ASTP
A World of
Knowledge
Transfer

ASTP 2020 Survey Report on Knowledge Transfer Activities in Europe

Financial Year 2018 data

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Foreword

ASTP is the pan-European association of Knowledge Transfer (KT) professionals. Our core missions are to share best practices and develop competences among KT professionals, as well as creating a better understanding of knowledge transfer resources, and activities. To this end, we have been preparing this Annual Survey Report which presents the latest data for Financial Year (FY) 2018. We hope that you will find the insights both interesting and useful at local and national levels, providing a unique European view.

This Annual Survey Report draws on data from 512 Knowledge Transfer Offices (KTOs) across 27 countries for FY2018. ASTP has been collecting and analysing data for many years now, greatly supported by collaborating National Associations (NAs), in particular we offer grateful thanks to the Danish Universities Denmark, French Réseau C.U.R.I.E, Hungarian network, ETTF Irish KTI, Italian Netval, Spanish RedOTRI, and UK Research England. ASTP's National Associations Advisory Committee (NAAC) continues to actively promote direct participation in the ASTP survey by their members. While some run their own national surveys using core ASTP survey questions, others with independent longstanding national surveys work closely with the Survey Committee and provide data from their national survey.

By bringing together the NA datasets with the data of individual KTOs that responded to the ASTP survey, this report aims to provide insight into the broad range of KT activities. In this year's report, we complement the overview of the KT landscape with reports, tools, and outputs from other international organisations on specific aspects that are related to KT (see Chapter 5).

Metrics harmonisation remains an important issue. The KT Metrics Harmonisation Report[1] of the Expert Group jointly run by the Joint Research Centre (JRC) and ASTP published its findings in 2020 (see Chapter 4). The work continues through 2020/21 on this challenging topic, with the ultimate objective to enable better quality data and improve understanding and insights on the KT landscape.

KT aims to maximise the economic and societal benefits of ideas, knowledge or inventions coming from research activities. It has increasingly become evident that context within which KT activities take place is critical and needs to be taken into consideration when dealing with metrics and impacts[2]. Consequently, approaches such as the impact stories flagged in Chapter 3 will be included in more detail in the ASTP Digital Resources Library[3].

As our Annual ASTP Survey continues to evolve - with increasing volumes of data, novel analysis approaches and new ways to share findings- we look forward to continued collaboration with all of you and welcome yet more suggestions and insights into this fascinating field. As we move forward, the Survey Committee has been restructured to enable volunteers to work in agile teams, building on ASTP's longstanding experience in gathering and analysing transnational KT data, towards a joint goal: creating a resource for the KT community that gives a sense of the breadth and scale of its activities.

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[1] Link to the KT Metrics Harmonisation Report: https://ec.europa.eu/jrc/en/publication/knowledge-transfer-metrics-towards-european-wide-set-harmonised-indicators

[2] Kreiling, L., Scanlan, J. (2020) "A European clustering study with Knowledge Transfer Office DNA", International Journal of Intellectual Property Management. Available at: https://doi.org/10.1504/IJIPM.2020.10030658

[3] Link to ASTP Digital Resources Library: https://www.astp4kt.eu/resources

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1. Introduction

Knowledge Transfer is something we have been engaged in for many years, but when it comes to understanding, measuring and reporting on the activities, there remains no single approach. For many years, the ASTP surveys have been refining the type of data gathered to reflect a picture of the range of activities and outputs across our broad geography. We do understand that the relationship between research activities and their translation to application and utilisation in the outside world - the impact of research results - is strengthened and expanded as a result of knowledge and technology transfer, not only for commerce, services and economy but also on health, policy, law as well as arts and culture. The purpose of this report is to provide an overview of the KT landscape at a pan-European level. It continues the tradition of past ASTP Survey Reports in that it presents the latest metrics and performance indicators of the KT field, now using the latest data available from FY2018.

The report draws on the largest dataset ever available with 512 respondent KTOs from 27 countries, both within the European Union and beyond, with their full geographical scope featured on pages 8 and 9. Annually, we in the ASTP Survey Committee, bring together and analyse data collected from two different sources: (1) data provided by individual Knowledge Transfer Offices (KTOs) who submitted their answers directly through our online questionnaire (2) data from National Associations that conducted their own national survey and kindly shared their compatible data with ASTP. Chapter 3 presents this dataset, focusing on the characteristics of KTOs (section 3.1.), Intellectual Property (section 3.2.), Agreements with Industry (section 3.3.), Commercial Contracts (section 3.4.), Commercial Revenue from IP (section 3.5.), Spin-offs and Start-ups (section 3.5.).

By analysing the number of respondents per question, we see that the most common metrics available and collected at KTO level are invention disclosures (n=479), licence agreements (n=577), gross revenue from IP (n=431), the number of spin-offs (n=455) and start-ups (n=369).

In response to the submission of impact stories as part of the Survey, we have referenced a few in Chapter 3 to illustrate some of the activities of the KTOs, but as we further develop the online digital resources by members, we continue to work with those interested KTOs to make their stories available.

ASTP has also been engaging in wider global discussion with peer associations around the world to understand better how the challenges of measuring and understanding KT activities is being promoted elsewhere. Starting in 2018, this global KT community began a process of drawing up a single document which aims to capture the key elements of a “definition” of knowledge transfer, showing the range of activities, and importantly the skills and types of roles carried out by professionals in this whole process. The definition may provide a useful reference point for the continued development of systems to identify data and other analyses which can be undertaken to further deepen our mutual understanding of the roles, challenges and output of knowledge transfer activities.

When collecting KT data on a pan-European level, we have to overcome several challenges namely the varying response rates, data harmonisation and standardisation. One of the most critical contextual issues which remains a challenge is lack of data around the relationship between volumes of research output of an institution alongside the resources available to support the knowledge transfer activities to drive translation of useful outputs. Continued collaborative working, with additional experts in the field of data gathering, is an ASTP goal as we continue to seek to address all such challenges; to enhance the quality of our survey.

