

**FOREST SCIENCE EDUCATION IN PRAGUE –
HISTORICAL DEVELOPMENT AND NEW
PERSPECTIVES**

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FOREST SCIENCE EDUCATION IN PRAGUE – HISTORICAL DEVELOPMENT AND NEW PERSPECTIVES

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Abstract

The paper deals with the development and new perspectives of forestry education at the Czech University of Life Sciences (CZU) in Prague. CZU is one of the leading public universities in the Czech Republic. The development of the CZU during the last years, as a result of the international and national social and political processes, was dynamic. Currently, CZU has more than 19,000 students (20% are from abroad) including the Faculty of Forestry and Wood Sciences (FFWS) with approximately 1700 - 2000 students. The modern history of FFWS began in 1990, currently the faculty is one of the most respected educational and scientific institutions in forestry and wood sciences in the Czech Republic. . The investment in technical equipment, including the construction of two new pavilions, made a significant contribution to this. Today, the faculty offers a wide portfolio of study programmes from traditional Forestry, to Arboriculture, Game Management, Wood Processing, and to Wood-based Constructions. Further development is aimed at increasing the quality of all processes at CZU and FFWS. All FFWS study programmes have been re-accredited by a new accreditation system and now is the time for their evaluation and quality assurance.

Keywords: University of Life Sciences Prague, Faculty of Forestry and Wood Sciences Prague, study programmes, internationalization, Forest Science Education

Introduction

The current situation of the Czech University of Life Sciences is the result of a process initiated by changes in the political system of the Czech Republic in 1989. In addition to the necessary legislative changes, the so-called Bologna Process and the creation of the European Higher Educational Area (EHEA) were a major impetus. For the Faculty of Forestry, which was restored in 1990 after 25 years of disruption, it opened up opportunities for complex development and international cooperation. Especially the mobility of students and teachers was supported significantly (Eenes, 2013).

Another major change was the division of higher education into three cycles - bachelor, master and doctoral (BSc, MSc, and PhD). These changes also contributed to a significant increase in the number of students at universities in the Czech Republic. Within 10 years, this number has doubled and the maximum number reached in 2010 (Figure 1), but since then the number of university students has been decreasing.

This trend did not fully correspond to the demographic development in the Czech Republic. Here, after the change in the political system, there was a deep decline in the birth rate (-33%), which lasted until 2001 (Figure 1). During this period, the number of university students increased by almost 100%. It is clear that the opportunity to study at universities in the Czech Republic increased significantly (Remeš, 2014). The difference is noticeable when comparing the share of students enrolled in university studies for the first time in the population of 19-year-olds. In 1991, this share was only less than 17%, in 2018 it was more than 49%. This, on the one hand, removed undesirable politically motivated barriers, but on the other hand, the quality of incoming students decreased to some extent.

