Mid-term Review of the project “Tenure Track Pilot Programme” in Croatia

Report for the Croatian Science Foundation

DLR-PT

Report

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1. Introduction

1.1. Background

The path to a permanent professorship is generally difficult and associated with various uncertainties. (Post-)PhD students are often confronted with the need to find a balance between the demands of their family and career and thus to develop longer-term perspectives during this phase of their lives. To provide outstanding young researchers with a reliable and plannable academic career path at an early stage of their careers, tenure track programmes are providing fixed-term contracts that lead to a permanent position at a higher level in case the candidate is evaluated positively. In view of the steadily increasing international competition for excellent scientists, these programmes offer universities a targeted instrument to increase their attractiveness for promising research newcomers by promoting mutual commitment. Currently, the European Innovation Scoreboard estimates that Croatia's national innovation system is faring relatively low compared to the average of the European Union as regards human resources.[1]

Croatia is interested in increasing the attractiveness of national research organizations with long-term perspectives for young and outstanding scientists by adapting a tenure track system. This instrument shall contribute to the objective of increasing international recognition and visibility of the Croatian research system. However, as the Science and Higher Education Act in place does currently not provide the legislative framework for implementing such a system, the Croatian Tenure Track Pilot Programme (TTPP) shall lay the necessary foundation for introducing such an instrument. Contrary to the current criteria for long-term employment such as number of publications, teaching hours or institutional coefficients, the TTPP should provide outstanding scientists with the possibility to participate in a competitive call for proposals and if selected for project financing, get a permanent contract at a research organisation or university of their choice. The further development of the scientific career would thus depend more on the positive outcomes of the projects managed. Almost halfway through the project, however, the legal framework still does not offer the possibility of providing the funded researchers with a permanent position, even after a first positive evaluation of their project results.

The mid-term review seeks to provide answers to the following aspects:

- Assessment of the TTPP's achievements in relation to the envisaged overall outcomes at the current stage of the project;
- Assessment of its potential and further steps for upscaling within the higher education system in Croatia;

[1] European Union (2021): European Innovation Scoreboard 2021; Country Profile Croatia.

- Recommendations for measures or options of adjustment for the performing project period based on its findings

The TTPP is jointly funded by the Swiss Agency for Development and Cooperation (SDC) with a share of 85% and the Croatian Ministry of Science and Education (MoSE) with a share of 15%. TTPP is part of the implementation of the cohesion policy programme Swiss - Croatian Cooperation Programme. As a pilot programme on tenure track, the TTPP was inspired by the Ecole Polytechnique Federal Lausanne (EPFL) to explore possibilities for tenure track programmes in Croatia. Being one of the pioneers for the introduction of tenure track models in Europe, EPFL provides mentorship for the supported PIs and on the scheme in general. The objective was to attract excellent researchers from abroad and offer good framework conditions for domestic researchers. At the moment, TTPP supports three Principal Investigators (PIs) in Croatia. Their activities started in 2019.

Figure 1 provides an overview of all stakeholders of the programme, both in Croatia and in Switzerland. The stakeholders are connected by the flow of funds, reporting duties and their constant exchange in the Steering Committee. Except for the SDC and the beneficiaries, all stakeholders are represented in the Steering Committee of TTPP. For this review, interviews and group discussions were conducted with representatives from all stakeholder groups.

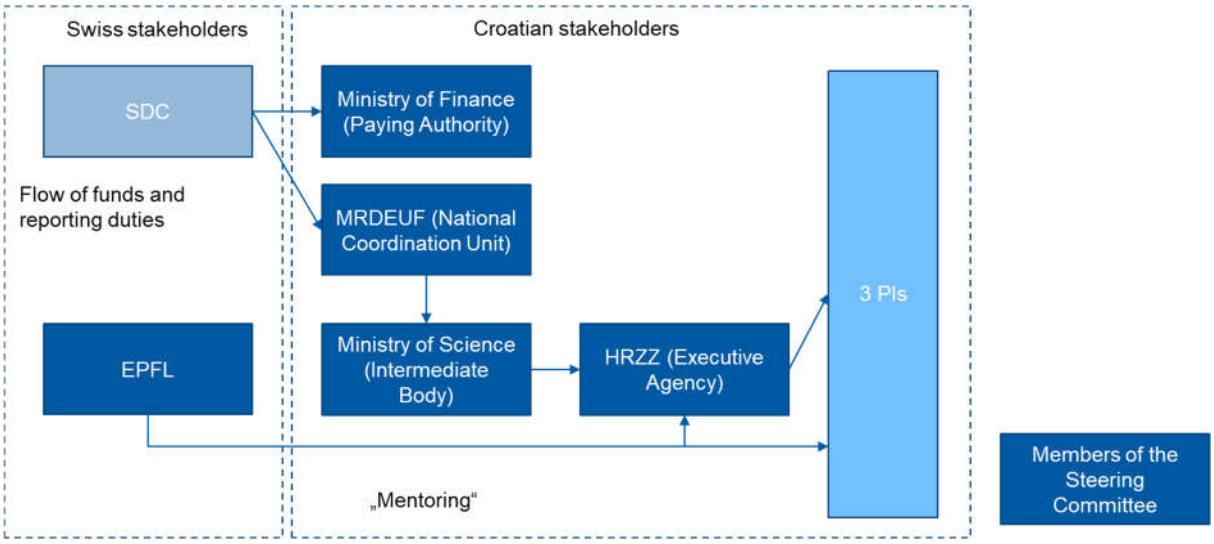

Figure 1: Stakeholders of the programme

1.2. Guiding questions of the review

The mid-term review focusses on the implementation of the programme and the achievements so far. Another important aspect is the potential for adoption of tenure track schemes on a broader scale in Croatia. The guiding questions can be structured along the three categories of efficiency and effectiveness, impact and sustainability and an international comparison with a look at tenure track schemes in other countries.

