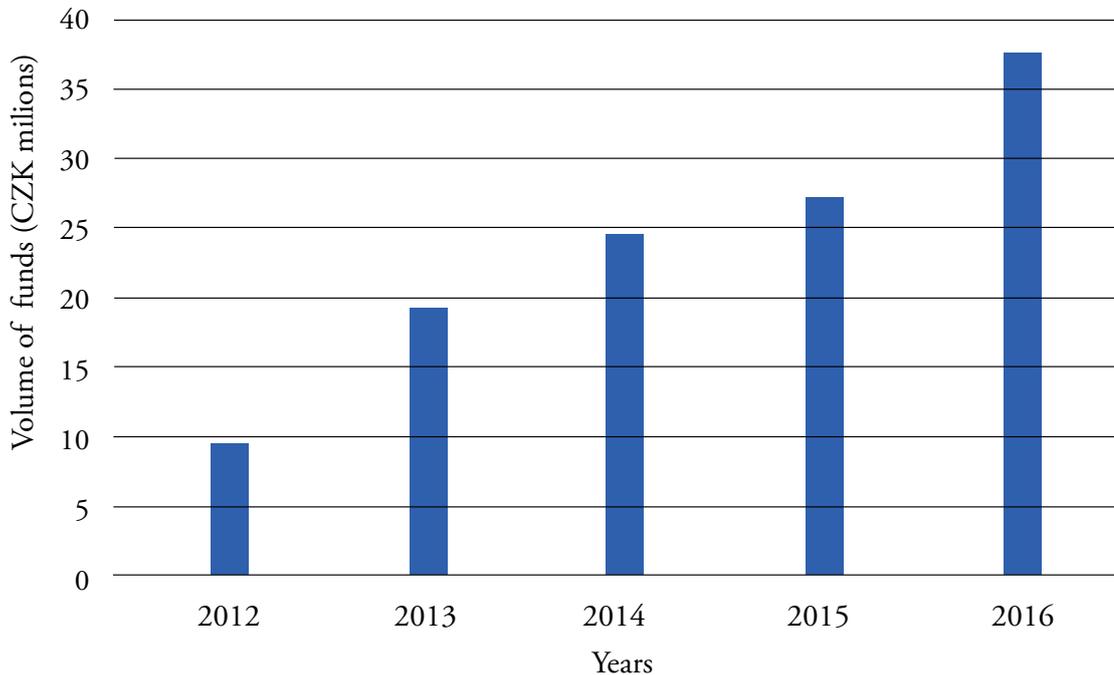
In the coming years, we need to prepare and mainly obtain more international projects (especially under the H2020 mechanism), in particular, in the context of the granted EXTEMIT-K project.

Institutional support

Since 2012, the resources from the institutional support for the Long-term Conceptual Development (DKR) provided by the Ministry of Education, Youth and Sports have been an indispensable source of support of science and research at the Faculty. For this period of four years, the amount of aid has more than quadrupled (Fig. 26). As the amount of DKR aid is calculated on the basis of results in research, experimental development and innovations, there has been an increase in the number and quality of scientific outputs of the Faculty staff. Support resources are then used to support the scientific and research activities at the Faculty. It is namely support of human resources development of scientific teams and an incentive programme for the preparation of publication outputs. DKR resources are also used to modernise laboratories and instrumentation. In 2016, also the investment funds from investment institutional support (DKR) in total amount of CZK 1,945,939 were used in acquiring the tangible fixed assets. In particular, it was the completion of the DGMWB laboratory at Truba (a magnetic coil for the research of magnetoreception); the funds were also used for the acquisition of equipment for the work of doctoral students: e.g. a device for stereomicroscope image digitisation, a frame sheet for the Laboratory of Wood Processing, the Merritt laboratory electromagnetic coil or the Sursonic thickness gauge with an evaluation unit.



Fig. 26: Development of the funds volume in the Long-term Conceptual Development (DKR) at the FFWS between 2012 and 2016



4.3. Support for post-doctoral positions

One of the objectives of the long-term plan of development of the Faculty, which was successfully adhered to in 2016, was the support of post-doctoral positions. In 2016, total of 10 postdocs were employed out of which 6 were from abroad (Nepal, France, Finland, Slovakia and 2 from Canada). Their scientific activity was linked to the existing research teams. At the same time, we employed 2 top graduates from doctoral studies at the FFWS and engaged them in the activities of the Faculty. The aim of these positions was to use their scientific and publishing potential. For this reason, postdocs were hired exclusively for a particular scientific project in the respective department. Most of postdocs have been involved in the preparation of project proposals. Postdocs together with staff members of departments also participated in the preparation of publications. In 2016, postdocs were authors or co-authors of 21 scientific papers published in journals with an impact factor (19) and in journals in the Scopus database (2) (e.g. Agricultural and Forest Meteorology, Forest Ecology and Management, Journal of Pest Science, Quaternary Science Reviews).

The introduction of post-doctoral positions has been clearly beneficial for the departments where the postdocs work. It has assisted the scientific teams of the departments to gain new insights into the addressed issues and to improve the education of PhD students in these departments. A considerable imbalance in the occupation of post-doctoral positions in the individual departments still remains a negative issue.

The most significant publication outputs of postdocs in 2016:

ČADA, V. – MORRISSEY, R. – MICHALOVÁ, Z. – BAČE, R. – JANDA, P. – SVOBODA, M. *Frequent severe natural disturbances and non-equilibrium landscape dynamics shaped the mountain spruce forest in central Europe* *Forest Ecology and Management*, 2016, roč. 363, č. 3, s. 169-178. ISSN: 0378-1127. (165,49)

WILSON, R. – ANCHUKAITIS, K. – BRIFFA, K. – BUNTGEN, U. – COOK, E. – D' AR- RIGO, R. – DAVI, N. – ESPER, J. – FRANK, D. – GUNNARSON, B. – HEGERL, G. – HE- LAMA, S. – KLESSE, S. – KRUSIC, P. – LINDERHOLM, H. – MYGLAN, V. – OSBORN, T. – RYDVAL, M. – SCHNEIDER, L. – SCHURER, A. – WILES, G. – ZHANG, P. – ZORI- TA, E. *Last millennium northern hemisphere summer temperatures from tree rings: Part I: The long term con- text.* *Quaternary Science Reviews*, 2016, roč. 134, č. 2, s. 1-18. ISSN: 0277-3791. (166,71)

SHARMA, R. – VACEK, Z. – VACEK, S. Individual tree crown width models for Norway spruce and European beech in Czech Republic. *Forest Ecology and Management*, 2016, roč. 2016, č. 366, s. 208-220. ISSN: 0378-1127. (165,49)

DOBOR, L. – BARCZA, Z. – HLÁSNY, T. – ÁRENDÁS, T. – SPITKÓ, T. – FODOR, N. *Crop planting date matters: Estimation methods and effect on future yields.* *Agricultural and Forest Meteorolo- gy*, 2016, roč. 223, č. 6, s. 103-115. ISSN: 0168-1923. (176,02)

HLÁSNY, T. – TROMBIK, J. – HOLUŠA, J. – LUKÁŠOVÁ, K. – GRENDÁR, M. – TUR-

ČÁNI, M. – ZÚBRIK, M. – TABAKOVIĆ-TOŠIĆ, M. – HIRKA, A. – BUKSHA, I. – MODLINGER, R. – KACPRZYK, M. – CSÓKA, G. *Multi-decade patterns of gypsy moth fluctuations in the Carpathian Mountains and options for outbreak forecasting. Journal of Pest Science*, 2016, roč. 89, č. 2, s. 413-425. ISSN: 1612-4758. (170,90)

4.4. Recent doctoral, habilitation and professorship procedures

The main priority in the area of doctoral studies in 2016 was raising the quality of studies. To this end, fulfilment of curricula, outputs and the requirements for the doctoral theses of students has been consistently checked. At the same time, the DSP students were encouraged to travel abroad. In 2016, funds from the Institutional support for PhD students (IP) were used to support PhD students going abroad for internship lasting at least one month. Overall, the IP allocated for S&R was used to support 9 trips, and 22 trips of DSP students were supported under the IGA projects. During these trips students gained a lot of experience and skills in the field of scientific and research activities. They also established international contacts, and the international cooperation of the FFWS with major universities was enhanced.

In the context of increasing the quality of doctoral studies in 2016, the number of doctoral students per one trainer was optimised, the Faculty held lectures and courses for PhD students to raise their expertise in scientific and research activities, and coordinated the themes of PhD students' doctoral theses with grant tasks of individual departments.

In 2016, 12 graduates successfully completed their doctoral studies. The Faculty continued in supporting and developing of gifted students with excellent results. In this context, excellent students were intensely sought at the Faculty and subsequently recruited for the positions of young scientists and thus integrated into the scientific and research work of the departments, which motivated them for doctoral studies. The Faculty will continue pursuing this trend also in 2017.

In 2016, 3 staff members were appointed associate professors in habilitation procedure at the Faculty, one FFWS staff member was appointed associate professor in habilitation procedure at the FTAS and one habilitation procedure at the FFWS was discontinued. One FFWS employee has been appointed Professor.



INTERNATIONALISATION

5. Internationalisation

In 2016, the FFWS activities in the sphere of international relations focused on achieving the updated “Development Strategy of the FFWS in the Field of Internationalisation for 2016”. Within this framework the activities in the area of internationalisation focused on three main sections in consistency with the present efforts of the Faculty leading to improvement of the study and teaching, communication with foreign institutions aiming at seeking new strategic partners abroad to enrich the pedagogic and research projects, publications, and research activities, both through the increased involvement of the Faculty in the Erasmus+ programme supporting the mobility of staff and students, and the involvement of the Faculty, staff and students in international professional institutions and organisations and, last but not least, the improvement of mobility of students and academic staff in the framework of other bilateral international projects, agreements and programmes.

5.1 Activity of the FFWS in international bodies and organisations

5.1.1 Activity of the FFWS in international institutions

In 2016, as an institution the FFWS continued in its active involvement in the European Forest Institute (EFI), Joensuu, Finland. This institution is the most important European forestry research organisation, in recent years also with a significant outreach outside of Europe, which develops important activities also in the field of teaching and education. Academic staff from the Faculty participates at important meetings organised or co-organised by the EFI on the regular basis. Within the framework of the EFI, the FFWS also participated in the activities of the EFI Regional Office for Central and Eastern Europe (RO EFI CEEC) in Vienna as one of the core members under a long-term agreement between the CULS and EFI.

The FFWS is also an effective active member of the most important global forestry research organisation – International Union of Forest Research Organisations (IUFRO) – in whose structure many FFWS staff members hold various positions. Namely, these are the positions of coordinators or deputy coordinators of research and project groups within the individual IUFRO divisions. The position of the FFWS has been reinforced by Prof. Šišák becoming the representative of the Czech Republic in the IUFRO International Council. Members of the Faculty participate and directly get involved in organising various activities of the IUFRO, espe-

cially conferences, seminars, symposia and workshops in the framework of their specialist research and working groups in individual divisions.

The FFWS is also involved in the activities of the Interuniversity Consortium for Agricultural and Related Sciences in Europe (ICA) – in particular, within the framework of the SILVA Network, and is also active in a major European organisation bringing together representatives of forestry faculties of universities in Europe.

“Conference of Deans and Directors of European Forestry Faculties and Schools” (CONFEST).

In addition to the above stated, the FFWS student organisation is a member of the highly prestigious international organisation of forestry students – International Forestry Students’ Association (IFSA) – in whose functioning it is actively involved. The Faculty supports the activity of students in this organisation also financially.

5.1.2 Activity of the FFWS staff in international bodies and organisations

In 2016, many FFWS staff members worked actively in various international bodies, organisations and institutions, many of them simultaneously in several ones as members, but a number of them also in a variety of organisational and managerial functions. Total of 13 staff members of the FFWS held 10 various organisational and managerial positions in the most prestigious international forestry organisations, IUFRO and EFI. The staff members were actively engaged in various international organisations and working groups, including the COST projects (European Cooperation in Science and Technology). 27 staff members of the FFWS were engaged in the total of 36 organisations based on their specialisation. Besides the listed activities,



16 employees holding 27 memberships in editorial boards have been active in those, or as the guest editors (International Journal of Remote Sensing; Forests; Journal of Forest Science; Central European Forestry Journal; European Journal of Entomology; Studies and Reports, Taxonomical Series; Annals of Forest Research). A nominal overview of the FFWS staff members' significant organisational management functions in international organisations and institutions in 2016 is given below.

Staff with organisational and managerial functions in the IUFRO in 2016:

Prof. Ing. Ivo Kupka, CSc.: Deputy Coordinator of the IUFRO Subunit 4.01.02 Growth models for tree and stand simulation

Prof. Ing. Milan Lstibůrek, MSc, Ph.D.: Coordinator of the IUFRO Subunit 2.04.02 Breeding theory and progeny testing

Prof. Ing. Robert Marušák, PhD.: Coordinator of the IUFRO Unit 4.04.00 Forest management planning

Prof. Ing. Miroslav Svoboda, Ph.D.: Deputy Coordinator of the IUFRO Subunit 8.01.01 Old growth forests and forest reserves

Prof. Ing. Luděk Šišák, CSc.:

- the representative of the Czech Republic in the IUFRO International Council;
- Deputy Coordinator of the IUFRO Unit 4.05.00 Managerial economics and accounting

Staff members representing the FFWS in EFI and other major international forestry organisations in 2016:

doc. Ing. Vilém Jarský, Ph.D.: representative of the FFWS in the EFI RO CEEC

Prof. Ing. Vilém Podrázský, CSc.: Chairman of the UEAA – Union of European Academies related to Agriculture

doc. Ing. Jiří Remeš, Ph.D.: representative of the CULS FFWS in the Silva Network

doc. Ing. Ivana Tomášková, Ph.D.: representative of the FFWS in the EFI RO CEEC.