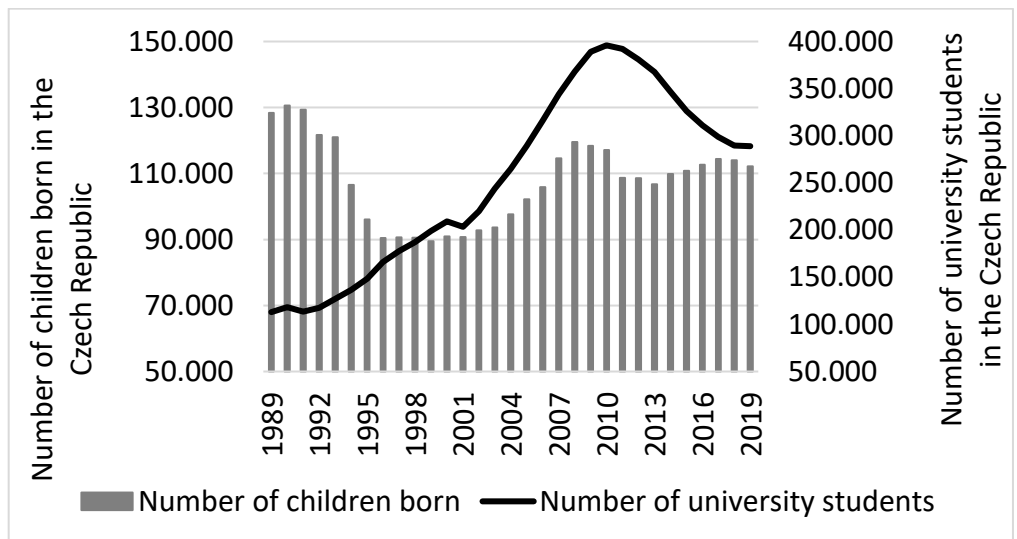


Figure 1: Demographic development and number of university students in the Czech Republic (Czech Statistical office – ČSÚ, 2019, Pačes, 2013)

Development of the Czech University of Life Sciences and Faculty of Forestry and Wood Sciences

The Czech University of Life Sciences (CZU) is one of the leading public universities in the Czech Republic. It is one of the six largest universities in the country. First lectures on agricultural sciences were delivered at the Faculty of Philosophy of the Prague Charles-Ferdinand University in Prague in 1776. A Department of Agriculture was subsequently established at the Czech Polytechnics in 1812. First lectures in forestry sciences were then given in autumn of 1848. The actual history of our university begins in 1906 with the establishment, by decree of the Austro-Hungarian Emperor Franz Joseph I, of a Faculty of Agriculture at the Czech Polytechnics in Prague. Reforms in the sphere of education in the newly founded Czechoslovak Republic (1918) led to structural changes of the Czech Polytechnics, which was renamed Czech Technical University in Prague in 1920. The Faculty of Agriculture

was transformed in 1920 into a College of Agriculture and Forest Engineering. It was still part of the Czech Technical University, in July 1952 the College became an independent University of Agriculture. The Faculty of Forestry was transformed into the Forest Research Institute in 1964 and fully restored in 1990. After the downfall of the Communist regime in 1989, and the establishment of democracy, the Czech University of Life Sciences (renamed in 2007) started a new chapter in its development.

The recent dynamic development of CZU, as a result of the above-mentioned international and national social and political processes, is clearly visible in all major activity areas. Currently the Czech University of Life Sciences has more than 19,000 students (Figure 2; 20% are from abroad) including the Faculty of Forestry and Wood Sciences with approximately 1700 - 2000 students. The university has about 2000 employees, of which more than 900 are Professors or Associate Professors. Since 2007 the CZU is member of the Euroleague for Life Sciences (www.euroleague-study.org).

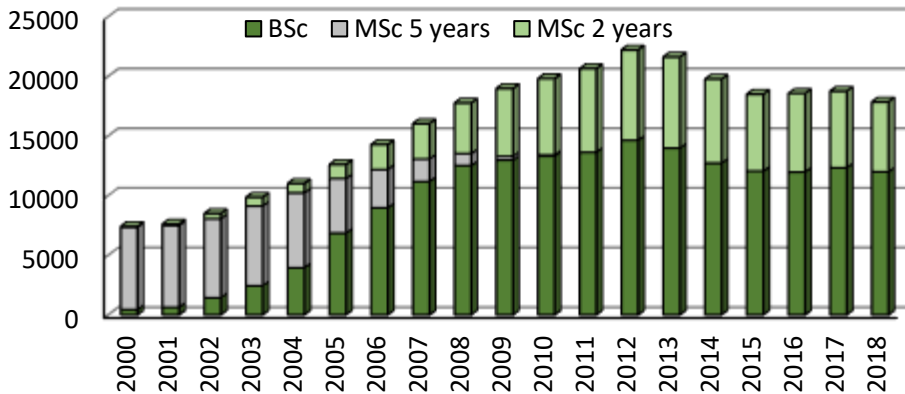


Figure 2: Development of the total number of students (Y-axis) in Bachelor's and Master's degree programmes at the CZU since 2000.