Efficiency/Effectiveness

Effectiveness and efficiency concern the status of the project, the achievements made so far and the overall implementation of the TTPP and the interplay between the various stakeholders:

- Review of the extent of active involvement of the stakeholders (host institutions, National Coordination Unit/NCU, Ministry of Science and Education/MoSE, Croatian Science Foundation/HRZZ and EPFL).
- What is functioning well, what could be improved and how?
- Is the project implementation on track?
- Is the project set-up appropriate for reaching the ultimate objective?

Impact and sustainability

Impact and sustainbility center around the question whether tenure track could be introduced widely in Croatia, including recommendations for the next phase and for the upscaling of the model:

- How could the pilot be transferred into the science and higher education system and be up-scaled into the current career model in Croatian universities and research institutes? What would be needed? What are the barriers?
- What are the constraints in the Croatian legislative system that hamper the adoption of the tenure track system?
- To what extent has the project contributed to the Smart Specialization Strategy (S3) of Croatia and how does it build into the new 2030 National Development Strategy?

International comparison

Since tenure track schemes are widely discussed in science policy in Europe and many member states of the EU, a closer look at examples from various countries can provide insights for the adoption and upscaling of the scheme. A comparative analysis of tenure track models in selected examples shows the potential for the adoption of tenure track models (or certain aspects thereof), and identifies key prerequisites for the successful implementation of tenure track schemes.

1.3. Methodological approach

The Tenure Track Pilot Programme has defined two central goals: one being the contribution to reduce economic and social disparities between Croatia and the more advanced countries in the enlarged European Union; the other goal is the contribution to reduce economic and social disparities within Croatia.

Since these two goals are defined on the impact level, they must first be broken down to the outcome, output and input-level, in order to form a stable framework along which the evaluation will be implemented. The evaluation will be carried out following the OECD DAC criteria of relevance, effectiveness, impact, coherence, efficiency and sustainability.[2]

In the frame of the evaluation, the TTPP programme is subjected to a contribution analysis taking into account the entire relevant field of actors. In this way, the assumptions about causal processes within the programme's impact logic are analyzed along with the contribution of the programme to observed changes and impacts. Unintended effects are also at the center of consideration here.

The evaluation approach of the DLR-PT is basically characterized by three dimensions: it is theory-driven, based on a mix of methods and participatory. Accordingly, in a first step, existing documents on the overall programme and its impact structure were analyzed and transformed into a logical framework. The conceptual preparatory work and a first exchange with HRZZ also served to supplement and prioritize the guiding evaluation questions.

According to good scientific practice, different data sources (data triangulation) as well as suitable data collection and evaluation procedures (method triangulation) are to be combined with one another. Qualitative data should be collected from different sources using different instruments to answer an evaluation question in order to ensure the greatest possible objectivity and validity of the findings and the conclusions and recommendations derived from them.

The participatory understanding of the DLR-PT means that the client is involved during the evaluation, especially in the development of the evaluation concept and the survey instruments as well as the subsequent evaluation of the results.

Figure 2: Steps for the review

[2] OECD (2019): Better Criteria for Better Evaluation Revised Evaluation Criteria Definitions and Principles for Use.

Step 1: Analysis of programme documents

To carry out this evaluation, a mixed methods design was used, consisting of qualitative data collection methods in order to evaluate the activities and achievements of the TTPP. A secondary data and document analysis of all programme-relevant and programme-controlling documents as well as overarching strategic and conceptual papers was carried out. The documents include basic project documentation (Project Agreement (PA) with Project Document (ProDoc), Project Implementation Agreement (PIA), EPFL-HRZZ Collaboration Agreement, Final Project Proposal (FPP), SDC internal Decision Note, and Decision Letter) and periodic reports (monthly and annual reports), provided by SDC, NCU, MoSE and HRZZ.

This analysis served not only for a deeper understanding of the programme, but also for an initial assessment of the achievement of objectives as well as a sharpening of the evaluation design and, in particular, the adaptation of the evaluation questions.

Step 2: Interviews

Interviews with key stakeholders are the primary data source. These were conducted with all stakeholders displayed in Figure 1.

The key questions and topics of the interviews were linked to the guiding questions.

Step 3: Triangulation

In this step, all collected information was analyzed along the guiding questions, and recommendation were derived. The findings are presented in this report. The report is focussed on the implementation of the programme and potentials for further activities, not on the impact of the individual projects undertaken by the PIs.

2. Findings

2.1. Efficiency and effectiveness

2.1.1. Role and involvement of stakeholders

The starting point for the review was a look at the different stakeholders, and how their specific roles are perceived by the other stakeholders involved in the implementation of the TTPP.