Prof. Ing. Marek Turčáni, PhD.:

- representative of the FFWS CULS in CONFEST – the Conference of Deans and Directors of European Forestry Faculties and Schools
- representative of the FFWS in the EFI, Joensuu, Finland

The representation of the FFWS in the excellent European organisation of seven universities,

including the CULS in Prague – Euroleague for Life Sciences Universities (ELLS) – dealing with science and education in the field of life sciences. The FFWS was represented in the working groups of the ELLS (Subject Areas) by:

doc. Ing. Miroslav Hájek, Ph.D.: Bioeconomy working group

Prof. Ing. Jaroslav Holuša, Ph.D.: Insect Ecology working group

Prof. Ing. Milan Lstibůrek, MSc, PhD.: Molecular Breeding and Plant Biotechnology working group

Prof. Ing. Vilém Podrázský, CSc., doc. Ing. Jiří Remeš, Ph.D.: Forestry working group

Staff members with organisational and managerial positions in the editorial boards of international scientific journals:

doc. PaedDr. Jan Farkač, CSc.: Editor-in-Chief of the Studies and Reports, Taxonomical Series

Prof. Ing. Jaroslav Holuša, Ph.D.: Executive Editor of the Lesnícky časopis – Forest Journal (new name: Central European Forestry Journal)

Prof. Ing. Jaroslav Holuša, Ph.D.: Associate Editor of the European Journal of Entomology

5.1.3 The most important foreign partners

The most important foreign partners with which an intensive cooperation was implemented on the basis of long-term bilateral agreements included: Swedish University of Agricultural Sciences in Uppsala, University of Life Sciences Warsaw, Technical University in Zvolen, University of Joensuu, Polytechnic University of Madrid, University of Natural Resources and Life Sciences Vienna, University of Alberta, University of Vancouver, Laval University Quebec, University of California, University of Missouri, Universidade de Evora, Koszalin University of Technology, Trás-os-Montes and Alto Douro University.

In 2016, the Swedish University of Agricultural Sciences in Uppsala (SLU) became one of the main strategic partners as the cooperation in the areas of pedagogic and, especially, research fields intensified. Through its excellent staff members the SLU was involved in the EXTEMIT-K excellent project that was granted to the FFWS in 2016. The SLU staff members also work as the External Advisory Board members in this project. SLU is also going to be one of the main foreign partners in another project with international participation prepared by the FFWS in 2016.

In 2016, intensive cooperation continued also with other universities both in the EU and outsi-

de the EU – e.g. with universities of the Russian Federation (the Saint Petersburg State Forest Technical Academy, the Moscow State Forest University, and last but not least with the Volga State University of Technology, Faculty of Forestry Industry in the framework of the so-called Double Degree Programme (Mari El Republic). The FFWS also continued cooperating with universities in Kazakhstan (in particular with the Kazakh National Agricultural University in Almaty and S. Seifullin Kazakh Agro Technical University in Astana) within credit mobility.

5.2 Involvement of the FFWS in international educational programmes including the mobility programmes

5.2.1 Erasmus+ programme

It is namely the ERASMUS+ programme, launched for the EU programming period of 2014–2020 in the winter term of the academic year 2014/2015, which holds a significant position in the area of internationalisation of education at the FFWS. The FFWS prepared and concluded, or updated a number of bilateral agreements with foreign institutions, whose number amounted to 57. In the last year, basically all expedition requests placed by the students as well as the teachers were met and, further, preconditions were created for a higher utilisation of the mobility opportunities, especially for our outgoing students in 2017 and following years. Students have internship options both in foreign and domestic institutions, which plays an important positive role in mobility.

Development in the area of contracts and mobility of students and teachers is shown in the following charts. Both, the domestic and the foreign students mobility has been supported by a number of incentive measures. In order to enhance the competence of our students and facilitate their trips, in 2016, the Faculty continued in providing special courses of professional English for both the students and the staff members. In 2016, we organised:

- two English courses for students of Bachelor's degree and Master's degree study programmes at B1/B2 level
- one course for PhD students at C1/C2 level.

The Faculty also ran three courses for staff members: one A1/A2 level course, one B1/B2 level course, and one C1/C2 level course.

The above listed courses have significantly proven useful and have been very well received by

students and staff members, and will thus be run again in the upcoming period.

Last year, internship of students under the Erasmus+ programme, for which space was made available in almost all parts of the Faculty, was developed to a greater extent. Data on student mobility under the Erasmus+ programmes (Erasmus LLP in the academic year 2014/2015 and, subsequently, Erasmus+ starting from 2015/2016) are provided in the following charts.

Table 13: Bilateral contracts made under the Erasmus programmes in the last five academic years

	2013/2014	2014/2015	2015/2016	2016/2017	2017/2018
Number of contracts	49	47	50	53	57
Number of universities	44	47	48	53	57
Number of countries	21	20	21	22	22

Table 14: Student (outgoing) participation in Erasmus programmes in the last five academic years (including the internships)

	2012/2013	2013/2014	2014/2015	2015/2016	2016/2017
Students outgoing through FFWS	30	27	20	17	19
Number of months	208.5	213.5	113	93	123
FFWS students	17	15	18	15	18
Number of months	106	117	127	78	114
Internship			6	1	4
Number of months			23	3	12

Table 15: Incoming students in Erasmus programmes in the last five academic years

	2012/2013	2013/2014	2014/2015	2015/2016	2016/2017
Incoming students					
For lectures	27	39	46	67	42
Number of months	174	258	309	331	262
Intership			6	14	17
Number of months			27	49	51

The mobility of academic staff under Erasmus+ is also very important. The number of trips of academic staff over the past five academic years and the number of days spent abroad fluctuated quite markedly between individual years. The number of trips decreased by nearly 20% in academic year 2016/2017, yet in the last five academic years it ranks as the second year with the biggest number of trips. It can be said that the duration of shorter-term trips with 7 to 10 days in length are being readjusted as the average trip length in academic year was just a little less than 8 days, which is the lowest average for the last five academic years. On the other hand, the number of people incoming in the given period increased significantly, both in terms of mobility and the number of days, and probably reaches the ceiling of technical and organisational capabilities of the Faculty (see the chart below).

Table 16: Mobility of staff members under the Erasmus programme in the last five academic years

	2012/2013	2013/2014	2014/2015	2015/2016	2016/2017
Outgoing staff	20	17	19	30	25
Number of days	263	148	323	353	199
Incoming staff	16	25	38	23	52
Number of days	119	185	252	126	248

5.2.2 Mobility organised in 2016 under projects and agreements outside the Erasmus+ long-term programme

In case of the said mobility, it is, in particular, the matter of organising and implementing short-term courses, seminars, workshops and conferences funded from various sources. In that context, the following activities have been implemented.

Game management and forestry summer school in Irkutsk – in cooperation with the Irkutsk State Academy of Agriculture, dealing with scientific research and educational activities, in July, for the duration of one month, the participation of seven students from the FFWS, one teacher from the FFWS, and three teachers from the University in Irkutsk. The course focused on the vertebrate zoology, game management, forestry and fishing.

The short-term course Silviculture in Central Europe – in cooperation with the Faculty of Forestry of the Warsaw University of Life Sciences, in the period of May–June, was attended by 98 students from Poland at the FFWS and 66 students from the FFWS at the FF in Warsaw, and total of four teachers from the FFWS and seven teachers from the FF in Warsaw. The course focused on the silviculture in the conditions of Central Europe.

In 2016, the international mobility of students supported by the Institutional Plan (IP) also played a very important role in the process of internationalisation of education, science and research. IP resources have contributed significantly to the development of internationalisation as well as to higher quantity and quality of students' mobility. IP resources were used to support short-term trips, i.e. short-term courses and field trips of FFWS students to Warsaw and Irkutsk and short-term stays and field trips of students from the Faculty of Forestry in Warsaw, from universities in Essen and Poznan. Above that, twenty-one long-term research stays (longer than one month) of students at universities and research institutes abroad were supported.

Student activities

An active involvement of FFWS students in international activities, both in the activities of ELLS (Euroleague for Life Sciences) and IFSA (International Forestry Students' Association) is much needed. In 2016, total of seven FFWS students took part in international events held by IFSA. Their participation was supported from IP.

5.2.3 Mobility of academic staff outside the Erasmus+ programmes

Incoming foreign staff in 2016

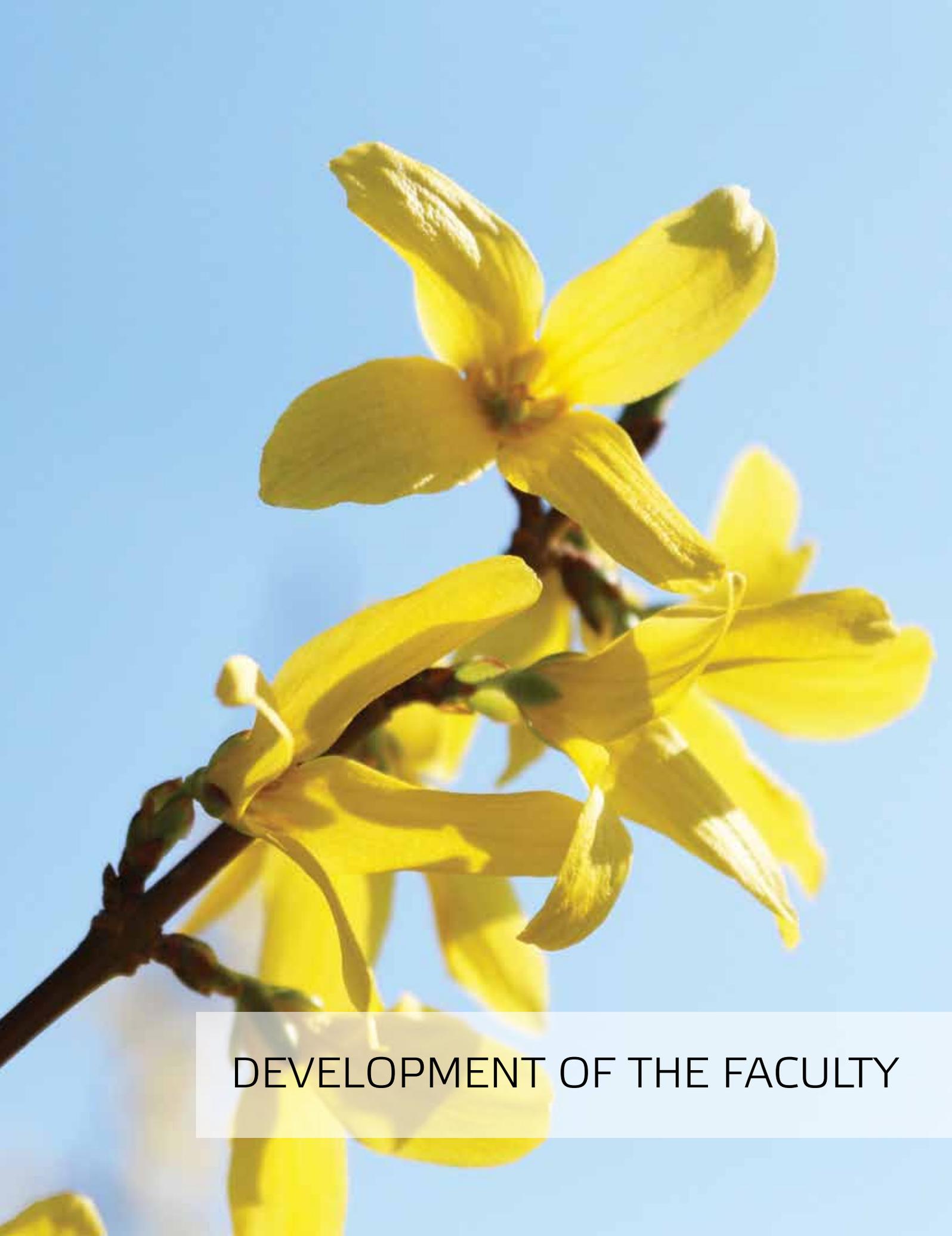
In the calendar year 2016, the FFWS hosted total of 63 staff members from 15 countries. Most visits were by guests from Poland, Slovakia, Hungary, then from Portugal, Belgium, France, Belarus, Ukraine, Turkey, Romania, USA, Spain, China, and Switzerland. The main purpose of these visits was the cooperation in organising of various types of events (preparation of joint projects, workshops, seminars, conferences, publications, field trips, summer schools and short courses, bilateral agreements, etc.), followed, in essence equally, by research and teaching.

Outgoing domestic staff in 2016

In 2016, overall, 254 trips of staff members to 39 countries, including the Erasmus programme were implemented. Out of the given number, most of the staff went to Slovakia. Outside the Erasmus programme (28 trips of staff in a given calendar year) 226 staff members travelled abroad mainly for the following reasons: organisational matters and cooperation, followed by participation in conferences and seminars, and solution of international projects (see the following chart).