Today, the CZU offers around 200 combinations of study programmes at the Bachelor's, Master's and doctoral levels, one quarter is in English. A similar trend is also evident in the number of graduates, which increased in proportion to the increase in the number of students, with a maximum of 5,522 reached in 2014 (Figure 3). In 2018, CZU obtained institutional accreditation for a total of seven areas of education. This entitles the university to independently create and approve study programmes. The modern history of Faculty of Forestry and Wood Sciences (FFWS) began in 1990, when two study programmes were opened - Forest Engineering and Landscape Engineering with a total of about 100 students. Today, the faculty offers a wide portfolio of study programmes from traditional Forestry, to Arboriculture, Game Management, Wood Processing, and to Wood-based Constructions. The faculty offers

seven study programmes and specializations at the Bachelor's level, five at the Master's and nine at the doctoral level. Twelve study programmes are also taught (in parallel) in English. The number of students has stabilized in recent years (Figure 4 and 5).

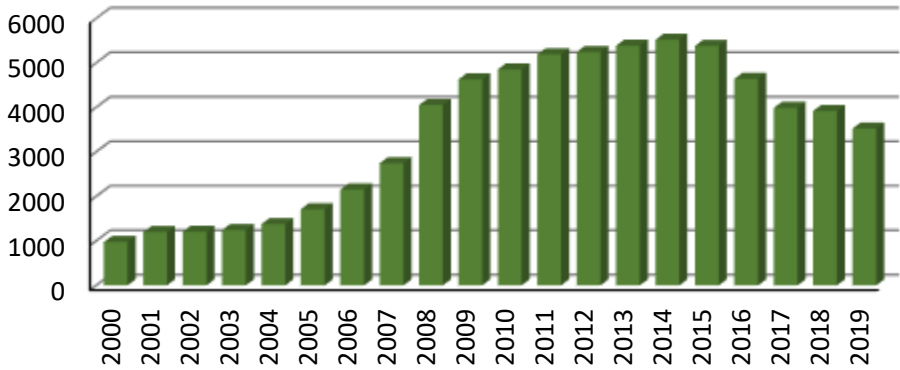


Figure 3: Development of the number of CZU graduates (Y-axis) in the years 2000 - 2019.

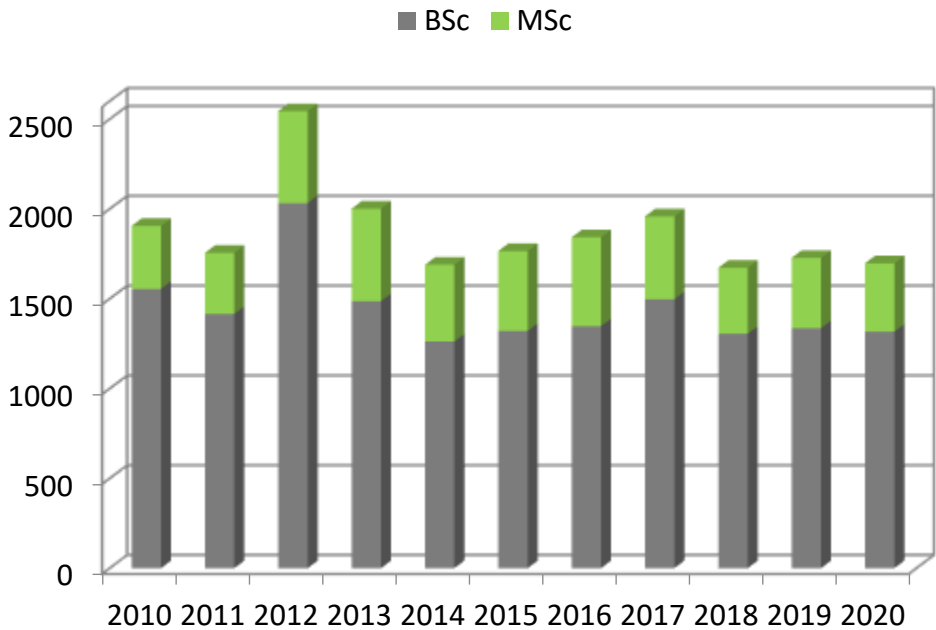


Figure 4: Number of students (Y-axis) in Bachelor's and Master's degree programmes at FFWS in the years 2010 – 2020.