The Croatian Science Foundation (HRZZ) is the Executive Agency for the programme. In this function, HRZZ is responsible for the management of the programme, the funding of PIs and the monitoring of their progress. All interviewed stakeholders expressed a high satisfaction with the role of HRZZ. This concerns especially the degrees of freedom granted to the beneficiaries. These were increased in the course of implementation, which was noted both by the PIs and the other institutions. This high degree of responsiveness to challenges posed by the programme could be observed for examples in the flexible use of funds when one application was withdrawn and the remaining budget was allocated to the three remaining PIs.

The Ministry of Science and Education (MoSE) acts as the Intermediate Body for the programme. The Intermediate Body is responsible for monitoring the work of and distributing the funds to the Executive Agency. Having the responsibility for education and science in Croatia, the MoSE shows "ownership" for the programme. This is visible in the current legislative process towards the broader introduction of tenure track in Croatia, which picks up the initiative sparked by the TTPP.

The Ministry for Regional Development and EU Funds (MRDEUF) acts as the National Coordination Unit (NCU) for the Swiss Croatian Cooperation Programme, being responsible for coordinating and monitoring. In this role, the MRDEUF also oversees the implementation of the TTPP. The NCU applies the framework from the ESIF regulations as regards reporting procedures, rules for use of budget or the required work plans which require detailed workplans and budget planning. This means that the programme might not always have the degrees of freedom needed for scientific projects,

The Ecolé polytechnique fédérale de Lausanne (EPFL) serves as a partner and research consultant in the TTPP, acting as a coach for the HRZZ during the implementation. EPFL played a crucial role for the programme, from the initial ideas until the current state of implementation. Their contribution is appreciated by all stakeholders, from the administrative side as well as from the supported PIs. The advice provided by EPFL is welcomed by Croatian stakeholders and implemented in turn.

The Swiss Agency for Development and Cooperation (SDC) co-funds the Swiss-Croatian Cooperation Programme with the amount of 85% of the overall values. The remaining 15% are contributed from Croatia's national budget. This framework also applies to the TTPP. In general, the SDC supports the programme and intends its continuation. Besides the financial support, the

SDC grants the Croatian stakeholders high flexibility for the implementation and does not exercise micro management.

All stakeholders are represented in the Steering Committee. The Steering Committee plays an important role in the implementation of the programme and ensures smooth coordination among all parties involved. But the Steering Committee does not offer advice to policymakers and higher levels of the administration; therefore the discussions about the programme taking place in the Steering Committee might not be properly reflected in the political discussion on tenure track.

The host institutions of the PIs welcome the possibility to attract additional talent. Due to their involvement in the applications, hosts are welcoming applicants and support the programme and the introduction of tenure track schemes in general. The host institutions seem to be eager to share their experience of the programme with other stakeholders.

During the interviews with stakeholders, the evaluators explored the interactions between SDC, NCU, HRZZ, MoSE and EPFL, in order to seek any aspects where communication and interaction might show room for improvement. In general, the cooperation between the stakeholders is perceived as very cooperative and productive from all parties involved. Communication flows are smooth. Decisions are made either at meetings of the Steering Committee or in between, and overall the decision-making process supports the implementation. The administrative burden reported by some stakeholders is not related to the cooperation between the stakeholders, but results from overarching regulations outside of the TTPP.

2.1.2. Review of the implementation

One important question for the review was whether the project implementation was on track, and whether the objectives of the programme can be achieved with the current set-up.

So far, the overall implementation is on track: all three initially funded PIs continue their work according to their work plans. No bigger delays were reported so far. Even the measures to contain the Covid-19 pandemic have had no larger effect on the implementation. The objective of supporting pilot phases for tenure track will supposedly be achieved. The positive feedback of participating PIs and stakeholders supports this view. But within the current pilot programme no changes to the legislation will be realized, since this process takes longer than the programme duration. The processes of managing the programme, the structures and procedure have improved over time in the eyes of the stakeholders. The standards for implementing research funding programmes are in line with those in other EU Member States or Associated Countries. The TTPP can be regarded as one of the best running activities in the Swiss-Croatian Cooperation Programme.

During the interviews, possible gridlocks or challenges that could hinder the successful implementation of tenure track schemes were adressed. Many of these challenges are out of the scope of the TTPP itself, but need to be adressed nevertheless. This concerns especially the attractiveness of pursuing a research career in Croatia overall. One factor determining the attractiveness is the level of wages in the science sector. Salaries in the Croatian science system are perceived as not being competitive by the stakeholders. Especially since the target group of

excellent researchers has a good variety of opportunities in other countries, such as Switzerland, the UK, or some Member States of the EU. Even though the TTPP offers an attractive overall package for the PIs, the salaries are still a crucial determining factor for applicants. This affects even more the PI's ability to hire Post Docs for their research groups, where the salary level is even more important (and comparatively low, especialy trying to attract post-docs or PhDs from abroad). With a direct look at the funded PIs, the programme succeeded in attracting researchers that had previously been employed at unversivities or research institutions abroad, including one foreign PI. From the PIs point of view,the package offered by the TTPP has increased the attractiveness of doing research in Croatia, but only on a small scale, given the small number of active participants.