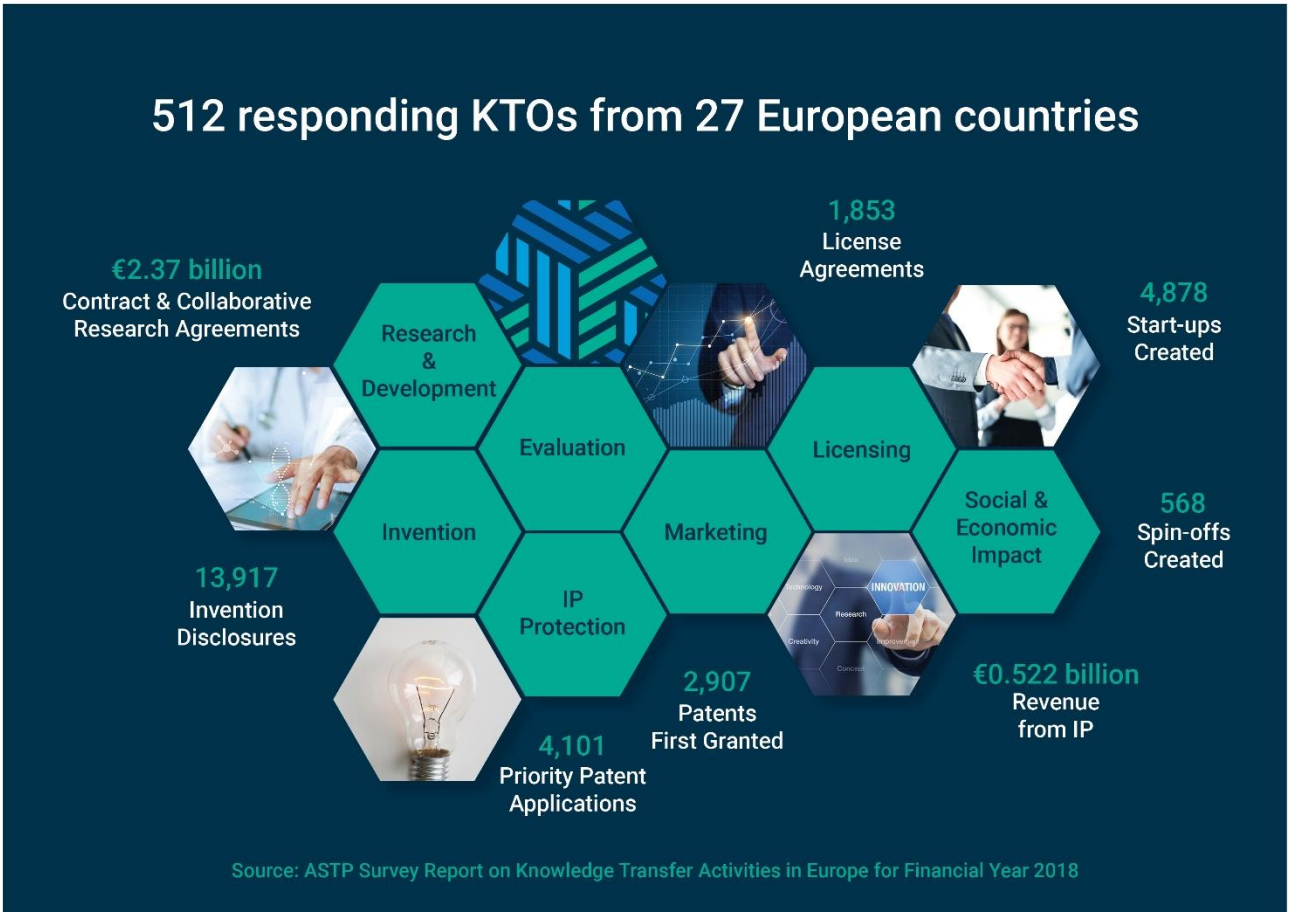


Figure 1: Overview of Survey Main Outputs and Findings

2. Survey Methodology

2.1. The FY2018 Survey

The survey consists of 27 questions. Excluding those questions pertaining to the name, contact details and whether the responding KTO agrees to share any data with a possible national transfer association, this leaves 24 questions relating to the activity of the KTO, including key parameters of the PRO(s) the KTO is serving. By comparison, the previous survey on the FY2017 data contained 23 such questions.

Seventeen of those content-related questions were exactly the same as in last year's report. One question (previously addressing the number of IP agreements) was essentially split into two questions (one relating to IP license agreements, the second covering other IP-related agreements) thus explaining the increase from 23 to 24 questions. The reason for doing so was to design the questionnaire in line with the structure of datasets from NAs. Three questions were modified only slightly. In two of those, the definition/spectrum of contract partners was slightly broadened (from 'industry' and 'for-profit parties' to 'non-academic partners'). In the third question, a more comprehensive list of potential activities of KTO-staff was included. Furthermore, rather than collecting data on total FTEs per activity as in previous years, the current questionnaire asked the proportion of the total FTEs allocated for the respective activity. Again, all these modifications were introduced to better align the structure of datasets obtained by using the ASTP questionnaire with those obtained in respective national surveys. Two questions have been replaced. The previous questions were aimed at obtaining an overview about which parameters KTOs are using/regarding as useful for assessing the impact of their activities. Now, as the concept of ´impact´ has become better established in KT, the present questionnaire was aimed at identifying specific successful impact stories.

2.2. Data Collection

Data collection started on 4 December 2019 and closed initially on 16 February 2020. At the request of a number of contributing KTOs, it was extended until 7 March 2020.

2.2.1. Respondents

ASTP collected FY2018 datasets from a total of 512 KTOs from 27 European countries. The datasets originate from two kinds of sources:

- KTOs that participated in the ASTP FY2018 survey which was sent to ASTP KTO members as well as individual KTOs in the ASTP database.
- NAs provided data that they collected by running national surveys. Care was taken to only include data that was compatible with ASTP's survey questions and definitions.