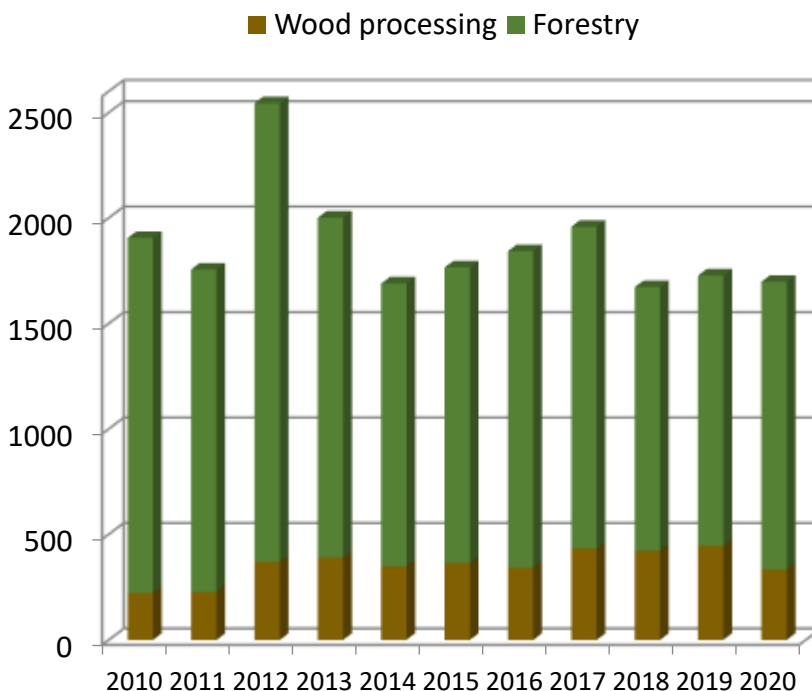


Figure 5: Number of students (Y-axis) in Forestry and Wood Processing study programmes at FFWS in the years 2010 – 2020.

The number of students in bachelor's programmes has stabilized at 1300-1400 and forms the main part of the students of the faculty (Figure 4). There are 350-450 students in master's programmes and around 150 students at the doctoral level. Most students study in forestry-oriented programmes (1300-1400), around 350-400 in programmes focused on wood processing and wood construction (Figure 5).

We no longer expect significant changes in the future, both in terms of the offer of study programmes and in terms of the number of students. Currently, we want to focus on the quality of study, especially with regard to teaching conditions and changing social and natural conditions, which must be reflected in the content of study programmes. The modernization of studies and study programmes must be the answer to the developments and changes such as globalization of the economy, climate change and new technologies.

A new innovation project was launched in 2017 and includes (Remeš, 2017):

- The construction of two new teaching pavilions – the Pavilion of Wood Sciences and a Hi-Tech pavilion for technological education (Figure 6) with more than 20 teaching laboratories (completed).
- Innovation of existing study programmes (completed).

- Preparation of new study programmes (completed).
- Implementation new teaching methods (ongoing).
- Deepening of the internationalization of studies at FFWS (ongoing).

This project is co-financed by the Operational programme Research, Development and Education (OPRDE) of the EU. The Hi-tech pavilion for technological education (last step in innovation of the education and research at the FFWS) provides a range of laboratories equipped with the state-of -the-art technologies. The building boasts two lecturing halls with 3D projection equipment, 3D modelling laboratory, ergonomics studies and ballistics laboratory, forest and timber fire protection laboratories, or, among others, also electron microscope and CT scanning laboratory. Moreover, the building also features built-in sustainable technologies, including green roof and energy recuperation system (Anonymous, 2019).



Figure 6: The Pavilion of Wood Sciences (left) and the Hi-tech pavilion for technological – education (right).

Internationalization

The last major change was the amendment to the Higher Education Act of 2016 (Act No. 137/2016 Coll.), which included the evaluation of the quality of university activities and a new accreditation system. Recently, so-called institutional accreditation has been introduced, which gives the university the right to independently create and implement study programmes in specific areas of education. CZU has successfully passed this assessment and in 2018 received institutional accreditation for seven fields of education, including the Forestry and Wood Processing field of study. The possibility of creating multidisciplinary and international study programmes was opened for the CULS. The dynamic trend in the development of the number of foreign students at the CULS since 2009 is evident from Figures 7 and 8.