One caveat of the programme implementation is that the duration of funded projects is shorter than comparable tenure track schemes in other countries. A period longer than the 4 - 5 years currently in place would enable the PIs to achieve more visible impacts during their project duration. A possible duration in upcoming calls could be seven years, as it is applied in the tenure track programme of the EPFL.

With a look at the efficiency, the time frame and work plan seem adequate. Implementation so far is on time. A number of institutions are involved in the implementation of the programme (see Figure 1). The roles of these institutions are well defined and no overlaps of responsibilities could be observed. The direct resources allocated to the implementation seem adequate to successfully implement the programme. The staff at HRZZ is described as capable and engaged by the PIs, and by the members of the Steering Committee as well. Given the rather small number of supported PIs there seems to be no need to allocate more resources for programme implementation at HRZZ. The staff at the other stakeholder institutions also seems adequate both quantitatively and in terms of qualification. Stakeholder described the decision-making processes as rather efficient, and expressed no need to change the way decisions are made for TTPP.

The reporting procedures in place between the stakeholders are adequate. However, the required documentation is described as burdensome for the researchers; e.g. work plans with a five years perspective including possible conferences PIs would like to attend in the years ahead, are hard to forecast (and the recent past with restrictions due to measures to contain the Covid-19 pandemic proved this even more). A wish for some relaxation of these requirements was expressed by PIs, and this easing of documentation and reporting would grant researchers more flexibility in devoting time to their research activities.

Public procurement procedures to buy equipment or services pose an additional administrative burden for the PIs, since the administrative departments of the host institutions do not have adequate resources to support here. This may also lead to delays in the continuation of research projects, since some of the procured goods pose potential bottlenecks for the projects. But these regulations and the additional effort required to comply to them are rooted outside of the TTPP and are part of general regulations for public procurement and are not directly connected to the implementation of the TTPP.

Summing up the analysis of effectiveness and efficiency of the implementation, the TTPP seems to be well implemented so far, with a steep learning curve from all institutions involved. All

involved stakeholders are fully engaged and their roles are well defined, and no major delays could be observed with regard to decision making or the interplay of the stakeholders involved. Some factors hinder the efficiency of the implementation, e.g the reporting procedures in place and the rules for public procurement. Some aspects show room for small improvements, which will be presented in the recommendations.

2.2. Impact and sustainability

The TTPP was intended as a feasibility study for the introduction of a tenure track in Croatia. With its definition as pilot programme, the programme can demonstrate the added value tenure track can contribute for the science system in Croatia. TTPP offers good packages for excellent young researchers and proves that good conditions can retain them in Croatia (and even win them back from abroad). Since brain drain posed a big threat, the introduction of tenure track is connected to the expectation of raising the attractiveness of Croatia as a location to do research; talented researchers should be retained in Croatia, Croatian scientists abroad should return and talented researchers from abroad should be attracted to Croatia. In the case of the three supported PIs, this objective has been achieved. The mentorship by the EPFL is another factor that should further increase the quality of the research system in Croatia.

The science system in Croatia is at the moment not very competitive compared to the opportunities excellent (Croatian) researchers can find abroad. Salaries are rather low, and some PIs withdrew their application to the TTPP due to better offers abroad. Even with these reservations, the PIs funded under the TTPP are better off than researchers with comparable backgrounds at other institutions in Croatia. Their research groups have better means than other groups. An illustration for this good allocation of resources is the fact that PIs currently have no need to apply for third party funding (e.g. from European funds such as Horizon Europe), and that they currently do not fully utilize funds available.

The adoption of a new law to build the foundations for tenure track is not part of the programme itself. The objective of the TTPP is to finish the programme with positive results both on the individual level of PIs and on the level of programme implementation. The new regulation will only be adopted after the initial run of the TTPP. This causes uncertainties for the current PIs. HRZZ is working on a sustainable solution for them, besides the actual new law. The grant agreements for the PIs contain a "guarantee clause" for them.

When the programme started, the initial intention of the cooperation was to provide a legal base to offer scientists the opportunity for a permanent job at the host institutions. Due to the Croatian legislation this is currently not possible to offer. The 3 PIs face a gap that needs to be solved in order to offer them attractive career paths after the TTPP has expired.

The TTPP makes no direct contributions to the goals of Croatia's Smart Specialisation Strategy and to the succeeding 2030 National Development Strategy. But the focus topics of the call for proposals for TTPP were in line with the strategic priorities of the Smart Specialisation Strategy. Fostering scientific excellence and promoting brain circulation can lay the basis for innovation, and therefore the programme might (indirectly) contribute to the objectives stated in these two

strategies. And on the overall political and strategical level, the programme has initiated a broader discussion how to bring back excellent young scientists and attract foreign scientists.

In general, the biggest impact of the TTPP on political level is the debate on the new law regulating the science sector in Croatia, where tenure track will play a role. The recovery plan for the post-pandemic phase in Croatia also includes objectives on researcher careers. As regards the current phase of the TTPP, the supported PIs actively chose a career in Croatia over other options, which underlines the attractiveness of the programme. However, the gap between the adoption of the new law and the expiration of the current funding should be adressed in order to offer clear career perspectives for the three PIs.