The 512 KTO datasets marks an all-time high and continues the trend from previous years of increasing number of KTOs covered in this survey (with the number for the FY2017 survey being 475). The majority of these datasets (414 out of the 512 mentioned above) were obtained via surveys conducted by NAs.

2.2.2. Data Received from Individual Knowledge Transfer Offices

Data from 98 individual KTOs were directly submitted to the online ASTP Survey. Just as in previous years, there was no obligation to answer all questions and indeed in many cases (see specific tables below for further details) various questions remained unanswered. Based on results from last years´ studies, this may be because data were either confidential, not compatible with the definitions on which the survey was based or, probably in most cases, because the specific data were not tracked by the KTO.

2.2.3. Data Received from National Associations

The majority of data (81%) were obtained from NAs. As in the last year, this survey has adopted data either shared or published by the respective NAs of Denmark ("Universities Denmark"), Ireland ("KTI"), Italy ("Netval"), France ("Réseau C.U.R.I.E."), Spain ("RedOTRI"), Switzerland ("swiTT") and "Research England" in the United Kingdom. In addition, now, for the first time, also the Hungarian NA ETTF contributed to the survey.

Unfortunately, although progress has been made with respect to harmonising the questionnaires and definitions of respective terms between the ASTP and some NAs, some incompatibility still exists. Thus, in some cases substantial parts of the datasets received from NAs had to be disregarded due to incompatibility (for example, we have not been able to include the UK license data this year). We encourage our partners to compare and ideally harmonise their own questionnaires to allow for an integration of their data in a broader European context. To work towards this ambitious goal, ASTP teamed up with the KT Competence Centre of the European Commission and the results are part of the ongoing collaboration, reporting on the Metrics in early 2020, more fully described in Chapter 4 (below).

2.2.4. Response Rates

The absolute number of responses per country for the past four years is presented in the table below. It clearly shows that even though the number of responses varies considerably from country to country, the participation remains quite stable for most countries. The consistent increase in the total number of responses shows an appetite to be part of the KT metric landscape and its growing importance across Europe.

Country	FY2018	FY2017	FY2016	FY2015
	2020 (n = 512)	2019 (n = 475)	2018 (n=474)	2017 (n=419)
United Kingdom*	165	166	162	160
Spain*	71	71	69	70
France*	64	52	58	0
Italy*	62	55	61	62
Ireland*	25	27	24	25
Germany	21	12	18	18
Denmark*	13	14	10	10
Poland	15	10	9	8
Switzerland	12	13	2	17
Netherlands	10	8	13	9
Czech Republic	10	5	8	1
Belgium	9	9	8	7
Norway	7	4	3	8
Hungary*	6	5	4	3
Austria	4	2	3	3
Sweden	3	4	4	7
Finland	2	6	5	3
Lithuania	2	3	4	0
Turkey	2	2	3	0
Croatia	2	1	0	1
Portugal	1	2	1	2
Slovak Republic	1	1	1	3
Luxembourg	1	1	1	1
Serbia	1	0	1	1
Estonia	1	0	0	0
Greece	1	0	0	0
Malta	1	0	1	0

Table 1: Overview of ASTP Survey response rates FY2018, 2017, 2016 and 2015

The number of responses per country, as shown in Table 1, is estimated to represent a fair proportion of KT activities for most countries in which KTOs responded to the ASTP FY2018 survey. Note that those indicated with an asterisk are NA datasets. To shed more light on the responses by countries, we calculated the relative response rates based on the number of KTOs that we contacted in respective countries (Figure 2).

Figure 2: Relative survey response rates across Europe

Figure 2 provides a geographic overview of the relative participation by country. The relative response rates per country have been calculated based on the number of KTOs that ASTP invited to participate in the survey in each country. The response rate for countries with no KTO participation is 0% and shown in white.

2.3. Data Quality

Data cleaning was performed during the creation of the database which involved the incremental inclusion of information from various sources, starting with the primary data from the ASTP FY2018 Survey and the addition of secondary data from the NAs, as described above.

Initially, extreme outliers that were considered potentially erratic were flagged up in the FY2018 database. To aid this process, several cross-checks were implemented, e.g. via the calculation of ratios such as the research budget (Euro/FTE research staff). The premise for using such ratios as a tool for data checking is that – within any given country (but not between countries) – the average cost of research on an FTE basis can be expected to fall within a limited range, assuming that salary costs are by far the largest factor determining research budgets. If the research budget divided by the number of research FTE, were lower than what could be considered a reasonable gross salary in the respective country, then the research budget and the FTE research data would be flagged up as doubtful and removed.

Next, if possible, outlier data were followed up for confirmation/correction via phone or email with the person who submitted the data. If no (satisfactory) response was obtained, the outlier data was rejected, deleted from the database, and thus excluded from the data analysis. A total of 15 data outlier cases were formally followed up with the respective points of contacts.

Where mistakes in data entry were obvious, such data was corrected without consultation with the respective KTO. Double entries (where the KTO in question had responded directly to the ASTP Survey but also indirectly contributed data to the Survey Database, via e.g. an NA) were removed. In such cases, the most complete dataset of the two (invariably the one that was submitted by the KTO directly) was retained.

It is not uncommon in empirical databases that values for variables are missing. As indicated above, reasons comprise non-availability, confidentiality or incompatibility of data. It is important to note the total number of respondents for each question (indicated with 'n') varies and is indicated for each statistic.

3. Data presentation

The data received for FY2018 is presented in the following sections under a number of different subject headings. Emphasis has been placed on presenting it in a similar way to the previous report in order to better allow a comparison of data and identification of possible trends.

In the 512 datasets, not all respondents provided data for all of the questions in our questionnaire. This is why there is a different number of responses for each question. The actual number of respondents is shown in the sample size for a particular question, indicated with 'n=' in each graph. Since the volume and identity of responding KTOs is different from year to year, a direct comparison between the data presented in this report and that of last year's (or any previous year for that matter) is therefore not very meaningful but may identify general trends.