The number of foreign students in all study programmes (excluding Erasmus+) has increased by more than 3,500 within 12 years, reaching 4,329 in 2020, which corresponds to about 20% of all students at the university. Approximately half of them

studied in study programmes taught in the Czech language. In the study programmes taught in English, the number of students also increased significantly (it increased more than five times compared to 2009).

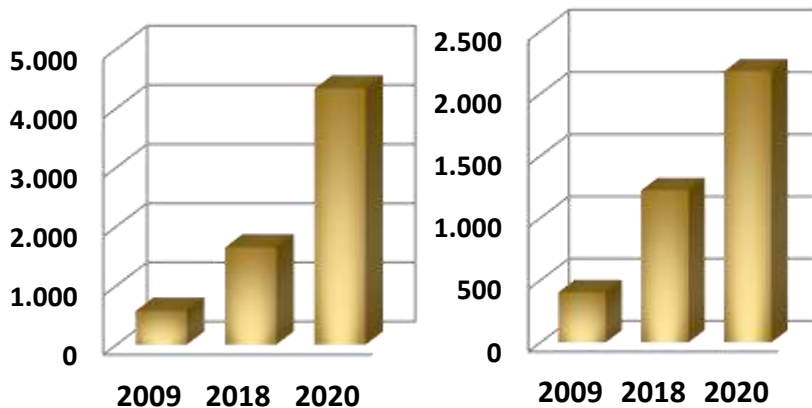


Figure 7 (left): Number of foreign students (Erasmus students are not included).
 Figure 8 (right): Number of students in the English study programmes.

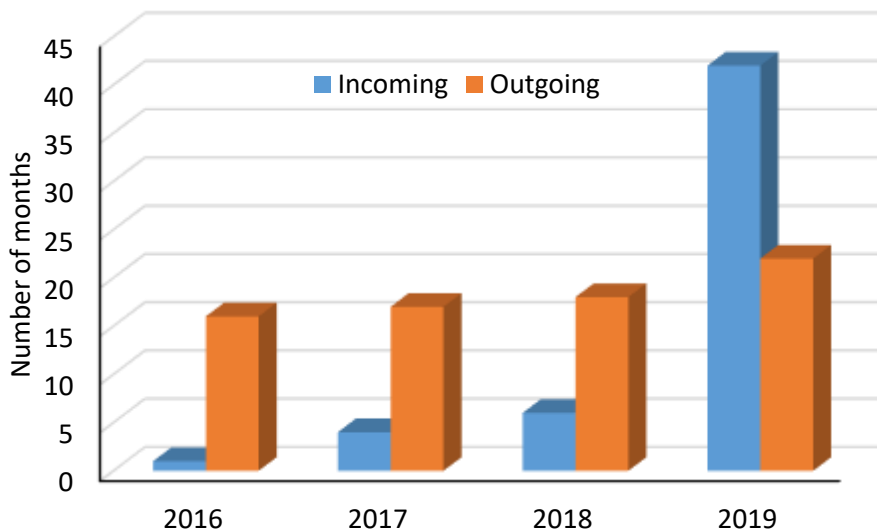


Figure 9: Development of FFWS staff mobility.

The FFWS also supports a multicultural environment. In total, there were 154 students in both Czech and English branches of BSc and MSc programmes in 2019, it represents approximately 10% of all students. Positive developments can be seen in the area of FFWS staff and student mobility (Figure 9 and 10). The number of outgoing teachers has long been higher than the number of incoming, but in 2019 the

situation changed. Among the students, incoming students predominate over ongoing students.