2.3. International perspective

The proliferation of tenure track schemes is an important topic in the debate over science and higher education policies in many European countries and on the level of the EU as a whole. The general goal connected to the introduction of tenure track schemes is to increase the attractiveness of the higher education institutions for talented researchers. On the level of the European Union, the objective is raising the attractiveness of the European Research Area and the European Higher Education Area. Special attention is given to raising the attractivenes of the research sector in the Widening Countries, such as Croatia. Tenure track schemes are supposed to support brain circulation instead of a constant brain drain: after their dissertation or Post-Doc positions abroad, researchers should return to their home countries in the frame of tenure track schemes, and in turn foster the development of more advanced research systems in their home countries. Introducing tenure track schemes affects established policies and structures on research careers and employment structures in the science systems.

The specific phrasing of these positions vary from country to country, but in general the denomination of positions is not the most important feature of these programmes (e.g. labelling positions as assistant professor, lecturer or similar).

Tenure track schemes are connected to systematic quality assessments before positions are convereted to permanent contracts. In the debate on tenure track schemes, three ideal-typical models of an academic career in higher education and research can be broadly distinguished in Europe[3]:

1) The probation-on-the-job model, leading to permanent employment at an early career stage (e.g. as practised in the United Kingdom)
2) The two-tier promotion and habilitation model, leading to permanent employment at a later career stage (e.g. practised in Austria, Germany, other Central European countries)

[3] LEAGUE OF EUROPEAN RESEARCH UNIVERSITIES (2014): Tenure and Tenure Track at LERU universities: Models for attractive research careers in Europe.

3) The centralistic state approbation model, leading to a combination of tenure and habilitation models (e.g. currently practised in France).

2.3.1. The probation-on-the-job model

The classic tenure track model established in the United Kingdom involves probation on the job at early career stages leading to a permanent contract at an higher education institution. This is combined with various employment possibilities, e.g. Lectureships and Senior Lectureships. A PhD is in most required to enter the tenure track. Besides being a formal necessity, the doctorate also serves as a proof that the candidate is qualified for independent research and teaching activities. Usually the time span between the doctorate and the tenured position is bridged by fixed-term employment with a contract as a Temporary Lecturer or Teaching Fellows. This most often has a duration of up to seven years before the position is tenured.[4]

2.3.2. The two-tier promotion and habilitation model

In many Central European countries, such as Germany and Austria, recent reforms were introduced to support tenure track at universities. Reaching tenure track happens at later career stages, compared to the model applied for example in the United Kingdom. It involves a doctorate phase, and in many cases a habilitation as well. Two schemes will be presented in more detail: the Tenure Track Programme of the Federal Ministry for Education and Research (BMBF) in Germany, and the new approach introduced in Austria.

The Tenure Track Programme of the BMBF in Germany

Intention and aim

The federal-state programme in Germany establishes the tenure-track professorship broadly at universities in Germany for the first time. For many young scientists, the path to a professorship will become much more transparent and easier to plan: the tenure-track professorship is aimed at young scientists in the early stages of their careers and provides for an immediate transition to a lifetime professorship after a successful probationary phase.

Key facts

The federal government is providing one billion Euro, subject to the appropriation of funds by the legislative bodies, to fund 1.000 additional tenure-track professorships. The programme has started in 2017 and will run until 2032. Following the successful completion of the two selection rounds in 2017 and 2019, a total of 1,000 additional tenure-track professorships will now be

[4] LEAGUE OF EUROPEAN RESEARCH UNIVERSITIES (2014): Tenure and Tenure Track at LERU universities: Models for attractive research careers in Europe.

funded at 75 universities across Germany. The basis for the selection was a science-led competitive process.

Reform of university structures

In order to develop the personnel structures not only selectively, but as a whole, each university had to submit a concept for the development of the entire scientific personnel as a condition of participation in the programme. As a result, the universities were required to rethink their personnel structures not only at the level of professors, but at all levels of academic staff. The programme also provides funding to enable universities to adequately shape the associated reform process.

The new career path to professorship is attractive to the best minds from Germany and abroad and creates early planning capability for remaining in academia for the long term. The tenure track program is thus also a structural reform project for Germany as a location for innovation.[5]

The Tenure Track Programme in Austria

Intention and aim

A career position as part of the **two-tier promotion and habilitation model** in Austria is intended to give young academics permanent employment prospects at the university. In terms of scientific autonomy, it should not differ from that of a professorship and it should open up new scientific territory without having to appoint an entire professorship.

At the same time the programme's aim is to strengthen the academic system as a whole by enabling better planning for young scientists.

Key facts

At Austrian Universities tenure track professors are initially employed on a six-year contract. In the event of a positive evaluation by international peers within the first six years of employment, the position will be changed to an open-ended contractual relationship as an associate professor. Associated professors with excellent research achievements have the opportunity to advance to university professorships through an internal, competitive procedure.

The application requirements include a doctorate / PhD degree and at least two years of experience as a Post-Doc, excellent publication activities and international reputation, willingness to take on the leadership of an independent research group as well as enthusiasm for excellent teaching and willingness to supervise students at all curricular levels.