Table 17: Staff members outgoing outside ERASMUS+ programme in 2016

Activities	Number
Total short-term trips (up to one month) of staff members outside Erasmus+ programme	226
of which: - Project implementation	98
- Participation in conferences, seminars, and workshops	85
- Organisational matters and cooperation	39
- Teaching and lecturing	4



DEVELOPMENT OF THE FACULTY

6. Development of the Faculty

After a considerable change in the approach taken by the Faculty over the years 2012–2015, when the space, instrument, and staffing project preparations were of the essence, the first major investment step made by the FFWS was building and equipping of the Pavilion of Wood Sciences. The opening ceremony of the Pavilion took place in January 2016. At the same time, a strategy for further intensive development of the Faculty was created – namely in connection with the opportunities offered by the Operational Programmes for the period of 2014–2020. From January 2016 talks have been held with potential candidates for the position of Vice-Dean for Development and Operational Programmes. At the end of June 2016, the position was taken by Ing. Radek Rinn. Among the key tasks for the Vice-Dean, there is primarily the goal to involve the FFWS in the utilisation of the European Structural and Investment Funds accenting the preparation for not only so called “hard” projects (investment projects aimed at building new premises and their equipping with state-of-the art instruments), but also “soft” projects focusing on a good quality research and enrolling of high quality domestic and foreign scientists. At this point it must be noted that the FFWS (as well as all of the faculties/universities in Prague) were offered great opportunities to use the European funds allocated under the Operational Programmes for building excellent science and development in education in the same programming period. Especially OP RDE (Operational Programme Research, Development and Education) owned by the Ministry of Education, Youth and Sports and OP PGP (Operational Programme Prague – Growth Pole of the Czech Republic) owned by the Magistrate of the Capital City of Prague are relevant for universities and colleges as these programmes compared with the previous period of 2007–2013 offer many times higher sums in the possibilities of financial support.

The FFWS has decided to take advantage of the situation already at the beginning of 2016 when it submitted its application to the MEYS requesting financial support for its first project (EX-TEMIT–K). This project was submitted into the call “Support of excellent research teams” of OP RDE. The evaluation was completed with a positive result at the end of 2016 – see more below.

Throughout June 2016, the FFWS was applying for another project in the Excellent Research area (EVA 4.0). Subsequently, over the summer, all five projects were submitted in which the FFWS will start participating in the middle of 2017, or as the case may be will act as their implementation guarantor. The projects aim primarily at supporting education, both in the undergraduate and graduate programmes, as well as in PhD programmes (MOST, HTP and a complex

of three projects aimed at modernisation of the PhD studies at FFWS).

Besides the above mentioned key and summary projects, two departments (DGPFT, DFE) have been successful in receiving, in one case even in commencing, of all the three international projects. The project at issue is called SUSTREE and is financially supported from the Interreg CENTRAL EUROPE programme, while two projects are financed from the Cross-border cooperation programme between the Czech Republic and the Free State of Bavaria Target (ETC Objective) 2014–2020.

Various departments were taking part in the preparation of several international projects submitted throughout 2017 into 2020. From a long-term perspective, the FFWS considers such activities as key and intends to focus on them with a considerable amount of intensity in the future as well.

The year 2016 was also the first year of sustainability of the first accomplished project Pavilion of Wood Sciences, which was successfully completed under the Operational Programme Research and Development for Innovations. The said infrastructure was used in 2016 by the FFWS for educational purposes in both, the Bachelor's and Master's degree branches of study, as well as in the PhD studies. Construction of the Pavilion of Wood Sciences contributed in a significant way to an increase in student participation in research and scientific activities where the students utilise the up-to-date facilities and laboratories intended for performing practi-



cal tasks. Markedly, the number of students performing the tasks under their practical training curriculum in the Pavilion has increased. In 2016, it reached approx. 50% of the share of all of the Wood Sciences programmes undergraduate students. In the following years, further increase is expected in connection with the commencing of lecturing and educational processes. Besides activities regarding the direct linkages to the educational processes, the Pavilion was used for instance also during the Open Days, Job Fair and other events organised by the FFWS. The Pavilion was also used for ceremonial purposes and specialised lectures, or training courses held for the representatives of the forestry industry and wood processing companies.

The project obtained in 2016

Building up an excellent scientific team and its spatiotechnical background focused on mitigation of the impact of climatic changes to forests from the gene levels to the landscape level (in short EXTEMIT-K)

In February 2016, a FFWS project with an overall budget of nearly CZK 250 million was submitted to the Ministry of Education, Youth and Sports into the Call 02_15_003 Excellent Research Teams Support of the Operational Programme Research, Development and Education. The original allocation of the call in total of CZK 2.5 billion, albeit increased to approx. CZK 5 billion, presented high demands on the applicants regarding the quality of processing the project applications. The sum of the budgets of the submitted projects totalled approx. CZK 14



billion and exceeded the available sources of the call announcer. The EXTEMIT-K project was successful in a hard competition, was approved in the autumn of the same year and commenced on 1 December. Its material implementation started in 2016. The project is planned to cover almost six years, to be precise until 31 October 2022.

The purpose of the EXTEMIT-K project is to upgrade the science level at the FFWS to excellence in the long-term horizon, namely through the following aims:

- building up a 17 member excellent scientific team,
- infrastructure modernisation,
- intensification of international cooperation.

The project is being solved in cooperation with a strategic partner – Swedish University of Agriculture.

The scientific team is aiming at solving the present and future problems in the forest ecosystems in the Czech Republic caused by the climatic changes and in searching for scientific solutions in protection of forests as the carbon absorbers. The project emphasises the most significant disturbance factors (bark beetle and related abiotic factors – mainly climatic extremes) at three levels:

- Gene – sub-project G,
- Tree – sub-project T,
- Landscape – sub-project L.

The excellent scientific team task is the research in the area of interaction between the bark beetle and the coniferous trees with the use of genomics, transcriptomics, and proteomics together with verifications from genetics and metabolomics (chemical ecology) and verifications of the relationship of tree/bark beetle physiology at the tree and landscape levels. Mapping of the typical disturbance regimes and mitigation strategy proposal for their management will represent a significant output.

The project submitted

Excellent research as the support of the Adaptation of Forestry and Wood Processing to the Global Change and the 4th Industrial Revolution (in short: EVA4.0)

In June 2016, the FFWS submitted into the OP RDE another project (in short: EVA4.0), namely into the Call 02_16_019 Excellent Research, with a proposed budget exceeding CZK 350 million and with the planned implementation period between 1 October 2017 and 30 September

ber 2022. At the beginning of 2017, the Project successfully passed through the first evaluation round. The second round of evaluation has been planned for the year 2017, the final results of evaluation will be known in the autumn.

The aim of the submitted project is construction of a new organisational unit (named EVA4.0) within the FFWS of the CULS that would be lead by excellent scientists from the USA, Europe but also from the Czech Republic, and which would research scientific problems in the material areas on a global level. The scientific team would thus create a 50 member collective core that would be consisting, in case the project is approved, of newly recruited excellent scientists in the position of a project leader and leaders of three scientific programmes, then key foreign and domestic scientists in the position of leaders of sub-programmes (overall, 17 excellent scientists), as well as domestic scientists at the level of individual scientific sections (more than 25 experts). Another significant part of the team ought to be formed by the highly motivated postdocs (domestic as well as foreign in total of 20 persons), the PhD students (30) and related foreign experts (more than 30).

The project is aimed at solving the up-to-date as well as future problems in the area of forestry (including the biological foundations of the forest ecosystems in temperate, and partly also subtropical and tropical zones) and forestry in the Czech Republic caused by the global change, and at seeking excellent, scientifically proven results inevitable for the implementation of both of the areas into Industry 4.0. The project emphasises the most important areas where the research is urgently necessary, namely at the level of the following three programmes:

- Biology – programme B,
- Forestry including the support of decision making for all of the three programmes – programme L,
- Wood Processing – programme D.



Projects submitted in 2016 – approved in 2017

Modernisation of the Study Programmes and Studies, Quality and Counselling at CULS Prague (in short: MOST)

In 2016, the FFWS also participated in the all-university project MOST aimed at improving the quality of the provided university education through the improvement of the expert level quality of the academic staff, rewriting the existing and creating new study programmes that take the modern methods of education, the needs of work market and real life situations into consideration, allowing for the demands of the special needs of students, and introducing the quality evaluation system and strengthening the strategic management of the CULS.

The overall planned budget of the submitted project was CZK 250 million, of which almost CZK 21 million ought to be credited to the FFWS. The period of implementation was intended to be five and half years from 1 April 2017 until 30 September 2022.

Through the project, the FFWS intends to accredit two new study programmes in reflection to the needs from the real life (Systematic Arboristics undergraduate programme and a follow-up graduate programme Wooden Structures and Wood-based Constructions) and to newly re-accredit three programmes (follow-up graduate programme Wood-processing Engineering and undergraduate programmes Preservation of Natural Products and Taxidermy and Forestry).

The project application was submitted into Call 02_16_015 for ESF for universities in summer of 2016. In April 2017, the CULS was informed that the project had been approved by the MEYS whilst the funding was cut down to CZK 182 million; the FFWS share after the cuts will thus be CZK 12 million.

Acquiring the necessary infrastructure for the re-accredited and newly established programmes is being solved on the FFWS part through the project plan of High-tech Technological-educational Pavilion of the FFWS.

FFWS High-tech Technological-educational Pavilion (HTP)

At the end of August, a project application was submitted into the ERDF call for universities No. 02_16_016 OP RDE for a construction of a new High-tech Technological-educational Pavilion of the FFWS (in short: HTP) with the overall planned budget approx. CZK 240 million and the planned implementation period of 1 May 2017 – 31 October 2019.

The aim of the project is the construction of a new FFWS pavilion for collecting, processing

and utilisation of natural and technical findings in education and practical use of digital data of geographic information systems. In the new facility a construction of a new educational laboratory is planned and a classroom using not only the devices for a remote exploration of Earth but also other high-tech SW and HW equipment will be acquired.

The building of the High-tech technological-educational pavilion of the FFWS is crucial for introducing two new study programmes in accordance with the demands of the real life environment (System Arboristics and Wooden Structures and Wood-based Constructions) and also of three newly re-accredited programmes (Wood-processing Engineering, Preservation of Natural Products and Taxidermy and Forestry). The newly built infrastructure will be used, in case of approval by the MEYS, secondarily also for the existing programmes, such as Wood Technology or Forest Engineering. The goal of the project is to secure favourable conditions for the sustainable ensuring of the up-to-date education process with direct links to the demands of employers and the study environment (modern facilities, collections and educational materials). The evaluation process results were announced on 13 April 2017, and the project was approved by the MEYS whilst the budget was cut down to CZK 192 million.

The newly emerging research and study programmes at the FFWS, Material Background for PO Study Programme, Material Background for GChF and DPZ Study Programmes

At the beginning of September of 2016, three complementary projects were submitted in two calls of OP RED 02_16_018 Research Study Programmes Development and 02_16_017 Research Infrastructures for Educational Purposes – building or modernisation: Creating of the new research study programmes at the FFWS, Material Background for the PO Study Programme, Material Background for GChF and DPZ Study Programmes. All of the above named projects were approved in April 2017.

The set of projects will allow for creation of three accredited PhD study programmes and for acquiring the necessary infrastructure. In case they are evaluated positively, the new programmes will be preparing high quality experts capable of using up-to-date technologies in all individual research areas.

These are the following PhD programmes:

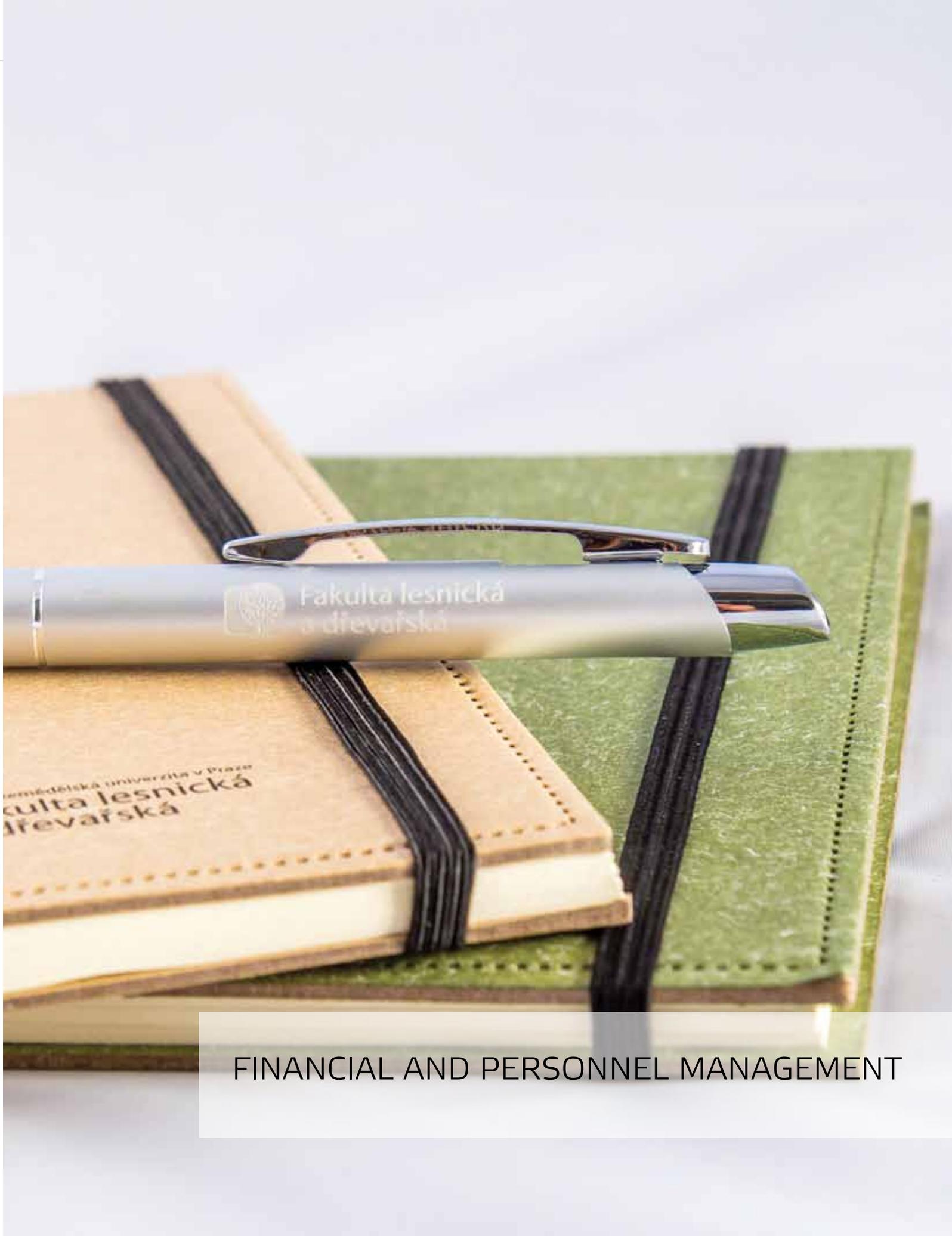
- Applied Geoinformatics and Long-distance Earth Exploration in Forestry,
- Forest, Wood and Wood-based Materials Fire Protection,
- Global Change Forestry.