3.1. Knowledge Transfer Offices

This section presents data on the KTOs themselves (without considering the size of the organisation(s) the KTO is serving) focusing on staffing levels (including respective staffing levels for various typical core KTO functions) and budget as well as the number of PROs the KTO is serving and research expenditure/research FTE of respective PRO(s)).

In terms of the number of FTEs employed at an individual KTO, Figure 3 (below) shows most KTOs responding to this question (n= 316) fall between 3 and 25 FTEs. In more detail, 71 KTOs (=22%) employ between 2 to 5 FTE, a similar number 72 (thus 23%) employ between 5 to 10 FTE and a somewhat higher number (87, thus 28%) employ between 10 to 25 FTEs. A sizeable number of KTOs are larger with 31 (=10%) comprising between 25 and 50 FTE with a further 12 of those 316 (=4%) being even larger.

At the other end of the spectrum are 43 small KTOs (14%) with up to two FTE. When comparing this category of the smallest KTOs with last year's report it is noted that, the limits were slightly adjusted so that the data of the present study better aligns with those of some National Associations. In last year's report: 0 to < 2 FTE, present report: 0-2 FTE. This change is mostly responsible for an increase of the proportion of this category from 10% (previous report) to 14% (present survey).

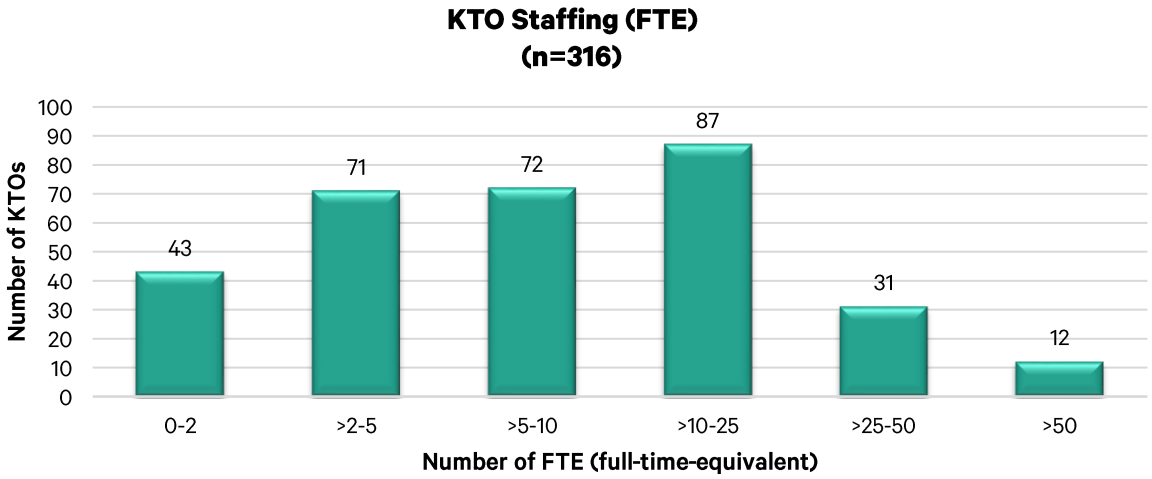


Figure 3: Distribution of KTO staffing levels in FTEs

To gain more insight into the activities of KTOs, we asked respondents to provide data on the share of the total FTEs within the KTO within the KTO that are engaged in one of the following activities:

- Research support, including handling of MTAs, CDAs, Collaborative Research Agreements etc.
- Commercialisation activities, including IP protection and commercialisation, licensing, and consultancy agreements.
- Supporting entrepreneurship activities at PRO(s) including training, business planning and incubation.

- Business development including industry liaison.
- Other activities.

As noted in section 2.1, in contrast to previous years, the present survey aimed at determining the proportion of FTEs (rather than the absolute number of FTEs) involved in the respective activity. The proportion of the activities a) to d) across the spectrum of KTOs providing data regarding any of such activity is given in Figures 4 to 7.

The total number of KTOs responding to any of these questions was much less than the number of 316 KTOs providing data on overall staffing level, with the highest number of KTOs submitting data regarding their activities pertaining to research support (167), commercialisation (167) and entrepreneurship support (167). However, only 100 KTOs submitted data on business development activities. One assumption for the lower number of KTOs providing data on the latter question might be that KTOs may have found it more difficult to answer this question.

A note regarding groups of KTOs providing data pertaining to their activities in the fields of research support or commercialisation or entrepreneurship: Although the list of respondents is largely overlapping and of the same length, they are nonetheless not identical.

The distribution of the proportion of FTEs dedicated to dealing with research agreements is given in Figure 4. The proportion of this activity varied significantly across the spectrum of 167 respondents. Nearly half (43%, total number: 73) stated that of the five fields of activities listed in the questionnaire roughly a fifth of (between 10 and 30%) was spent thereon. In 17% of the respondents (total number: 29%) this activity made up a share of only 10% or less of their work. However, for 18 of them (11%) providing research support occupied at least half of their FTE-capacity, thus making this service their prime activity. Seven of said KTOs (4% of all respondents) spent even 60% or more of their FTE-resources on this activity.