A publication of the League of European Research Universities (LERU) in 2014 criticizes the Austrian system since a professorship occurs late in a scholar's academic career. Therefore the researchers face many years of uncertainty in their academic careers. In addition, according to LERU (2014), "the system is affected by the dominance of chairs and the related fact that

[5] See https://www.bmbf.de/de/wissenschaftlicher-nachwuchs-144.html

professorships make up only a small percentage of the full-time academic positions. The critical point in an academic career is therefore the transition from habilitation to a professorship."[6]

Reform of university structures

A reform of university structures in the early 1990s had far-reaching effects on the legal status of academic staff. The core of this reform cycle was the transformation of the university from a state institution to a public company, which took place in two steps. At that time, Austrian universities were reluctant to conclude open-ended employment contracts. Due to the quantitative imbalance between mid-level and professorial positions, the opportunities for junior high-level graduates to continue their professorships were inevitably limited. In the collective agreement for university employees, which came into force in 2009, the the career position was introduced as a new position at universities, also in order to defuse this career impasse.

The guideline on tenure track positions and qualification agreements in Austria is based on the requirements of the Universities Act UG 2002 and the collective agreement for university employees as well as the European Charter for Researchers.

2.3.3. The centralistic state approbation model

In France, a combination of tenure and habilitation models is currently practiced.[7] The French system relies strongly on public funding of universities. It provides tenured positions for academics between the ages of 28 and 38, thus particularly attracting young researchers who want to enjoy the benefits of tenure and public service advantages as well as academic freedom early in their careers. At the same time, however, it also carries the risk that the efficiency and competition of French universities will be hindered by the long-term retention of staff at an early age.

After passing their doctoral degree, researchers can apply for a permanent position as a civil servant with all connected advantages. The position corresponds to an Assistant or Associate Professor or a Senior Lecturer at an international level. For advancing in their career, researchers are then required to conclude a habilitation process. Once they have acquired their habilitation, they are eligible to apply for a full professorship. Therefore, the system is combined: Probation model at a first stage and a habilitation model at a later stage of a researcher's career.[8]

In July 2020 France submitted a new bill with the aim to promote the public Research and Development (R&D) sector. Besides increasing public research spending over the next ten years and raising salaries for scientists, the French government introduced the possibility for tenure-track positions. These positions will be created in addition to the permanent entry-level positions existing so far in the French R&D system. The so-called "junior professors" would receive an

[6] LERU LEAGUE OF EUROPEAN RESEARCH UNIVERSITIES (2014): Tenure and Tenure Track at LERU universities: Models for attractive research careers in Europe, p. 9.
[7] See Französisches Kabinett billigt Gesetzentwurf für mehrjährigen Finanzrahmen für die Forschung | kooperation-international | Forschung. Wissen. Innovation.
[8] See LERU LEAGUE OF EUROPEAN RESEARCH UNIVERSITIES (2014): Tenure and Tenure Track at LERU universities: Models for attractive research careers in Europe, p. 9.

average of €200,000 research budget and have up to 6 years to being positively evaluated and receive a permanent position.

Even so the tenure track positions would be complementary academic jobs to the existing ones, critics include the arguments that so far France is one of the countries where researchers have the opportunity to become a professor at an earlier stage of their career. The programme would increase the uncertainty of jobs in the academic sector with the introduction of fixed-term contracts for longer time spans, instead of directly increasing the number of permanent positions. Furthermore, research unions emphasize that it might be the start of reduction of continuous funding, stable employment conditions and academic freedom.[9] Additionally, the plan, according to a frequent accusation, lacks ambition and the stakeholders concerned have not been given enough time to analyse the details, which were only published last minute.[10]

2.3.4. Success factors for the implementation of tenure track

The successful implementation of tenure track schemes hinges on several factors, irrelevant of the underlying model:[11]

A long term perspective for the researchers is necessary, e.g. positions should involve a fixed-term contract for up to seven years, which is then transformed into a tenured position at the institution. This means that many research projects that involve the target group of promising researchers are too short in this regardswith regard to a long-term career perspective. Even though research projects can guarantee a secure career path for a certain period, on the long run This implies that a successful tenure track programme might needs to be financed from the public block funding that is allocated to the host institutions. Third party funding seems not adequate here, since it does not offer a reliable long-term perspective for both the candidates and the institutions.

The autonomy of the higher education institutions needs to be respected. The installation of tenure track positions should be additional to their current staff planning and go along with a systematic seeking of institutional excellence in research and education. By applying this model it is assumed that tenure track is practised at higher education institutions and, thus, strengthen these institutions through the integration of innovative research and highly talented staff. The universities would be able to offer research-based academic education and develop the capacity to compete on a higher level of research excellence. Their work would be promoted in several dimensions, including increased attractiveness for research networks and improved acquisition opportunities for public funds. Moreover, the professional skills and the output of the performance of those involved is raised; the basis for future research with good quality is provided.

[9] See French science bill promises boost to public R&D | Science | AAAS (sciencemag.org)
[10] See Französisches Kabinett billigt Gesetzentwurf für mehrjährigen Finanzrahmen für die Forschung | kooperation-international | Forschung. Wissen. Innovation.
[11] Lübcke, Maren / Wannemacher, Klaus (2019): Bildungsverständnis im europäischen Vergleich - Analyse von Konzeptionen und Narrativen der EU-Kommission und ausgewählter EU-Länder; Hochschulforum Digitalisierung Nr. 49/ 2019.

The model of outsourcing research activities to (external) research organisations is not ideal in this respect.

Quality assessments of the candidates need to be conducted on a regular and transparent basis. This means that all candidatesd get clear answers whether they can continue on the tenure track, or should seek alternative career paths. The assessment should be finished and the recommendations should be given at least 6 months before the contract of the candidate ends.