It is intended to prepare the last named programme in the English language as a joint degree in cooperation with the project programme partner – the Technical University in Zvolen. The remaining two PhD programmes should be accredited in both, the Czech and English languages. The total planned budget for the three projects was originally CZK 28.7 million, when approved it was cut down to CZK 27 million. The time schedules of the said projects were planned for the period between 1 April 2017 and 30 September 2022.

Conservation and sustainable utilisation of forest tree diversity in climate change (in short: SUSTREE)

On 1 August 2016, the implementation of the previously approved project SUSTREE financed from the Interreg CENTRAL EUROPE programme started. The project is being implemented in cooperation by partners from six Central European countries, namely from Austria, Germany, Slovakia, Poland, Hungary, and the Czech Republic. The leading partner in the project is Bundesforschungs- und Ausbildungszentrum für Wald, Naturgefahren und Landschaft, Vienna, Austria. The total project budget is approximately EUR 1.8 million, of which the share of FFWS is approximately EUR 211,000. The implementation should be completed by 31 July 2019. The main goal of the SUSTREE project is the support of the forest ecosystems adaptation to the global change through international management of the genetic sources of forest woody plants. The project outputs will have the form of maps, instructions of cross-border transport of seeds and access to the national registers of the reproductive material of forest woody plants.

Simultaneously, in 2016, two projects under the Cross-border cooperation programme between the Czech Republic and the Free State of Bavaria Target (ETC Objective) 2014–2020 were approved whose implementation will start no sooner than in 2017. They are specifically the following: Silva Gabreta Monitoring – Cross-border Biodiversity and Water Regimes Monitoring Implementation and Cross-border Mapping of Forest Ecosystems – Path to the Common Management of the Šumava and the Bavarian Forest National Parks.



FINANCIAL AND PERSONNEL MANAGEMENT

7. Financial and personnel management

7.1 Financial management

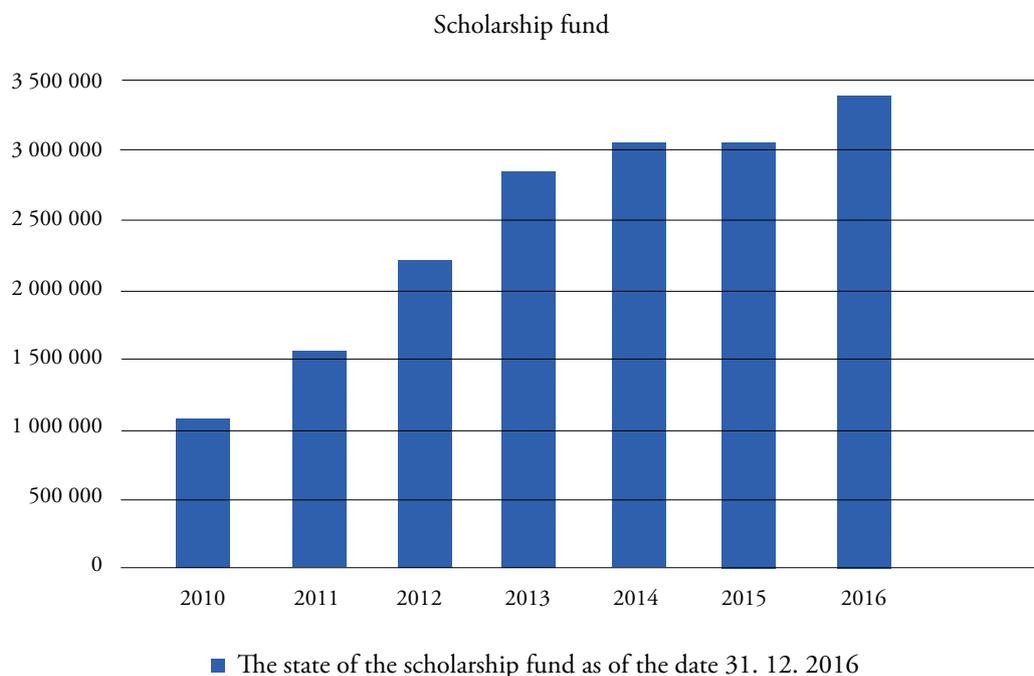
In total, the FFWS obtained the sum of CZK 107,134,185 into its budget for 2016 within the frameworks of subsidies per student, the institutional support for the Long-term Conceptual Development (DKR), and specific research.

Throughout 2016, the rules for handling the provided funds in accordance with Act No. 218/2000 Coll., on Budgetary Rules, as amended, were consistently and strictly kept in the area of financial management of the FFWS CULS in Prague. The Faculty as a whole adhered to the budget as planned.

The Faculty managed to have a budget surplus in its main operation – i.e. the operational funds – totalling CZK 15,738,450.84. The said sum was transferred to the Operational Fund as at 31 December 2016. The DKR non-investment support was increased by CZK 683,267 for 2017.

Faculty funds

The Scholarship Fund is created from the tuition fees. Likewise in the previous years, in 2016, the scholarships were awarded in accordance with the Scholarship Rules of the CULS. The development of the Fund between 2010 and 2016 is illustrated in the chart in Fig. 27 below.

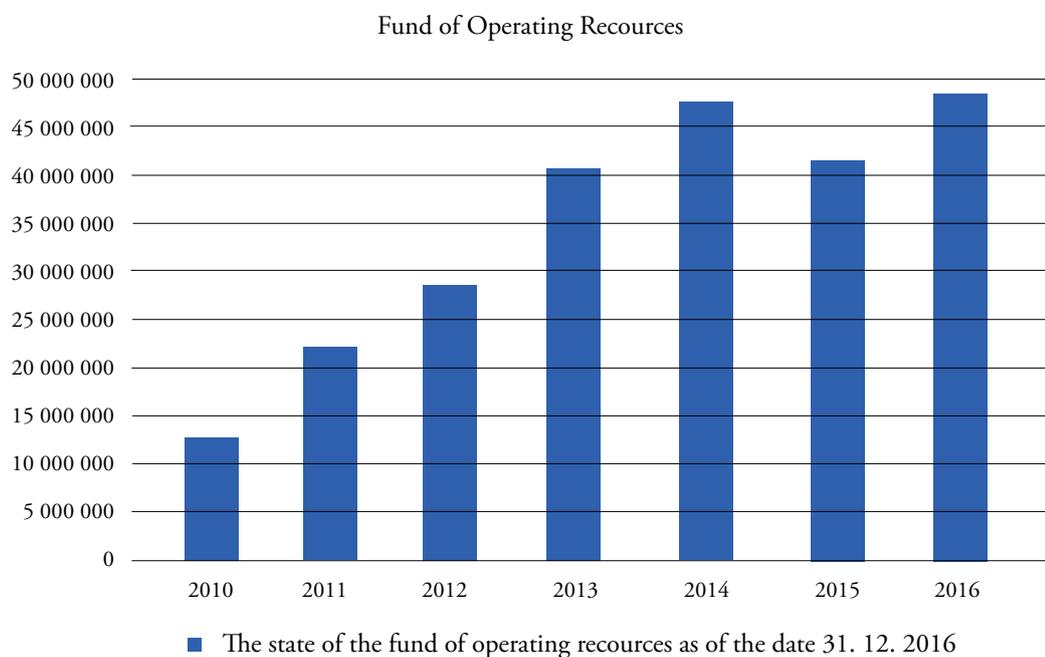
Fig. 27: Scholarship Fund development between 2010 and 2016

The Reward Fund is comprised of transfers of funds from the Operational Fund and it is used to cover the salary compensations (leaves, sick leaves) related to already completed projects (see Table 18). The outstanding balance in the Reward Fund is covered by the positive balance in the Operational Fund.

From the FRIM fund of capital goods development there were funds drawn for the partnerships in various projects in total of CZK 3.5 million (exchange of the FRIM fund for the CULS KaM own income – residence and dining halls) and CZK 5.891 million as a direct grant into the FRIM fund for the purpose of acquiring the tangible fixed assets, namely the completion of equipping the FFWS Pavilion of Wood Sciences.

Operational Fund

The Fund comprises of the balance transfers from the educational activities grant, that is, the balance in the main operation. This Fund primarily serves for accumulation of funds designated for further use in the operational and investment development of the Faculty (see Fig. 28).

Fig. 28: Operational Fund development between 2010 and 2016

The development and balance of the funds, as shown in Table 18, is consistently positive. The total financial reserve of the Faculty as at 31 December 2016 totalled CZK 48,180,775 (FRIM + Operational Fund).

Table 18: Faculty funds development

	Scholarship Fund	Reward Fund	FRIM	Operational Fund
Balance as at 1 January 2016	3 065 593	57 150	3 496 911	41 456 550
Formation of the Fund	2 677 567	200 000	5 826 877	16 016 197
Fund withdrawals	2 404 025	263 330	9 218 153	9 391 426
Balance as at 31 December 2016	3 339 136	- 6 180	105 635	48 081 320

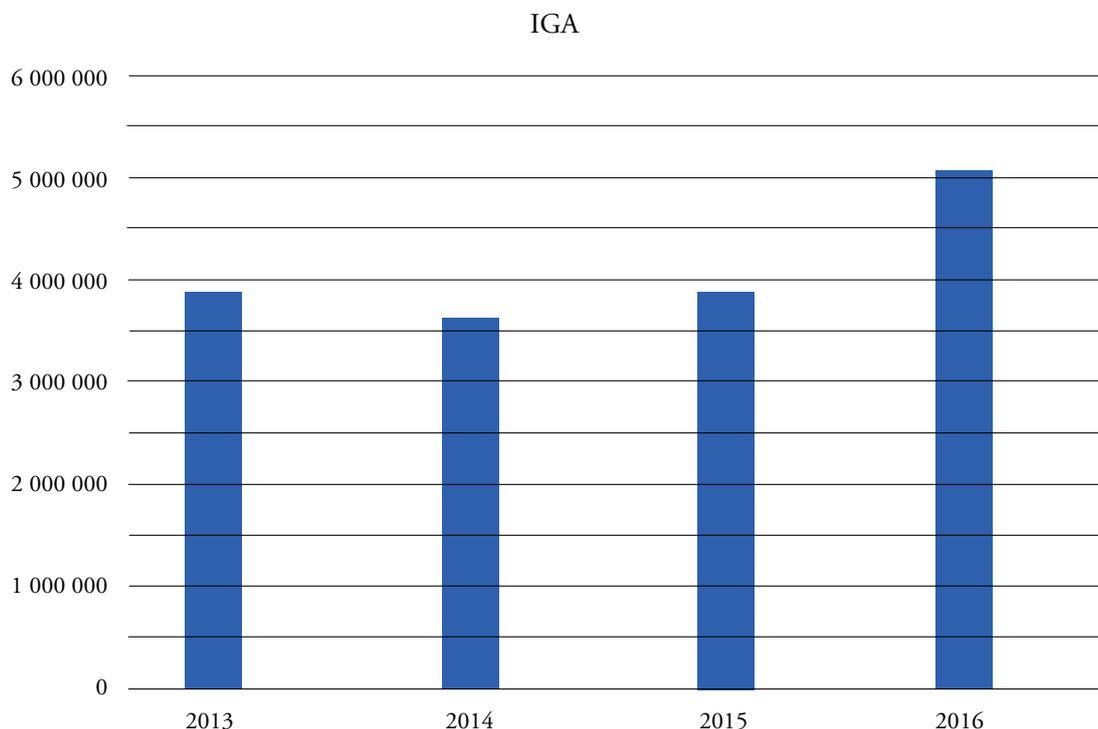
In the same manner as in 2014 and 2015, also in 2016 the FFWS generated profit from complementary and own activities. The profit for 2016 in total of CZK 973,386.51 has been transferred into the Operational Fund. The profit deposited in the Fund will be used for pertinent covering of emergency and unexpected expenses.

In 2016, the FFWS received financial donation designated for support of educational and research activities. The donation in the total amount of CZK 2,650,432.35 was provided by a Faculty alumnus Ing. Slavoj Ludvik Eis who currently resides in Canada.

In 2016, also the funds from investment institutional support in the total amount of CZK 1,945,939 were used in acquiring the tangible fixed assets. In total, the balance in the Funds of the Faculty (Reward, FRIM, FPP) increased in 2016 by CZK 3,170,163.

As in the previous years, also in 2016, the FFWS was using multi-source financing of the research operations. In 2016, there was a sharp increase in IGA support.