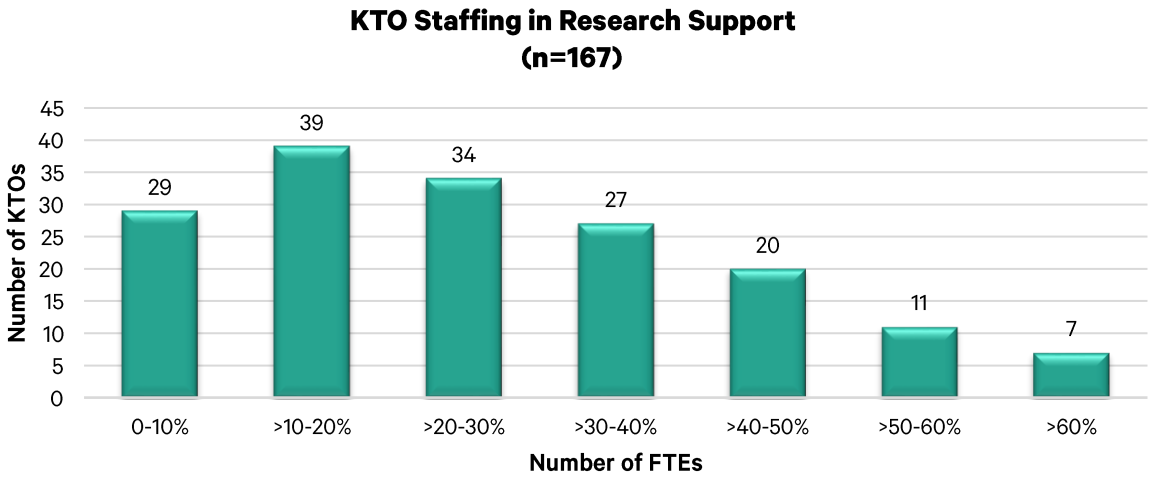


Figure 4: Distribution of KTO research agreement staffing levels in FTEs

Figure 5 indicates how much FTE effort in the responding KTOs worked on commercialisation activities. Notably, although a core activity of technology transfer, the variability among the responding KTOs is even higher than for the previous question. Half of the aforementioned KTOs (83 of 163) spent less than 20% of their FTEs on this activity, more than a quarter (44/167) even less than 10%. 27 of the respondents (=16%) spent between 20 and 30% of their FTEs and 24 of them (=14%) between 30 and 40% of their FTEs there on. The percentages decrease further with regard to KTOs spending either between 40 and 50% (7/167, thus 4%) or between 50 and 60% (9/167, thus 5/167) of their FTE resources on commercialisation. However, this leaves another 17 KTOs (=10%) allocating more than 60% of their FTEs to commercialisation. Thus, a small proportion of responding KTOs not only seem to place a high emphasis on commercialisation but also have the ability to channel most of their resources into these activities.

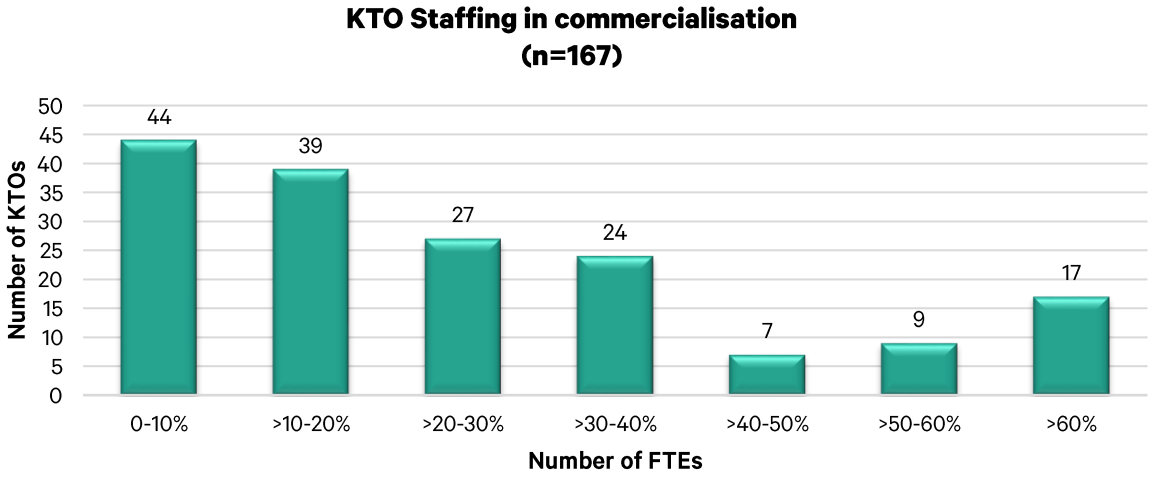


Figure 5: Distribution of KTO commercialisation staffing levels in FTEs

Figure 6 illustrates how much FTEs are deployed in supporting entrepreneurship within the group of responding KTOs.

In contrast to the two fields of activities discussed above, supporting entrepreneurship mostly seems to be limited to only a portion of the KTOs. Indeed, more than half (87/167) of said KTOs were either not at all involved in this activity or spend only up to 10% of their FTEs on this service. The number of KTOs spending 10-20% of FTEs thereon was 43 (=26%) and of those spending between 20-30% (21, thus 13% of respondents), between 30 and 40% (7, thus 10% of KTOs) and between 40 and 50% (5, thus 3% thereof) further declining. Only a tiny fraction of 3 KTOs (=2%) placed more than 50% of their FTEs into on this activity, which is a number significantly smaller than the number of KTOs mostly focusing on research support or commercialisation.