The introduction of tenure track into established research systems might come with some risks. One potential risk is the fact that researchers who are already longer employed in a chain of fixed-term contracts might become ineligible for the new schemes and consequently drop out of the system.

3. Conclusion and recommendations

3.1. Summary of findings

Summing up the analysis of effectiveness and efficiency of the implementation, the TTPP seems to be well implemented so far, with a steep learning curve from all institutions involved. All stakeholders are fully engaged and their roles are well defined, and no major delays could be observed with regard to decision making or the interplay of the stakeholders involved. Some factors hinder the efficiency of the implementation, e.g the reporting procedures in place and the rules for public procurement. Some aspects show room for small improvements, which will be presented in the recommendations.

In general, the biggest impact of the TTPP on political level is the debate on the new law regulating the science sector in Croatia, where tenure track will play a role. The recovery plan for the post-pandemic phase in Croatia also includes objectives on researcher careers. As regards the current phase of the TTPP, the supported PIs actively chose a career in Croatia over other options, which underlines the attractiveness of the programme. However, the gap between the adoption of the new law and the expiration of the current funding should be adressed in order to offer clear career perspectives for the three PIs.

The introduction of a tenure-track programme should take into account short- and long-term aspects and provide impulses for the further development of personnel structures for academic staff at universities. Certainly, it makes a lot of sense to use calls with sufficient financial resources to establish the introduction of tenure-track structures and also to secure the maintenance of this new component in the university system for a certain period. The financial resources can, for example, be directed towards the creation of new positions that benefit junior researchers and support universities in filling these positions in a strategic and targeted manner. For a long-term perspective, however, financing options through more institutional channels should be considered. From our perspective, this might include the endowment of the basic funding of the universities. Calls can have both a clearly determined purpose orientation in favour of the tenure track and bring about a change in the culture of this part of the education system. Calls can thus be understood as a well-suited start-up funding, with the help of which a tenure-track programme emerges as a new component in the university system. A long term vision might include core financing perspectives, though.

The review allows to identify some factors that could support a potential upscaling of the programme. The Executive Agency seems well equipped and qualified to continue the programme in a way well-regarded by all stakeholders. But some adaptations seem desirable:

Finding	Recommendations
Programme Design	
Programme with five years duration rather short compared to other TT models	Prolongation of up to seven years seems desirable to offer a long-term perspective for the PIs and allow for scientific impacts to become more visible
PIs expressed complaints over high administrative burdens, especially reporting and planning procedures, which require much effort and take away time from their actual research	Reducing reporting duties in line with research funding schemes and allowing for some flexibility with regard to the work plan would help PIs to focus on their research
HRZZ conducts a quality assessment six months before the end of the projects.	The time frame seems appropriate. In order to apply for follow-up activities or other positions, it would be good if PIs could have the results appr. six months before the programme's expiration.
The introduction of the new regulation on tenure track schemes might only become effective after the expiration of the TTPP	The programme should offer a clear career perspective for the current PIs
Financing	
Host institutions need a clear financial perspective in order to introduce tenure track positions	Tenure track schemes might need a start-up funding (e.g. by competitive calls) and become be part of the block financing of the host institutions on the long run (and should not be part of research projects with a fix durations)
	Tenure track positions should be complementary to the current staff planning at institutions and integrated in the regular personnel planning process; they should not reduce the number of existing positions
Accompanying measures	
PIs expressed the desire for further accompanying measures	Consultancy services on career development would be a good complement to the programme; another feature could be support on how to obtain more third-party funding for further research activities, e.g. via Horizon Europe.

3.2. Conclusion

Since the TTPP is well implemented, it is maybe worth to take potential future developments into account. From our perspective, the introduction of a tenure-track programme should consider short- and long-term aspects and provide impulses for the further development of personnel structures for academic staff at universities. Iterative calls with sufficient financial resources will help to establish the introduction of tenure-track structures and also to secure the maintenance of this new component in the university and research system for a certain period. The financial resources in a short-term research eco-system can, for example, be directed towards the creation of new positions in specific research projects, e.g. for PIs. They can as well be directed towards the creation of new positions that do explicitly benefit junior faculty members in institutions of higher education for teaching and research. Targeted financial means can support universities in filling these positions in a strategic manner and help the universities to strengthen their position in the international networks and become more attractive for high-potential young academic personnel.

For a long-term perspective, however, financing options through more institutional channels might be considered. From our perspective, this might include the endowment of the basic funding of the universities. Calls with a short-term orientation can have both a clearly determined purpose orientation in favour of the tenure-track programme and bring about a change in the culture of this part of the education system. Calls can thus be understood as a well-suited start-up funding, with the help of which a tenure-track programme emerges as a new component in the university system. A long-term vision might include core financing perspectives, though.