Fig. 29: Development of funds designated for IGA



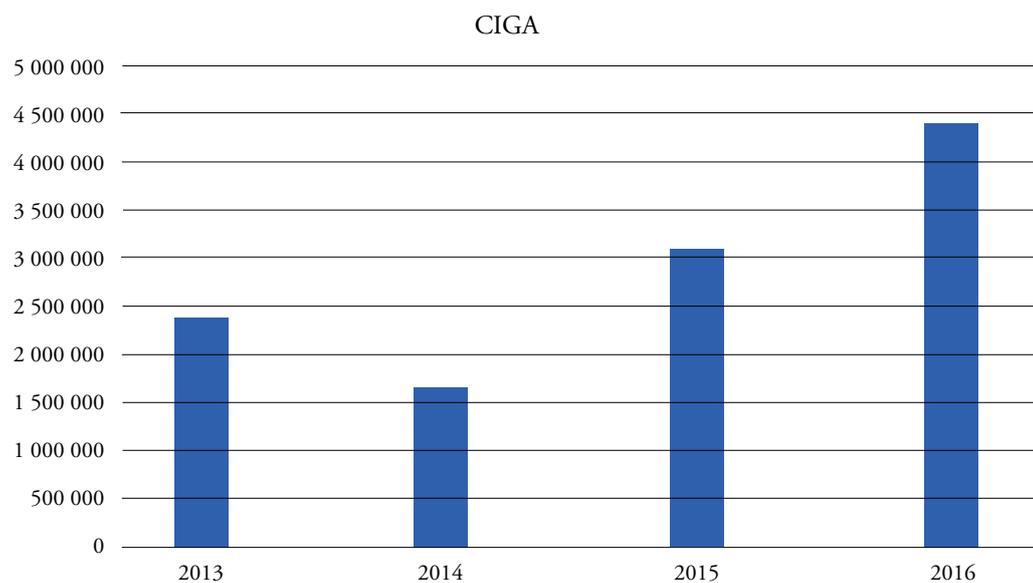
This increase was reached thanks to an increase in subsidies for the specific research which, compared with 2015, rose by CZK 1,234,443, i.e. to the final sum of CZK 5,552,174.

Table 19: Development of subsidies for the specific research and IGA

Specific research	2013	2014	2015	2016
Subsidies	4,139,555	4,144,734	4,317,731	5,552,174
IGA	3,882,763	3,632,792	3,912,102	5,077,788

In 2016, the FFWS was able to acquire the sum of CZK 4,382,000 from the CULS funds under the CIGA project.

Fig. 30: The development of the funds acquired under CIGA



Increase in contractual research and complementary activities also positively affected the overall economic management of the Faculty in 2016.

Table 20: Development of income/profit from contractual research and complementary activities

	2013	2014	2015	2016
Income from contractual research and complementary activities	CZK 2,284,012.56	CZK 2,446,952.72	CZK 3,219,821.30	CZK 5,396,671.65
Income from contractual research and complementary activities after taxation	CZK 368.46	CZK 245,864.64	CZK 339,573.22	CZK 571,499.58

Other sources of the FFWS activities funding were obtained through the means under the GA CR, TACR, NAZV, and OP RDE projects, within the framework of contractual research and Faculty's own operations.

In 2016, the FFWS was administering funds in total of CZK 206,638,589.37.

7.2 FFWS organisational structure

The FFWS management pays a constant attention to the area of human resources. The year 2016 saw continuation of the pursuit of the strategic objectives in accordance with the long-term targets of both, the FFWS as well as the CULS, in the area of enhancement of professional skills and qualifications through the habilitation and professorial proceedings compliant with the new regulations of the Faculty which came into effect in October 2014. In 2016, three staff members were appointed associate professors in habilitation procedure at the Faculty, one FFWS staff member was appointed associate professor in habilitation procedure at the Faculty of Tropical AgriSciences, and one habilitation procedure at the FFWS was suspended. One FFWS staff member was appointed Professor.

In comparison with the previous year, there has been an increase in the ratio of the number of professors by one full-time contract, the number of associate professors grew by 2.35 FTE, and the number of senior assistants and assistants was cut down by 10.6 of FTE. The ratio of contracted jobs in the research personnel was increased by 20.4 FTE, and in the techno-economic department there has been a decrease by 1.5 FTE. The increase in the research and research-pedagogical personnel has been caused by a higher number projects in implementation.

The structure of the Faculty in terms of qualifications, expressed by the ratio of the number of professors to the number of associate professors and to the number of senior assistants in 2016 was 20% : 31% : 49%. The goal set in the previous years, that is reaching the 45% share of professors and associate professors in the overall academic personnel numbers, has been achieved. The share of the FFWS foreign employee numbers is mildly increasing. Out of the 91 academic staff members at the FFWS 14 are foreign nationals. Employing specialists from abroad, especially in case of outstanding experts, is in full harmony with an increase in quality trends in education and research as well as it is in connection with the increasing numbers of foreign students. The systematic continuous studying, including participation in the educational programmes held by the CULS, forms also an integral part of the academic staff work tasks.

Table 21: Development in the number of academic staff members of the FFWS and their age structure over the last five years

Category										
	As at 31 December 2012		As at 31 December 2013		As at 31 December 2014		As at 31 December 2015		As at 31 December 2016	
	Number	Average age								
Professors	10	61	12	61	12	61	13	58	17	57,4
Associate professors	22	49	21	46	19	48	18	49,5	22	47,3
Senior assistants + VPed (research-pedagogical)	67	41	78	41	75	39	51	37	87	42,5

(VPed – research-pedagogical staff – academic staff)

(VP – research staff)

Table 22: Development in the number of the FFWS staff members in the last five years - ration*

Year	Professors	Associate professors	Senior Assistant	A	VPed+VP	Techno-economic staff*	Pr Operational staff ov. zam.	Total
2012	8.7	20.6	30.4	0	16.7	28.16	3	107.56
2013	10.8	19.45	37.1	1.6	20.75	28.71	3	121.41
2014	10.5	18.35	41.9	1.2	20.75	31.6	2.94	127.24
2015	11.5	17.35	41.7	1.2	19.75	28.806	3	123.306
2016	13.9	21.2	32.5	0.5	33.45	26.11	3	130.66

THP – techno-economic department staff members (part of these staff members participate in direct S&R support not only through data collection but also by their own publishing activities)

Table 23: Development in the number of the FFWS staff members over the last five years
– registered records

Year	Professors	Associate professors	Senior Assistant	A	VPed+VP	Techno-economic staff*	Pr Operational staff ov. zam.	Total
2012	10	22	37		30	40	3	142
2013	12	21	44	1	34	42	3	157
2014	12	19	48	1	26	49	3	158
2015	13	18	48	2	39	34	3	157
2016	17	22	44	2	41	33	3	162

*THP – techno-economic department staff members (part of these staff members participate in direct S&R support not only through data collection but also by their own publishing activities)

A close-up photograph of a green pine branch with sharp needles, set against a blurred background of green foliage. A semi-transparent white rectangular box is positioned at the bottom of the image, containing the text "MARKETING DEPARTMENT" in a bold, black, sans-serif font.

MARKETING DEPARTMENT

8. FFWS Marketing Department

8.1 The Marketing Department as a part of strategic planning of Faculty development

Within the Faculty strategies, marketing has become a significant source of information, a tool for creating the space for strategic changes, and ultimately for a good-quality Faculty management. The assignments for the FFWS Marketing Department follow from there. Marketing Department's objective in 2016 was to publicise and make the Faculty more visible and to increase the Faculty awareness in the general public. The attention was paid to both, the external as well as the internal relationships. In both the named directions many events were organised for the applicants interested in studies at the Faculty, for the Faculty staff members, and for the general public.

The main Marketing Department activity in 2016 was the promotion and publicity of the study programmes and recruitment of potential applicants for the studies. The Department was providing digital campaigns for the academic year 2016/2017 and it was intensively devoting its efforts to the social networking sites (Facebook, Instagram, Twitter). Further, the Department was coordinating presentations on high school studies, preparing Open Days (both of the above in cooperation with the Faculty students and staff members) and participating in post-A-levels education fairs in the Czech and Slovak Republics.

In cooperation with the Faculty students and staff members the Marketing Department also actively participated in annual expositions and fairs as these have their permanent place in its yearly schedule. Some one-time events also took place within the everyday business at the Faculty. Ceremonial opening of the newly built Pavilion of Wood Sciences FFWS represented a very special occasion — the Pavilion is a modern structure considerably improving the study conditions not only for the wood processing but also forestry fields of studies, and contributed immensely to the development of science and research activities at the Faculty.

Other activities performed by the Marketing Department include active participation in the editorial board of the CULS Bulletin “Živá univerzita” (Living University), and further cooperation with student bodies (FFWS Buglers, Hunting Club of CULS FFWS in Prague, Student Club of CULS FFWS, student editorial board of “Science Promotion”).

The Faculty does put a major emphasis on the marketing activities. The goal of such activities is not only in attracting good-quality candidates for the studies who would contribute to the development of forestry, wood processing and game management but also in creating a good name of the Faculty within the professional as well as the general public, and in developing cooperation with external partners and contributing into the working lives of its staff members and students.

8.2 Events aimed at recruiting new students

Open Days

The students to be were able to come and walk around the premises of the Faculty, to obtain the information about the courses, to experience the specific study programmes in live demonstrations, to have a go in various competitions, or to immerse themselves in the tones of hunting fanfares. Besides the regular January Open Days, one more day in the autumn has been added into the schedule.

Prague Public Universities Fair

The Faculty offered its study programmes in the first year of Prague Public Universities Fair that took place at University of Economics in Prague.

Gaudeamus Prague, Nitra, and Brno

The Faculty participated in the Central European Education and Lifelong Learning Fairs Gaudeamus both, in the Czech Republic as well as in Slovakia.

Kam na vysokú – Trnava, Prešov, Žilina, Banská Bystrica and Trenčín

We sent our student delegates to the Slovak fair of education which was organised in five towns.

Akadémia&Vapac Bratislava

The Faculty representatives presented the courses and provided detailed information to those interested at the fair of study and career in Bratislava, Slovak Republic.

Pro Educo Košice

The FFWS representatives took part in the International Education Fair in Košice together with other CULS faculties in order to provide information to the potential applicants.

8.3 Promotional events

Silva Regina

The Faculty was represented at the International Forestry and Hunting Fair in Brno by all ten departments in a wooden exhibition stand with an area 100 m².

The Faculty students prepared and built the stand proper, and it was then furnished with works of art by Martin Patříčný. The Faculty further participated in the programme accompanying the fair by holding topical lectures on game management and hunting.

The forest pedagogy programme prepared by eminent forestry-wood processing institutions formed an integral part of the fair.

IAF - International Agricultural Fair

The Faculty participated in the 43rd annual International Agricultural Fair. Besides information regarding the study programmes and courses and games for children, the Faculty also presented in its stand samples of music played at hunts. At the Exhibition, the Minister of Agriculture prizes were awarded to young researchers. The PhD lady-students from the Department of Game Management and Wildlife Biology – Ing. Tereza Kolbabová and Ing. Michaela Holá were awarded first and second place.

All About Wood

In Letňany – part of Prague – All About Wood premiered with an aim to acquaint the general public with wood as a material. The visitors had the opportunity to follow the path of wood from the forest all the way into final products, where a special accent was given to the wooden structures and buildings. The Faculty provided an umbrella of its auspices to this fair of low-energy housing, wooden structures and buildings and roofs and presented itself with its wooden exhibition stand.

Dřevostavby

Wood-processing departments – the Department of Wood Processing and the Department of Wood Products and Wood Constructions presented themselves at the 11th international fair of

wooden constructions, structures and materials in the „Výstaviště Prague Holešovice“.

Pragoligna

Both the wood-processing departments participated in the International Exhibition of Machines, Tools, and Materials for Wood Processing Industry.

Festival vědy

The Faculty participated in the 4th year of Science Fair held at Vítězné náměstí in Prague-Dejvice. In an entertaining interactive way the Faculty provided children and also the other visitors to the Fair with information from the areas of forestry and game management.



Hunting and Fishing Festival

Held by our forestry and wood-processing partner company – Kaiser s.r.o. – in Rožmitál pod Třemšínem, the first year of the festival presented also demonstrations of game management/hunting and fish-pond harvesting. The Faculty, as one of the main partners, provided demonstrations of exhibits related to hunting and interactive wooden toys by Martin Patříčný. Thanks to the programme full of interesting events the festival attracted many people from the general public as well as the regional media (e.g. TV Fonka from Příbram).

A day with Lesy ČR

The Faculty participated in the event held for the general public at the Konopiště Castle. The Faculty buglers actively participated in the Day.

St. Eustace Festival

2nd year of the St. Eustace Festival took place at the Křivoklát Castle again with the Faculty buglers present and the Faculty stand with the forestry & hunting exhibits on display. The accompanying programme for the general public was enhanced by the deer calling demonstrations, or introduction to the hunting cynology and presentations of gamekeepers' customs and traditions.

Grapeharvesting at the Kačina Castle

The Faculty joined the National Network for the Country organised by the State Agriculture Intervention Fund (SZIF) with its exhibition stand.

Open Days at Arboretum in Kostelec

The general public had the opportunity to see the Faculty Arboretum in Kostelec in the spring and autumn season.

8.4 Student competitions and film festival

Young People in European Forests - YPEF

The regional round of knowledge competition YPEF – Young People in European Forests for Prague and Central Bohemian Region was run at the FFWS. The competition was run in two categories – junior and senior students. In total 26 three-member teams came to compete and took the written test and the wildlife identification quiz. The winning teams qualified for the na-

tional round that has been organised by the Faculty for a number of years.