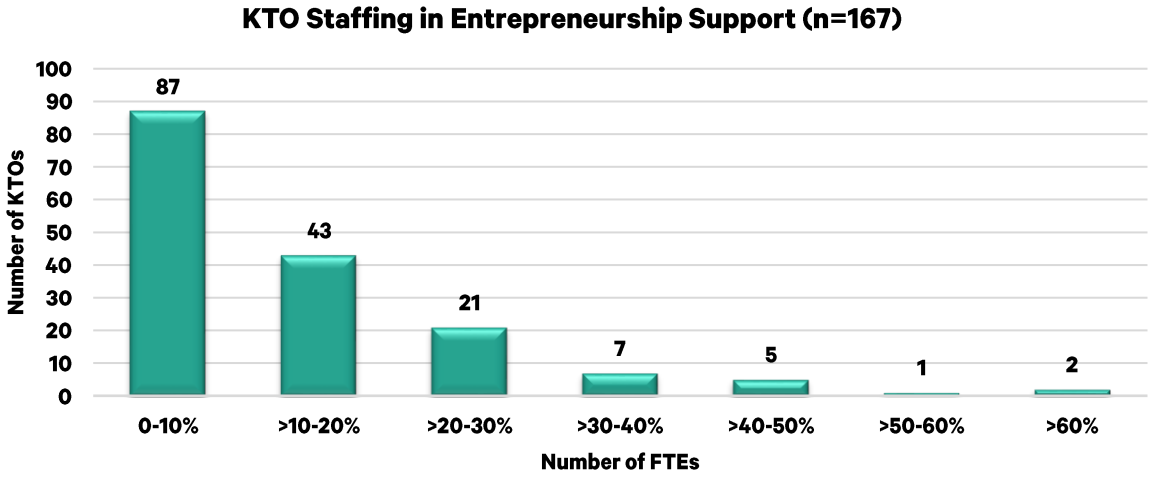


Figure 6: Distribution of KTO entrepreneurship support staffing levels in FTEs

As shown in Figure 7 for most of the 100 KTOs providing data on this activity, business development plays only a minor role. 36% of those KTO spend less than 10% of their FTEs on business development activities as defined herein. The total proportion of responding KTOs spending at the most 20% of their activities in this field is 65%. The total proportion of KTOs spending up to 30% hereon adds up to even 85%, of those allocating between none and 40% in sum is even 95%. None of the responding KTOs spend more than half of their resources on this activity.

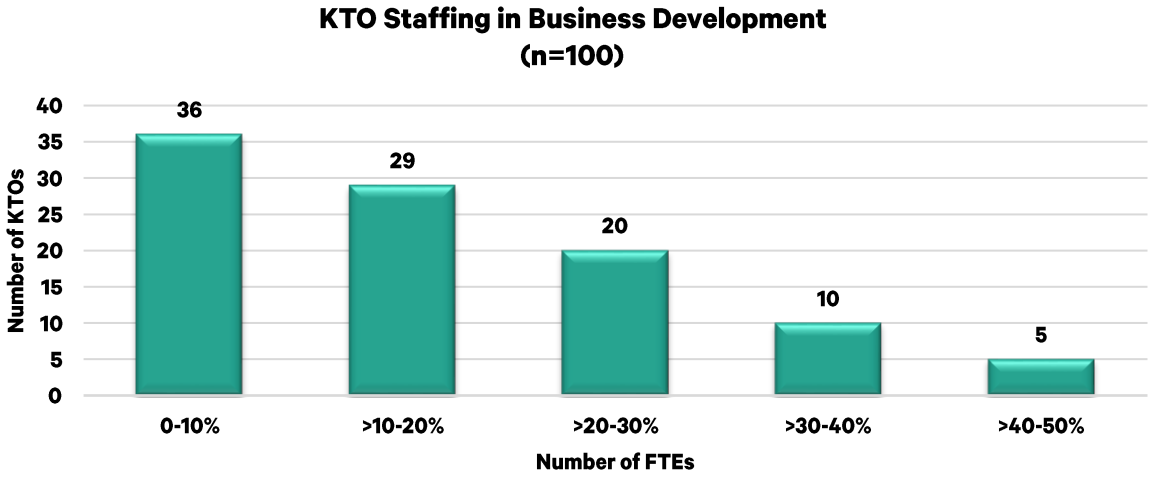


Figure 7: Distribution of KTO business development staffing levels in FTEs

Overall, of the five different fields of activities listed in the questionnaire, the total proportion of FTE tasked with commercialisation activities is highest with 31% (see Figure 8), with the proportion of FTEs spent on research support being second (24%). Pooling the data, the different KTOs shows that overall a similar proportion of FTEs is spent on business development, entrepreneurship support and other activities (15% each).

This analysis however is only based on the data from those KTOs that submitted data on all five fields of activity as listed in the questionnaire.

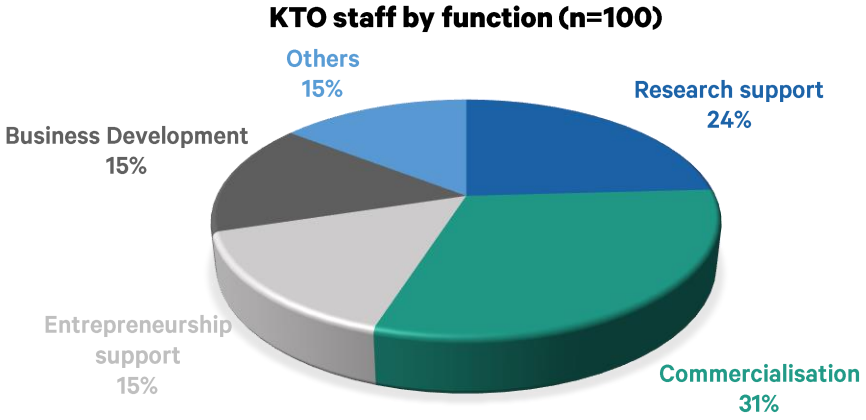


Figure 8: Distribution of KTO staff across major KTO functions

Furthermore, data was collected with respect to the number of PRO(s) the respective KTOs are serving.

Most KTOs serve a single PRO (83%) and some KTOs report data for multiple PROs, with a few (4 of those, thus 4%) operating on behalf of several 10's of research institutions (Figure 9). This latter group includes KTOs from Germany, Norway and Serbia. However, it is noted that the total number of responses to this question is only 104.