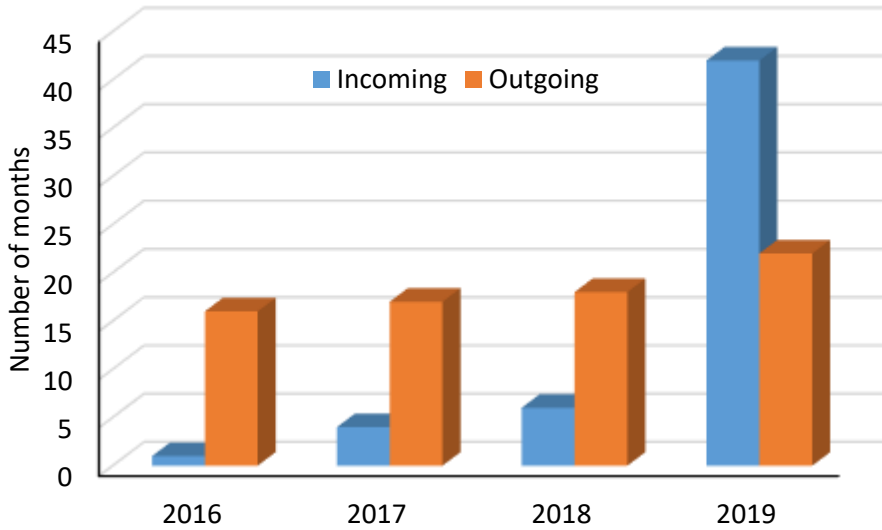


Figure 9: Development of FFWS staff mobility.

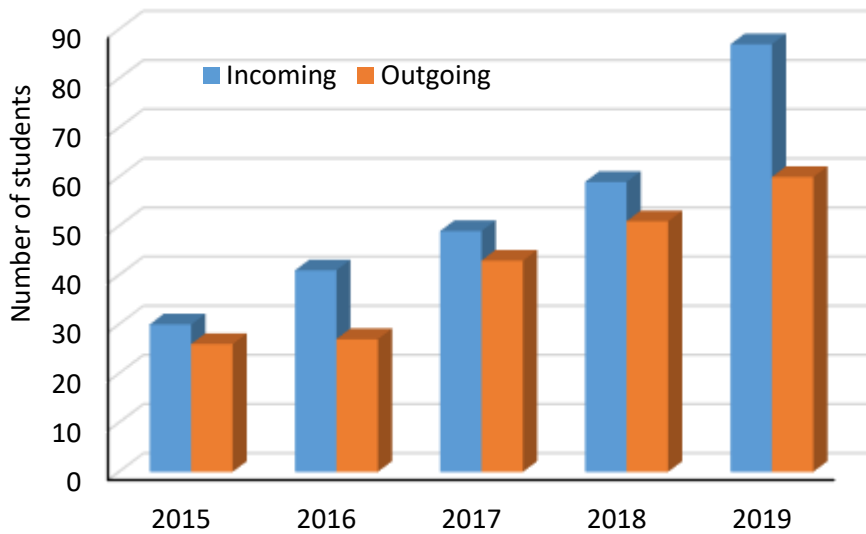


Figure 10: Development of FFWS student mobility.

Interest in studying at CZU and FFWS

Interest in studying at CZU is consistently high (Figure 11). The number of applications to study has reached more than 20,000 in recent years, which corresponds to the total number of students. A similar situation is also with interest in studying at the Faculty of Forestry and Wood Sciences. In recent years, the number of applications for Bachelor's degree programmes has been around 1400, and around 300 applications for Master's degree programmes are registered (Figure 12). The share of the faculty in the total number of students and applicants at CZU is approximately 8-10%.