The 6th annual national finals of the international YPEF – Young People in European Forests were held at the castle and faculty arboretum in Kostelec nad Černými Lesy in June. Following the local and regional rounds 15 three-member teams fought their way through into the finals. The absolute winner prize was awarded to the team of the Czech Academy of Forestry in Trutnov. The same team represented the Czech Republic at the international finals in Brasov, Romania in September of the same year.

Life Science Film Festival

The Faculty, under the Marketing Department aegis, was active in participating in the international festival of documentary films with the topic of natural and agricultural sciences, and the sustainable development held at the CULS. The audience in the hall had the opportunity to watch selected films with the forestry & game keeping topics and take part in debates with the Faculty experts as well as external experts.

The festival programme continued at the weekend in Dejvice, Prague, where the Food Film Festival was held. The Faculty exhibition stand focused on the forest pedagogy presentation, and also on the tasting of home-made muffins with forest fruit and game stew. The accompanying programme was provided by doc. Vlastimil Hart from the Department of Game Management and Wildlife Biology who demonstrated a roast wild boar carving.

CULS Rector's Cup Shooting Competition

14th annual shooting competition under the auspices of the CULS Rector took place, as usually, at Chloumek near Mělník. The Marketing Department organised the competition in cooperation with the student Hunting Club of FFWS CULS.

FFWS Dean's Cup Shooting Competition

Under the auspices of the Dean of the FFWS, the members of the Hunting Club of FFWS CULS in Prague organised already 9th annual shooting competition with a small bore rifle at the Magnum Prague – Sedlec shooting range.

8.5 In-house Faculty events

Grand opening of the FFWS Pavilion of Wood Sciences

In January, a ceremony of grand opening the FFWS Pavilion of Wood Sciences took place with representatives of the public life as well as the academic sphere of the Czech Republic and also from abroad – the structure is a major contribution to the improvement of technical education and will be a support of wood use development in the Czech Republic in the future, as wood represents the most significant renewable raw material. The ceremony was coordinated by the Marketing Department in cooperation with the CULS Public Relations Office.

Summer gathering at the Arboretum

The summer get-together of the Faculty partners, staff and PhD students of was organised at the end of the term in the beautiful grounds of Kostelec Arboretum.

Sales event

The students and staff members of the CULS had the opportunity to purchase outdoor clothing for themselves or as a Christmas present for their family members and friends at the Faculty premises before Christmas.

The FFWS Christmas concert

Traditionally held Faculty Christmas concert took place at St Salvator (Holy Saviour) Church in Prague. The invitation was accepted by the guests, staff members as well as the students of the Faculty. The programme contained the trumpeting and organ tones and also the performance of the choir and orchestra consisting of the students and staff members of the Faculty.

The Dean's opening address was followed by a book launch – “Velká kniha o dřevě” (Big Book on Wood) – by Martin Patričný, a book on which the Faculty co-worked.. An award in the form of an original painting presented by the DUHA (Rainbow) Foundation – provider of social services to the mentally handicapped – formed a part of the concert programme. The theme of the painting titled “Winter Idyll” by Jakub Verich was used in the Faculty New Year's cards.

Christmas party at the FFWS

Getting together before Christmas of the staff members and PhD students took place as usual on the premises of brewery in Únětice. A photo show from the past year in the life of the Faculty was prepared for one and all; some of the colleagues contributed to creating the right atmosphere by playing musical instruments and singing.



DEPARTMENTS

9. Departments

9.1 Arboretum

In 2016, the FFWS Arboretum continued thanks to many supporters by small steps in the successful development of the areas of its activities. The Faculty of Forestry and Wood Sciences of the CULS has been and shall remain the main supporting body for the Arboretum, financially backing up the site from the subsidies provided per head for students and from other Faculty sources. The Rector's Office provided more finances covering the operational costs in the last year. Thanks to the said subsidies the Arboretum provides a base for scientific work and practical training in the field of dendrology for the FFWS CULS students but also for students of several other CULS faculties. The students visited the FFWS Arboretum also under the field training sessions and under curricula of other subjects. In 2016, also two students from Spain underwent practical three-month training at the site. Manual, hands-on training for first year undergraduate students of Forestry forms an inseparable part of the spring and autumn schedules for student activities. At the same time, during the practical training the students were shown demonstrations of tree climbing and arboristics by a professional company staff. Within the long-term cooperation, specialised firm provides tree-climbing courses also for the Faculty staff and helps with treating the woody plants in the FFWS Arboretum.

As usually, spring and autumn Open Days at the FFWS Arboretum were held for the general public. The spring Open Days included the permanent exhibition of tree cones complemented by unique samples of conifer male and female cones. The exhibition marked a great success also in the expert public who visited the Arboretum on scientific excursions. The cone exhibition from the Arboretum collections was also presented at the "All about Wood" and "Silva Regina" fairs, and it was lent to the interactive exhibition "Forest Kingdom" at the Letňany Shopping Centre. At the mentioned fairs, the Arboretum obtained many contacts promising further cooperation projects, and the general interest in the Arboretum was overwhelming. Practically throughout the whole year visits of kindergarten, elementary, and secondary school groups as well as the U3A groups take place in the Arboretum. Many children from biology clubs have also visited the FFWS Arboretum, visits were organised for the Czech Tourist Club, or the Gardening Club (Czech Union of Allotment and Leisure Gardeners). The foreign visitors to the Arboretum came from the Warsaw University (students) under the "Silviculture in Central Europe" summer school programme, or the students from the International Forestry Students' Association. The practical part and the results announcement of the national round of the YPEF

competition also took place at the Arboretum.

The Arboretum serves as the source of natural products for educational purposes as well. A new leaf preservation technology was used for the first time in the last year. The rejuvenation and replenishing of the tree cone and fruit collection, including new marking system, is under way. Through Index seminum, trips to Mongolia, Japan, and China a great amount of very rare and precious seeds of various woody plants with a precise locality description was successfully obtained and the plants are also successfully being further grown. In 2016, the FFWS Arboretum staff members participated in preparations of several wedding ceremonies and receptions held in the spring, summer as well as autumn months in the Arboretum premises. The last year, or as the case may be, the year before that, were very favourable for the development of some conifer tree cones. Thanks to that the Arboretum staff received and processed under the commercial deciphering of seminal material over 12.6 tonnes of tree cones, predominantly spruce (*picea abies*), and they handed almost 342 kilos of clean seed stock to the customers. The Arboretum regularly informs of all its activities and events on its Facebook which is well visited.

9.2 Department of Wood Products and Wood Constructions

The Department of Wood Products and Wood Constructions underwent significant and noticeable changes in 2016. At the beginning of the year the Department was moved into the premises of the Pavilion of Wood Sciences. New laboratories of wooden products and structures, adhesives and paints, and a laboratory of structural joinery extended the Department facilities. The Department staff members and DSP students were trained in turns in operating a range of new instruments over the year; also two orders of contractual research were received. With five skeleton staff members and a range of external co-workers of the Department, it was possible to secure a similar volume of lectures in all three educational levels as in the previous years. In the area of research and development, the Department participated in preparation of four project applications under TA CR and GA CR calls, one application for the Ministry of Industry and Trade, one for the programme Trio, three sub-projects under the university “Proof of Concept” project under the OP RDE call, and two CIGA projects. Except for two applications, all the above stated projects were approved for financing and from the beginning of 2017 in all nine research and development projects are being solved aiming at commercial use of their results.

Companies such as Window Holding, RD Rýmařov, Matrix, Dias, Denzer, Kronospan, Stachema, VVUD and many other large or smaller firms operating in the wood-processing industry

and in the wooden structures sector rank among the major commercial sphere partners of the Department.

In addition, in November the wood-processing workshop was held aiming at promoting the co-operation between the partners from the commercial as well as scientific spheres.

The Department systematically strives for productivity increase in the area of publications, and in 2016, it participated in publishing of ten articles with IF, one reviewed monograph, several scholarly articles and one textbook. In the same year, the Department managed to obtain European patent for using of optical fibres for light effects in furniture parts. The results of the described development will be transferred into the commercial phase under one of the “Proof of Concept” OP RDE projects.

The doctoral studies student Ing. Štěpán Hýsek was awarded with the Josef Hlávka Prize, and one DSP student successfully defended his doctoral thesis and was awarded the PhD degree.

The Department also commenced a new operation in the field of agricultural structures and began to create awareness platform of knowledge in the area of designing and building agricultural structures with the aim to hold an annual conference and workshop dealing with the given area

9.3 Department of Forest Ecology

The DFE secured a large portion of the lecturing and educational activities not only at the Prague venue, but also in Kostelec nad Černými lesy (FFWS Arboretum). Considering the need for study material improvement, the Department staff continued in improving the quality of the instructional materials available to the students. The first year students performed marking out and sorting out in order to provide clearings in the old part of the Arboretum in the given year as part of their practical training. In another part, new wooden plants expositions were prepared. Sowing and growing of interesting species from the collection point of view were carried out in the cultivation station Truba facilities in order to extend the collection. Counselling and educational activities, organising of field trips and Open Days formed an integral part of the work in the Department.

In the area of research the staff members and the students secured the work on the GA CR projects in whose frameworks the field work operations in terrains of the whole of Central Europe are carried out. The Department acquired a new GA CR project in 2016 under which the scientists from the Department will research and cooperate with the researchers from Russia and Japan. In 2016, the staff members of the Department published a number of articles with

an IF. Some of those articles were published in prestigious journals such as *Forest Ecology and Management*, and which are incorporated into the 1st quartile at the Web of Science.

The PhD students participated in the CIGA projects preparations with positive results. The acquired projects will aid in developing new areas of forest ecology studies in the future. In 2016, three doctoral theses were defended at the Department. The PhD students from the DFE were also awarded the “Rector’s Prize” for a high quality publishing outputs.

The Department continued in extending of the technical equipment of its laboratories. In the Dendrochronological Laboratory in the Pavilion of Wood Sciences the equipment for collecting, preparation and analysis of the annual ring series samples was further extended. In the Laboratory, the LINTAB measuring systems produced by RINNTECH (Germany) can be found enabling the measurements of tree ring width and thus obtaining the exact information about the age, tree growth intensity, wood production, and the forest vegetation dynamics.

When solving the projects, the work demands also physical fitness during the samples collection which is rather good at our Department as can be seen, for example, in good positions several members of our Department reached in the traditional CULS race in running.

A wide range of people interested in our research and scientific work and events organised by the Department frequently visit our Department’s social networks. These events include, for instance, film projections, recruitment of students for field trips, educational excursions, etc. We have over 1,500 fans on Facebook not only from the Czech Republic but from the whole of Europe.

9.4 Department of Forestry and Wood Economics

In 2016, the Department of Forestry Economics Management changed its name to the Department of Forestry and Wood Economics (DFWE). “Section of Forestry and Environmental Policies” forms part of the Department. In educational activities in 2016, the Department staff members secured lecturing in social sciences, namely subjects concerning economics, not only in the FFWS study programmes but also in teaching programmes run at the Faculty of Environmental Sciences (FES) and the Faculty of Faculty of Agrobiological Sciences, Food and Natural Resources (FAFNR).

The Department guaranteed project solving, or was participating in solving the projects, e.g. “Differentiating in management intensity and procedures in relation to securing of the forest biodiversity and economical vitality of forest economy” in 2016. The solving of the Natio-

nal Agency for Research in Agriculture (NAZV) project “Forest ecosystems stabilising by balanced ratio of natural and artificial forest restoration” was successfully completed. Solving of another NAZV project – “The current and strategic possibilities of sustainable providing of forest functions and services of the polyfunctional forest management to the public from the socio-economical, political and legal standpoints in the Czech Republic” was under way in the same year.

Under the international COST programme and project “Orchestrating forest-related policy analysis in Europe”, the MEYS project “Analysis of the national forest policies in the Czech Republic as a tool for preparing, formulating and implementing of the European forest policy” was being solved, and also under the project titled “Forest Land Ownership Change in Euro-



pe: Significance for Management and Policy”, the MEYS project”The forest ownership changes and its impacts on the forest policy and means of managing the forests in the Czech Republic” was being solved and successfully completed.

Furthermore, in the area of contractual research the Department solved two projects for the Grant service of LČR. Besides that, the Department staff members participated in solving the socio-economic aspects of a range of other projects outside as well as within the Faculty (e.g. DOS, DFPE, DFTC, DFM). From the international point of view, we can mention, for example, sharing in the project solution of “Frameworks and possibilities of the forestry adaptation steps and strategies linked with the climate change.” (FRAMEADAPT), coordinated within the FFWS DFM.

The engagement of Department staff in applied sciences (Social aspects of forestry contracts, Correctness of the contractual framework, Forms of indexation of contractual prices) was rather significant in their involvement in working groups of LČR.

The Department staff actively participated in organising not only domestic but also international meetings, conferences, seminars, and symposia in 2016. The major ones include, for instance, IUFRO symposium “Advances and challenges in managerial economics and accounting” (Vienna), conference Woodema “More” (Baton Rouge – USA), ”StarTree final conference – Wild forest products in Europe” (Barcelona), and Final conference of the COST Action FP1201 FACESMAP (Vienna). Among the significant Department involvements there were, for example, organising of two meetings of the Economic committee of the Department of Forest Management of the Czech Academy of Agricultural Sciences, and participation in organising the Czech Forestry Society seminar “The changes in forest ownership and its impacts on the forest policies and forms of cultivating the forests in the Czech Republic”.