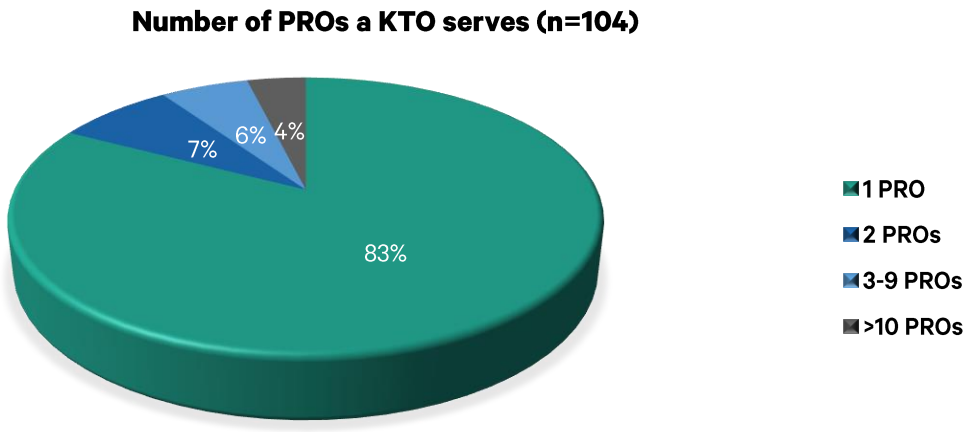


Figure 9: Distribution of the number of PROs that a KTO serves

In order to normalise for organisation size and perform some analysis on the metrics, we asked KTOs to provide us with two metrics for the PROs that they serve: the PRO Research Expenditure and the PRO Research Effort expressed in FTE. The distribution of PROs Research Expenditure and PROs Research Effort (FTE) is given in the following two graphs (Figures 10 and 11), including the cumulated data provided by KTOs which serve several PROs.

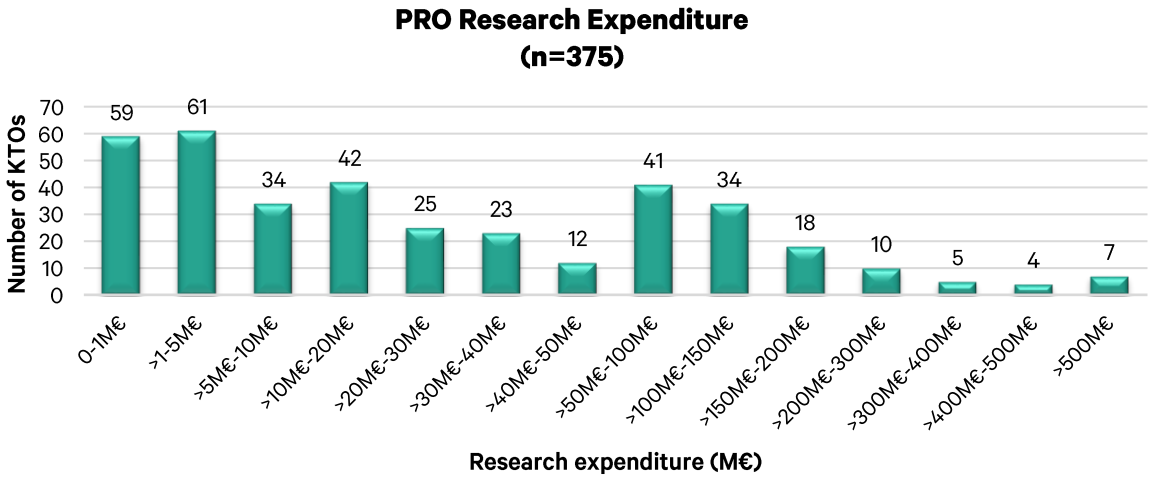


Figure 10: Distribution of PRO research expenditure

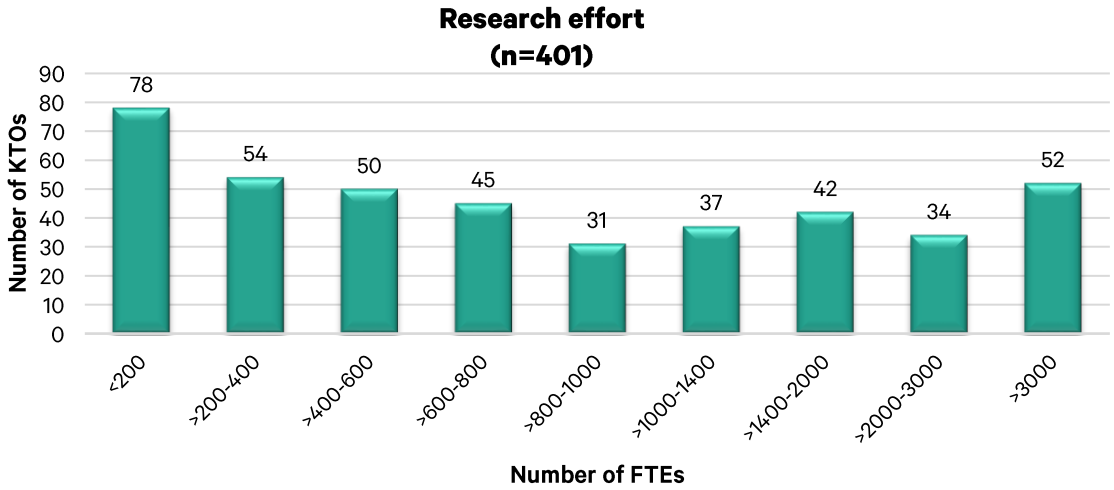


Figure 11: Distribution of PRO research effort in FTEs

The last topic of interest regarding the KTOs themselves is the amount spent by the KTO (and/or the PRO) on IP protection (Figure 12). Though a small minority (13/208, thus 6%) of the KTOs have not spent any money on IP protection, most offices report spending at least some money on this, with around 45% of offices having spent a minimal amount of up to 50k€ on IP protection in FY2018. However, there are also 8 KTOs which have spent more than 1m€, 4 of those even more than 2m€ on this issue.