A long-term perspective might include changes in law. A big impact can be caused by a change in the legal regulation frameworks for the science sector and for institutions of higher education in Croatia. Here, it might be helpful to throw an eye on some changes in the legal frameworks in other countries. If tenure track may play a role, several aspects might be considered with regard to this framework:[12]

- The appointment of a tenure-track professor should be linked to the promise of subsequent appointment to a professorship of comparable denomination in a higher grade in the event of probation.
- The appointment is in each case subject to the positive evaluation of suitability, qualification and professional performance of the candidate.
- The subsequent appointment to a professorship depends on a positive evaluation of the professional performance of the candidate after a determinated lapse of time in order to

[12] This very short list of aspects that might be considered for the redaction of a legal framework for tenure track is inspired by the legislation of the state of Baden-Württemberg in Germany. See https://www.landesrecht-bw.de/jportal/portal/t/wpv/page/bsbawueprod.psml/action/portlets.jw.MainAction?p1=2d&eventSubmit_doNavigate=searchInSubtreeTOC&showdoccase=1&doc.hl=0&doc.id=jlr-HSchulGBWV26P51b&doc.part=S&toc.poskey=#focuspoint

guarantee productive feedback (e.g. midterm evaluations, interim evaluations, post-doctoral mentorships).

- The requirements (weighted criteria) for both the appointment and for a positive evaluation of the performance should explicitly be described in a quality assurance concept of the higher education institution and agreed with the official entity of the state (e.g. Ministry). The size and composition of a suitable expert commission should be an integral part of the concept; faculty members and external members might be part of the commission.
- Tenure-track lecturers and researchers may bear a specific designation that clearls assigns their role and/or employment as a state official or an employee under private law at the teaching and research institution.
- The positive evaluation of the professional performance will lead to a subsequent employment; if the evaluation is negative, the candidate can be given a prolongation of the contract only for one year, for example, to wrap up the results of his/her research.
- Neither the appointment of a junior professional nor the positive evaluation of the performance of a young professor needs to lead towards a senior position in research groups automatically and in each case; the promise of subsequent appointment can as well be adressing a senior lectureship or a professorship of a higher grade in the institution (tenure-track lectureship); the positive evaluation and probation must still be given in every case.

It is self-evident that these aspects cannot comprehensively reflect the needs and possibilities of the Croatian vision of a legal framework for tenure track. They must of course be adapted concisely and with diligent respect to the given conditions. They may be considered in the discussion, however, and be regarded as an impulse for the next steps in the ongoing development.

4. Annex

4.1. List of figures

4.2. List of abbreviations

BMBF ..... Federal Ministry for Education and Research
EPFL ..... Ecolé polytechnique fédérale de Lausanne
EU ..... European Union
HRZZ ..... Croatian Science Foundation
LERU ..... League of European Research Universities
MoSE ..... Ministry of Science and Education
MRDEUF ..... Ministry for Regional Development and EU Funds
PI ..... Principal Investigator
SDC ..... Swiss Agency for Development and Cooperation
TTPP ..... Tenure Track Pilot Programme

4.3. List of interviewees

National Coordination Unit (NCU) – Ministry for Regional Development and EU Funds:

Ms Ivona Martinuš, Senior Expert Adviser, Sector for EU programmes and international financial mechanisms

Intermediary Body (IB) – Ministry of Science and Education:

Ms Anita Šimić, Senior Advisor, Department for Preparation, Monitoring and Implementation of Scientific and Technological Policies

Ms Amalija Babić, Head of Sector for Scientific System and Technological Development

Executing Agency – Croatian Science Foundation (HRZZ):

Ms Jasminka Boljević, Head of the Department for International Programmes and Funds

Dr Dario Lečić, PhD, Research Grants Coordinator

Swiss Partner – École polytechnique fédérale de Lausanne:

Professor Olivier Küttel, PhD, Head of International affairs

Swiss Agency for Development and Cooperation (SDC):

Ms Debora Kern, Programme Manager (from 2020)

Principal Investigators :

- Dr Kosuke Nomura, Faculty of Science, project: Exotic Nuclear Structure and Dynamics
- Dr Helena Bilandžija, Ruđer Bošković Institute, project: Evolution in the Dark,
- Dr Lovro Palaversa, Ruđer Bošković Institute, project: Mining the Variable Sky

4.4. List of documents

Framework Agreement between the Swiss Federal Council and the Government of the Republic of Croatia concerning the Implementation of the Swiss-Croatian Cooperation Programme to Reduce Economic and Social Disparities within the Enlarged European Union, signed on 30 June 2015, https://www.swiss-cro.hr/en/about-the-programme/documents/

SDC Decision Letter on Final Project Proposal, including Project Document and Logframe

Project Agreement between SDC and MRDEUF on the Grant for the "Tenure Track Pilot Programme", signed on 14 March 2018, https://www.swiss-cro.hr/en/projects/promotion-of-tenure-track-model/

Collaboration Agreement between EPFL and HRZZ, signed on 28 March 2018

Project Implementation Agreement between NCU, MoSE and HRZZ (available only in Croatian)

Decision on the Establishment of the Steering Committee of 25 April 2018 and Decision on Amending the Decision

Call for Proposals TTP-2018-07 and Guidelines for Applicants

Annual and Interim reports for 2017, 2018, 2019 and 2020

Legislative framework:

THE ACT ON SCIENTIFIC ACTIVITY AND HIGHER EDUCATION - https://www.azvo.hr/images/stories/o_nama/Act_on_Scientific_Activity-UNOFFICIAL_TRANSLATION.pdf

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Mid-term Review of the project “Tenure Track Pilot Programme” in Croatia

Croatian Science Foundation (HRZZ)

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