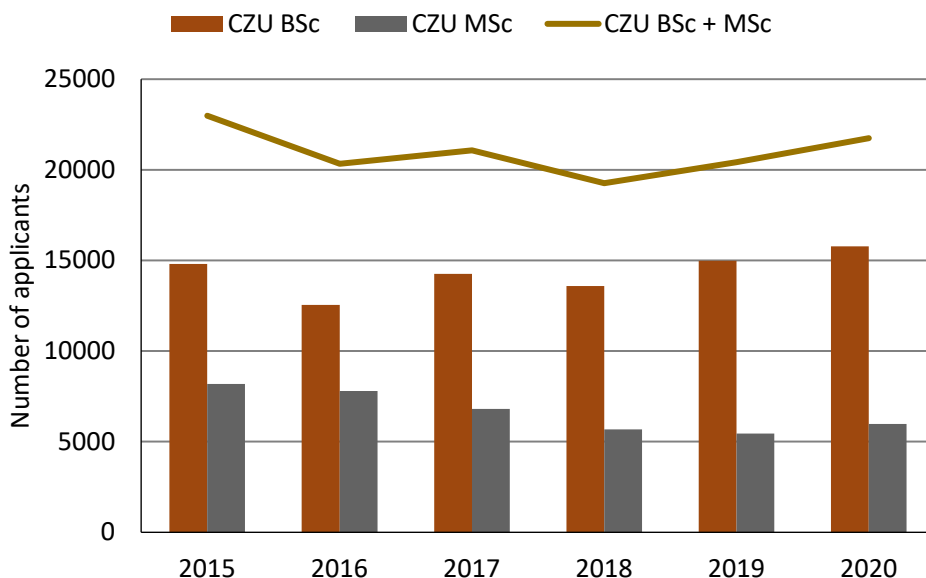


Figure 11: Development of the number of applications for studies at CZU.

New perspectives

At present, the stage of extensive development of the faculty has ended. Both in terms of the number of students, the portfolio of study programmes and technical equipment. There is a period when it is necessary to increase the quality of the educational process and ensure maximum usability and sustainability of the mentioned development projects. It is associated with finding resources for financial support of educational activities that without additional resources from the EU is still insufficient.

All FFWS study programmes have been re-accredited by a new accreditation system in the period 2019-2020 and now is the time for their evaluation and quality assurance. This also follows from the mentioned legislative changes in the Czech Republic. An internal quality evaluation system has been established at the university, which is

centrally managed by the Internal Evaluation Council. The basic principles include the evaluation of the quality of individual study programmes in the form of annual reports of the panel of study programmes. The guarantor of the study programme is responsible for this activity.

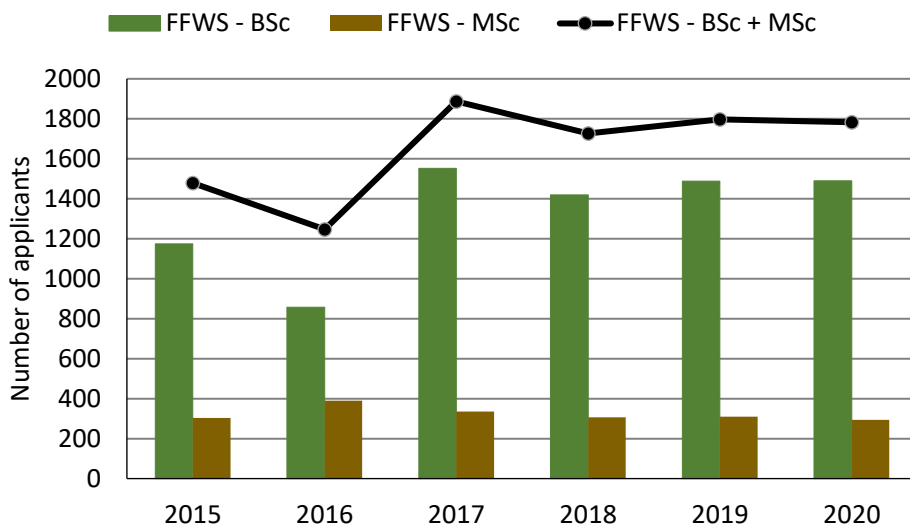


Figure 12: Development of the number of applications for studies at FFWS.

One of the main problems to be solved in forestry-oriented study programmes is the low success rate of students in their studies. The need to continuously update the content of study programmes in cooperation with forestry practice and the greater use of the university forest enterprise for teaching, including financial security (Remeš 2018), are also discussed.

Conclusion

The development of Czech University of Life Sciences as well as Faculty of Forestry and Wood Sciences has been very dynamic in the last 30 years. Political changes and subsequent reforms of tertiary education have made a major contribution to opening up higher education to a wide range of applicants. This led to a massive increase in the number of students at universities in the Czech Republic and also at the CZU in Prague. The culmination was reached in 2010-2012. Since then, the number of students has been declining slightly. During this period, the CULS became one of the six largest universities in the country with a total number of students around 20,000. Modern history FFWS began in 1990, currently the faculty is one of the most respected educational and scientific institutions in forestry and wood sciences in the Czech Republic.. The development of technical equipment, including the construction of two new pavilions, made a significant contribution to this result. Further

development is aimed at increasing the quality of all processes at CZU and FFWS and the optimal use of all products of the investment period.

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