9.5 Department of Genetics and Physiology of Forest Trees

On long-term basis, the Department applies following two strategies: (1) in the area of teaching to provide the students with the necessary theory background in physiology and genetics with emphasis on mathematical (engineering) approach of biology branches, practical training in laboratories and in the field using u-to-date instruments and with real-life applications of the theoretical knowledge in forest management; (2) in science and research interlinking of basic research with the needs of forest management and environmental protection, preferring quality over quantity. Emphasis on the quality of research work, creating own methodologies with a wide range of applications in the Czech Republic as well as abroad.

In 2016, the Department acquired a significant international project under Interreg Central Europe and the cooperation with partnering organisations from Austria, Slovakia, Hungary, Germany, and Poland began on topic “Conservation and sustainable utilisation of forest tree diversity in climate change”. The project succeeded in the public tender and is one of the 35 financially supported projects (out of the total of 620 proposed projects). The work on solving the NAZV project (Securing high quality gene sources with regard to the requirements of society and the climate change) began, with the LČR, s.p. as a partner. The TA CR project (The use of gene sources of forest woody plants in maintaining the biological diversity and forest restoration for Vojenské lesy a statky ČR, s.p., 2011–2016), was successfully completed with the output in comprehensive concept of cultivating the woody plants – new seminal orchards were established in all divisions of VLS ČR, etc. In the same year, the work on methodology of verification of the origins of the planting stock material with the use of gene markers (project of the Grant service of LČR) started. Within the CULS framework, under CIGA project analyses began of the gene expression and accumulation of dehydrin in spruce (*Picea abies*).

Two doctoral students joined the Department in 2016 in a new doctoral programme of Forest biology (Ing. Chaloupková, Ing. Krejzková). Ing. Chaloupková successfully published the results of her thesis in the IF journal *Tree Genetics and Genomes* and received the Minister’s of Agriculture Award for her work.

The Department Head Professor Milan Lstibůrek has been acting since 1 August 2016 as Adjunct Professor at North Carolina State University, USA and is authorised, among other things, to lecture the doctoral students and use the academic facilities of the University.

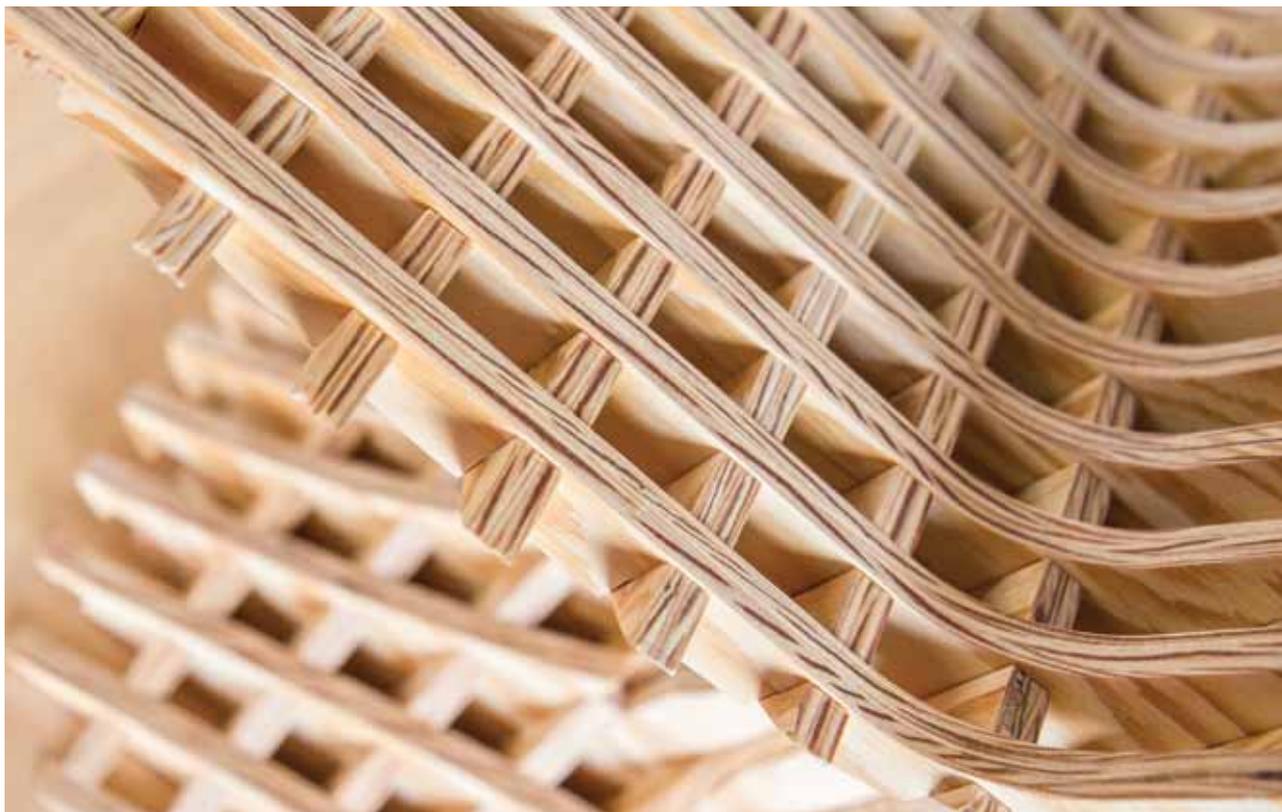
The Department develops a long-term cooperation with the top foreign as well as domestic institutions. The results of such cooperation are regularly published in the journals with an impact factor. In 2016, the research work results were published in *Tree Physiology*; *Tree Genetics and Genomes*; *G3: Genes, Genomes, Genetics*; *Molecular Breeding*; *Ecology and Evolution*, and others. The article by Čepl et al. in *Tree Physiology* received the CULS Rector’s Award (for excellent publishing).

Throughout 2016, the majority of the Department members used the opportunity to travel and participate in internships abroad and in international conferences with the aim to present their work and to establish work relationships with organisations abroad.

9.6 Department of Forest Management

The Department of Forest Management (DFM) was developing professionally in two principal directions throughout 2016. It was mainly the area of the remote exploration of Earth and data collection with the use of the up-to-date methods of photogrammetry; the second area was the support in selecting and planning of forest clearing wood extractions using modern mathematical methods and geographic information systems. The professional expert development was taking place also in the traditional fields such as economic management of forests, dendrometry, or production.

Throughout 2016, intensive strengthening and developing of established partnerships with foreign institutions, namely with the Portuguese Institute of Mediterranean Agricultural and Environmental Sciences in Évora, or Trás-os-Montes and Alto Douro University in Vila Real, took place. The staff from both the universities visited our Department several times in the last year, and representatives of our Department travelled to foreign universities in order to prepare the shared projects and articles. The Department also continues in cooperation with the Institute of Statistical Mathematics in Tokyo, which gave rise to several reciprocal exchanges and joint publications. Further, we have established cooperation with Euro Working Group Decision Support



Systems and with the staff of University of Lleida in Spain. The cooperation with our Spanish colleagues led to the joint application of the H2020 project. We are currently expecting the evaluation results. We have managed to establish a very active link of cooperation with the University of Göttingen, Germany. Several reciprocal visits to both partner sites took place: in 2016, two German students visited the DFM to take part in the Department research programmes. By their active involvement, the staff members of the Department also reinforced their positions in international and national organisations and groups, such as the ForestDSS Community of Practise, which brings together prominent experts in the area of decision-making support, planning, and decision support systems, or the Czech Society for Operations Research. In 2016, the preparatory works began for the annual IUFRO Congress where the Department representatives were called upon to organise their own section devoted to the tools supporting the decision systems and forest adaptation to the climate change. The Congress will be held in September 2017. The Department is also included into the newly established Centre for Precision Agriculture at the CULS.

The Department members are also authors of several significant articles in respected international periodicals and they held an international workshop on Data-Dynamic-Decision.

9.7 Department of Wood Processing

The year 2016 was a year of major changes for the DWP. The Pavilion of Wood Sciences furnished with the top state-of-the-art laboratory equipment considerably increased the Department's potential in the area of research activities, in project acquiring, and together with both of those also publishing output.

The available space and technologies offer potential for more staffing. It is obvious that in the next period it will be necessary to boost the capacities of the Department from outside but also through upbringing of qualified young scientists.

Among the main goals of DPW for 2016 there were grant and project acquirements that helped in improving the quantities and quality of its scientific and educational outputs. The Department was relatively successful in that context.

In the area of projects the Department acquired in all three CIGA projects with the solution time of 2 years, and five IGA projects. All the tasks in projects were in the first year of their solution (2016) successfully accomplished.

In the publishing activities the Department focused on quality improvement of the publications

which on the one hand lead to a minor decrease in their number, on the other hand, however, to an increase of their publishing in prestigious journals with high IF. The Department asserted itself in journals such as *Construction and Building Materials* (IF =2.421), *Composites Part B: Engineering* (IF =3.850), and *Composite Structures* (IF =3.853).

The Department collective submitted, or participated throughout the given year in preparation of, several prestigious projects. The Department aspires to be ranking amongst the top quality European bodies in the given field.

The Department added several new textbooks, e.g. “Wood Structure and Properties of Economically Significant Woody Plants” (Stavba a vlastnosti dřeva hospodářsky významných dřevin by Zeidler & Borůvka), “Wood Properties in Arithmetical Problems” (Vlastnosti dřeva v příkladech by Babiak & Borůvka). The named educational materials should make the studies easier for the students of not only wood-processing but also of forestry courses.

In the last year, the DWP applied for nomination for organising of the SWST (Society of Wood Science and Technology) Conference on the premises of the CULS FFWS in Prague in 2018. The plan to organise the prestigious conference on the CULS FFWS premises in Prague in 2020 is the outcome of long and complicated negotiations with the SWST representatives. In the case of success it would be the third time when the said event would be organised in Europe.

9.8 Department of Game Management and Wildlife Biology

In 2016, a number of very important events took place at the Department of Game Management and Wildlife Biology. One of the most significant of those events is awarding of our PhD programme lady-students (Ing. Kolbabová and Ing. Holá), who received two main awards of the Minister of Agriculture for young scientists at the Bread Basket agricultural fair. In addition, the PhD students and Department staff received the CULS Rector’s award for the best publishing outputs, traditionally awarded at the new academic year opening ceremony.

The project aimed at the reproductive characteristics of female sika deer, supported by the Grant service of Lesy ČR, was successfully completed in 2016; the project has been valued by the Grant service in a very positive way. In connection with the previous success, the Department staff members acquired another grant from the same agency aiming at telemetric monitoring of deer game at LZ Boubín (forest managing body), and verifying of the seasonal migration flows among the Bohemian Forest (Šumava) hunting districts. A specialised seminar “Principles of correct game feeding and baiting in relation to the damage caused to crops, forest stands and game health” held under the auspices of the Ministry of Agriculture was a very interesting

event for experts. 130 participants attended the seminar. The Norwegian Funds grant was successfully completed in 2016, and together with staff members of the Institute of Vertebrate Biology in Brno (The Czech Academy of Sciences) and with the Šumava National Park staff, a draft of “The plan of care for large predators in the Czech Republic” was produced. The project “Harmonising the game population management and forest ecosystems in the context of expected climate change and minimising the damage to forest areas” was also successfully completed in 2016.

The traditional summer school, held on the bank of the lake Baikal in Russia, lasted in 2016 for one month and focused not only on learning but also on research aimed at bioacoustics of birds and ground squirrels. Besides the conventional field trip exercises, special zoology and game-keeping field trips were held for the students and graduates. Doc. Farkač took part in organising the Biology Olympiad.

The work on the educational materials for our students continued also in 2016, and we have issued three new textbooks. The textbook for the Game Management subject (by Hanzal et al.) has for the first time in the history of game management textbooks two volumes and contains many new pieces of information that will help the students to cope with the high demands of the given subject. The Forestry Zoology textbook “The vertebrates” (by Červený et al.) brings considerable innovations. The last publication dealing with the given subject was issued unbelievable 62 years ago. As regards other books originating in this Department, we can mention the Otto Encyclopaedia volume “Game” published also by Professor Červený et al. This book received the Publishing Houses Award 2016 for exceptional creative contribution as an original Czech science communication publication.

In 2016, we replenished the collection exhibits significantly and moreover, we acquired a specimen of a bear (Vojta, the bear known from the children’s TV series, died) of which we managed to produce a standing skeleton mount as well as the full body taxidermy mount.

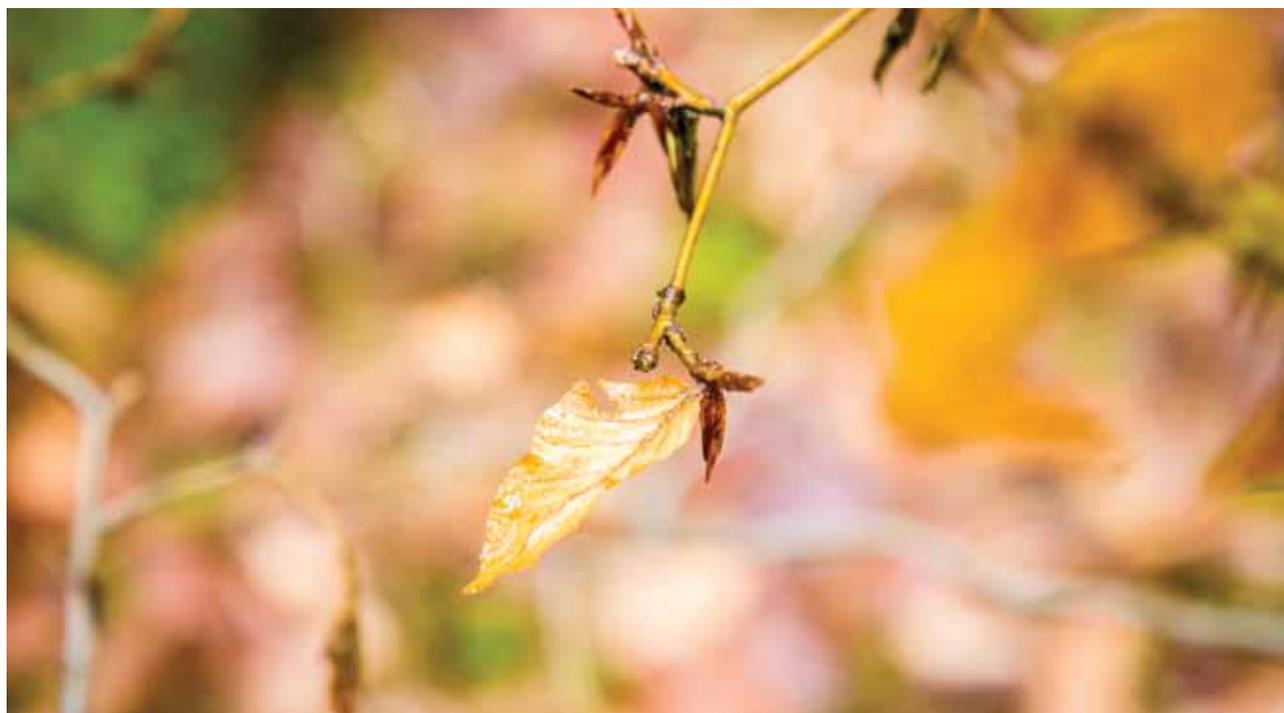
9.9 Department of Forest Protection and Entomology

Compared with the year before, the results achieved by the DFPE staff members prove that 2016 was a year of growing success in both, the area of teaching and, mainly, in research and publishing.

The DFPE secures large volumes of teaching in both, the Bachelor’s degree as well as Master’s degree courses. Out of all the subjects ensured by the whole FFWS, the Department guarantees and teaches 27 subjects in total.

The theoretical part of training is complemented with lectures by external personnel, e.g. from the Central Institute for Supervising and Testing in Agriculture (ÚKZÚZ) or from private companies specialised in providing services for forest management (L.E.S., etc.). The field trip exercises held at the University Forest Establishment (ŠLP) in Kostelec nad Černými lesy, or directly in the state owned forest areas, serve to the students as means for strengthening and verifying the knowledge acquired in the theory lessons.

The Department staff members, including the PhD students, are solving a range of projects, grants, out of which two are supported by the GA CR, four by the Ministry of Agriculture, eight are in-house grants, and three are supported by CIGA grants. These scientific programmes are aimed at solving the current issues in the area of forest protection, namely in connection with the climate change and reactions of the insects and other environment parts to this change. The PhD students as well as the teachers from our Department visited many sites abroad, for instance Universidad Nacional de Ucayali in Peru, University of Alicante in Spain, University of Calabria in Italy, and the National Park Tusheti in Georgia. Other expeditions were sent, for example, to Madagascar, to Cameroon, and to Guyana, among other reasons in order to collect material and data usable in the publications in preparation. The beneficial effect of those trips can be evidenced by the fact that in the last year, overall, 28 IF articles were concerning descriptions of new species of insects, or revisions of descriptions of the species already known. During 2016, the Department staff published the total of 63 IF articles and 4 other articles in



journals in the SCOPUS database. Out of 13 other evaluated research results we can mention, for instance, an industrial design and simultaneously the final product linked with the hydraulic log skidding winch set and its drive.

The Department staff members promote the activities of the Department not only on the Open Days held by the Faculty, but also at exhibitions and fairs, such as Silva Regina in Brno, or Paths of Wood in Prague – Letňany. The Faculty as well as the Department exhibition enjoy a great amount of attention from the visitors at the said fairs, and, at the same time, we answer many enquiries regarding the issues of forest and wood protection.

We promote the Faculty also during trips and visits to selected schools in the whole of the Czech Republic.

Within the scope of their erudition, the Department staff members also provide consulting and advisory services. Among the main issues addressed in 2016, fighting the bark beetle, namely *Pityogenes chalcographus*, and wood protection against wood damaging pests, were predominant. Many inquiries involve the area of phytopathology – tree diseases, especially ash tree diseases, caused by fungus *Chalara fraxinea* or pine tree diseases caused by fungus *Sphaeropsis fraxinea*.

9.10 Department of Silviculture

The Department of Silviculture currently employs three professors, two associate professors and one full-time assistant. In addition, there are two technicians whose salaries are partially covered by grant funds who are actively participating in the work of the Department. Furthermore, the Department has 10 internal doctoral students, two in the combined form of study, three young scientists and two post-doctoral staff members. One PhD student from the Department came second in the Rector's competition for young scientists in 2016. Four PhD students graduated successfully and one student passed the state doctoral examination. Seven new students have enrolled into the PhD programmes.

This staffing arrangement is fully sufficient to fully cover the needs in lecturing and training (subjects related to the fundamentals of forest ecology, forest establishment and silviculture in various conditions). The Department staff members are also engaged in the teaching of tropical forestry while a substantial proportion of teaching load is also devoted to other CULS faculties, specifically to the FES, FTAS and FAFNR. The teaching of the Department takes place to a significant extent in the field; in particular, when it comes to profile subjects, block field exercises and seminars are quite common. These are concentrated mainly in the territory of the

School Forest Enterprise in Kostelec nad Černými lesy, on FR Klokočná (LCR) while the forest establishment is mainly taught at the Truba field station, where there have been educational and laboratory facilities built with a substantial financial contribution from the Faculty and the Department in the long term. The Department also provides a week-long final field trip to various regions of the Czech Republic and in recent years even to Poland in cooperation with SGGW in Warsaw.

The research projects are principally focused on forest management and silviculture in protected areas, on natural forestry, nursery technology, afforestation of agricultural land, monitoring of the impact of fertilisers, including wood ash, and also on the research of introduced tree species, in particular, the Douglas fir. In 2016, there were 2 TA CR projects, 6 NAZV projects and 3 IGA projects carried out with success. One contractual research project was performed as well. The output of research activities included, inter alia, ten articles in journals with an IF, 12 articles in journals in the SCOPUS database, and the results of the Department were presented in scientific journals and at conferences. The Department prepared 2 textbooks, developed 1 utility design and 5 certified methodologies. In 2016, the Department again participated in the organisation of the national round of the YPEF competition. In the context of building of relationships with the operation, the staff members provided a number of consultations to forest owners and administrators and worked in several professional and scientific organisations. Česká lesnická společnost, Czech Academy of Agricultural Sciences and the Czech Academy of Sciences are the top ones.

9.11 Department of Forestry Technologies and Construction

In 2016, staff members of the Department of Forest Technologies and Construction (DFTC) taught 34 subjects for all forestry and wood technology branches of study, including encyclopaedic forestry subjects for agronomic, technical and environmental branches of study accredited at the relevant Faculties of the CULS. Five subjects were taught in the English language. The newly taught subject was Torrent and avalanche control. The Department also provided for the mandatory practical training of the FFWS students. The educational and scientific activities of the Department were executed by: two associate professors and four senior assistants. The Department participated in the international cooperation. It coordinated for the FFWS all the three international networks within the “Central European Exchange Program for University Studies” (CEEPUS). Through this university student exchange programme, 19 students and 15 teachers from universities in Poland and Slovakia visited the Department.

In the area of research and development, the Department slightly increased performance in publishing activities. Two publications were issued (textbooks and monographs) and the staff members of the Department were the authors and co-authors of nine articles in scientific journals and four conference proceedings. In 2016, the DFTC increased its participation in scientific research and applied projects. It participated in one TA CR project and two NAZV projects and also worked on four projects with the Department of Forest Protection and Entomology and the Department of Forestry and Wood Economics. In 2016, two certified methodologies were approved.

Staff members of the DFTC successfully participated in research and development of several forestry machines in 2016. In the framework of the project „Design and Development of the ENTRACON Combined Machine“ (TACR) a new device was developed for which a patent application was filed. Two functional samples were developed and an industrial design was granted by the Industrial Property Office to the other device, a hydraulic log skidding winch set and its drive, developed in 2016 by the DFTC staff members under the “Tree-picker” project (NAZV). Department staff members took an active part in Faculty events, e.g. Open Days and recruiting of students at secondary schools.

9.12 Laboratory of Wood Processing

The new FFWS Laboratory of Wood Processing was established in March when the proposal by the FFWS Senate was approved. The Head of the LWP reports directly to the Faculty Dean and his position is comparable to the position of a department head. It is an organisational unit whose role is to link theory with practice. The Laboratory is comprised of four technological units located in the FFWS Pavilion of Wood Sciences.

The first one is an outdoor warehouse of round and sawn timber equipped with a band saw and a hot-air drying kiln. Cutting and drying of special cut-outs for the teaching and research activities of other FFWS units takes place here.

The second one is a joiner's workshop equipped with comprehensive machinery and tools for the processing of solid wood, laminated and veneered surface materials. In addition to traditional machines, there is also a CNC furniture centre, NC dimension saw, vacuum press, etc. Besides teaching of subjects related to machines and tools for wood machining, test bodies for the FFWS laboratories are produced here. The Laboratory is also more and more successful in meeting the requirements of other FFWS units. Teaching of CAD programs was linked successfully with the CNC centre programming. Students test in practical exercises if their designs in

electronic format can be machine-made and they acquire programming habits.

The third one is a manual workshop primarily intended for teaching of “Practice II” and “Special timber production” subjects, teaching of CNC machining, etc. The workshop is also equipped with a CO2 etching laser designed for cutting and etching of wood-based materials in particular.

The last unit is a paint shop where the samples and products are subject to surface finishing. The technology includes air and airless spraying of coatings by spraying in the paint shop with a suction wall.

To a certain extent, this unit also deals with commercial contracts and supplies furniture to the refurbished FFWS premises, thus considerably contributing to the performance of research tasks associated with a number of granted projects and being indirectly involved in these projects.

In 2016, we tested and introduced a system under which the practice takes place at the Faculty and the most skilled students perform most of the manufacturing operations by themselves under the supervision of experienced academic staff.



CONCLUSION

10. Conclusion

The objectives of the (strategic) Long-term Plan of the Faculty and its Update for 2016 were fulfilled as planned. The year 2016 was the first year when we were able to take almost full advantage of the potential of the FFWS Pavilion of Wood Sciences. Throughout the year, the premises and equipment of the Pavilion were optimised and adapted to educational, but also scientific and research needs of the Faculty, which required additional investments; nonetheless, we consider the fact that all the technologies and laboratories have been optimally supplemented as important. The Study Administration Office in the original building of the Faculty was also refurbished and a relaxation zone for students was built nearby – this way we are trying to create comfortable conditions for the students when they spend time by tackling administrative affairs regarding their studies. The Marketing Department (including the Copy Centre) was re-constructed, job assignments were enhanced and competencies strengthened. The Faculty continued to work on the implementation of the multi-source financing plan. The volume of funds obtained from project resources and institutional support resources totalled CZK 137 million, exceeding thus the amount of funds from the grant per student (CZK 100 million). Substantial growth of project resources is attributable to the granting of the EXTEMIT-K project under which the Faculty acquired CZK 43 million in 2016. This financing source should yield a considerable sum of funds each year until the year 2022.

In 2016, there was a slight increase in the number of students and with regard to the expected further procedure of the Ministry of Education, Youth and Sports regarding university funding we consider the Faculty's position as stabilised. At the same time, throughout 2016, work on the system changes in access to financial resources of the Faculty continued with the aim of their effective exploitation to the maximum extent. Throughout the year 2016, the Faculty worked intensively on preparation of projects under Operational Programmes, mainly the OP RDE. From the beginning of the year we were gradually preparing and submitting projects for the following calls: Excellent teams, Excellent research, the ESF and ERDF projects for undergraduate students and the ESF and ERDF projects for doctoral programmes.

In June 2016, a selection procedure for heads of all departments at the Faculty was carried out in accordance with the CULS Regulations for selection procedures. In two cases out of ten, the department heads were replaced. The Vice-Dean for Development and Operational Programmes was appointed in June. His primary goal is raising funds through Operational Programmes, and thus allowing for the development of the spatial, instrumental and personnel capacities of the Faculty in order to provide for a considerable qualitative shift in all areas of life of the Fa-

culty. The Faculty is still trying to reinforce the personnel structure in those branches of study in which there is a shortage of high-quality candidates for scientific and pedagogical positions. We are trying to take greater advantage of the possibility to employ foreign staff members; nevertheless, this process faces many obstacles generally on the level of the Ministry of Foreign Affairs – such as language barriers, the complicated process of recognition of foreign degrees and obtaining of residence and work visas.

In 2016, the departments of forestry were granted considerable funds under the TA CR projects, Prague – Growth Pole of the Czech Republic and/or under the CIGA projects, enhancing thus their capability to develop scientific and research activities. We can state that currently in all the Faculty departments the project financing has been secured, thus providing preconditions for their further development. We are expecting another increase of performance of the Faculty in science and research in the area of hard, mainly excellent results in 2017. The results of analysis carried out by our colleagues at Faculty of Forestry of SLU placed our Faculty (based on the number of articles focusing on forestry in accordance with the WOS and SCOPUS databases) on the eighth position worldwide among institutions performing research in the field of forestry. In the context of Central Europe we came as the only body from the former Eastern Bloc countries within the first fifteen (15th place was taken by BOKU).

All the above mentioned facts and further intensive optimisation of all the institutional processes and strengthening of the Faculty staff work output coordination should result in the reinforcement of the leading role of the Prague CULS FFWS in the Central European region in the years to come.