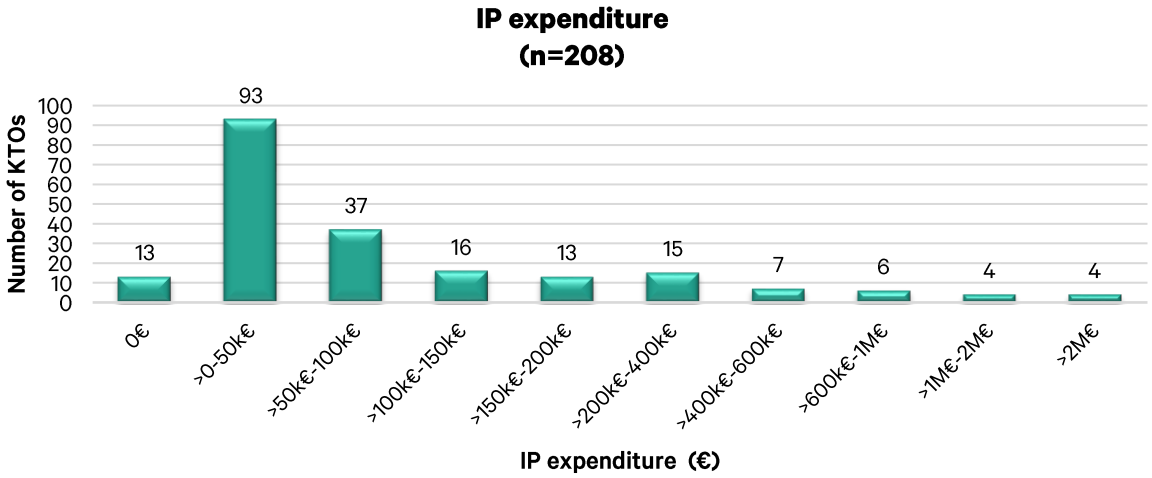


Figure 12: Distribution of out-of-pocket intellectual property protection costs

3.2. Intellectual Property (IP)

IP management has always been a core activity of KTOs, as it provides the basis for the commercialisation of research results. The output of the IP management activity are not only quantitative indicators, but may also refer to the strategic focus of the PRO in terms of KT. The present section provides an overview of IP activities of the respondent KTOs.

Table 2 shows the total reported number of invention disclosures, priority patent applications and patents first granted to KTOs in FY2018[4]. It is worth noting that the number of valid responses varies across the three categories: while most KTOs report on invention disclosures, significantly fewer do so on priority patent filings (mainly due to the fact that the definition of priority patent applications used in some of the datasets from National Associations is not compatible with the definition used in the ASTP Survey). The number of KTOs reporting patents first granted has more than doubled since last year, reflecting 50% of the total respondents in the present period. The main reason behind the increase is the fact, that this year two National Associations (Spain, Italy) provided data for this question, who had not done it previously.

The total number of invention disclosures has slightly increased (+12%) comparing to the data presented in FY2017. The total number of priority patent applications is also significantly higher (+21%) this year. However even taking account of the increase in reporting KTOs from 452 to 479, we see that the average number of IDFs has also increased from 27 to 29, indicating a slight trend in increasing disclosure rates.

There is significant overlapping between respondents providing data for the number of priority patent applications and the number of active patent families, which is not surprising, since these indicators relate to the very same activities.

[4] See Appendix 2 for the definitions in the survey for questions 15, 16 and 17 respectively.

KTO's IP Activities	No. of responding KTOs (n)	Total
No. of invention disclosures	479	13,917
No. of priority patent applications	319	4,101
No. of patents first granted	258	2,907
No. of active patent families	293	30,685
No. of licensed or optioned Patent families	134	3,302

Table 2: Total number of KTO's Intellectual Property Activities

We can see from Figure 13, that 24% of KTOs reported not receiving invention disclosures at all during FY2018. The background analysis shows that most of these are active in the fields of Arts, Humanities, Business and Social Sciences (non-technological fields). Compared to FY2017, the pattern of the graph is largely similar, and the distribution has not changed significantly: one quarter of the respondents received up to 10 invention disclosures, 15% of them received more than 50 disclosures and 39 KTOs received more than 90.

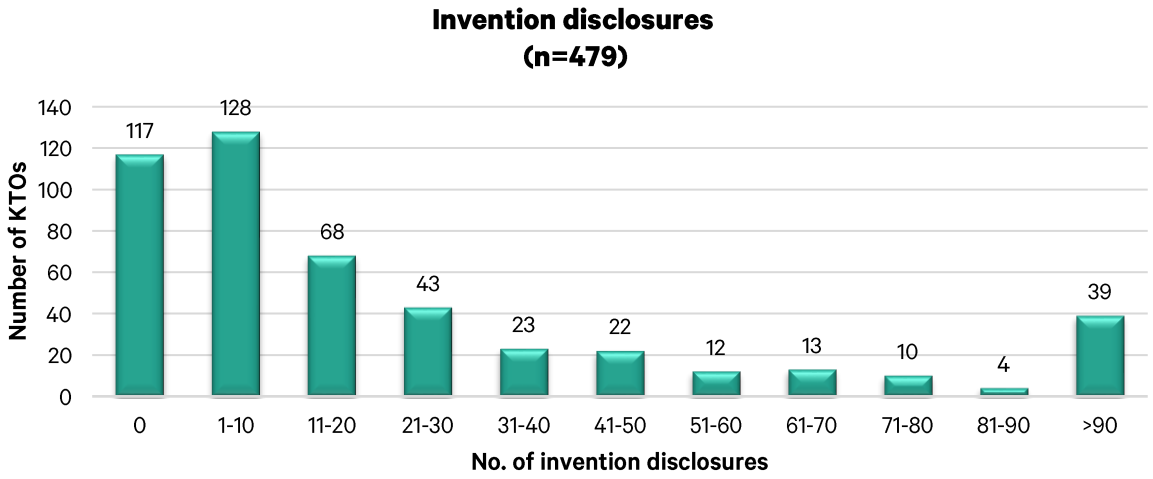


Figure 13: Distribution of the number of invention disclosures

In terms of the number of priority patent application per KTO, the absolute number of responses is lower than for invention disclosures. This is partially explained by the fact that no compatible data on this metric was available from the UK dataset. It has a different definition for this indicator, including all Patent Cooperation Treaty (PCT) applications in the number of new patent applications.

Out of the 319 respondents, 20% reported not filling a priority patent application in FY2018. Slightly less than half (45%) of the KTOs reported to have filed between 1-10 patent applications, which is considerably less, than last year (-16%). More than one quarter of the respondents filed between 11-50 priority patent applications (28%) and only a relatively small number filed more than 50(5%).

Compared to the FY2017 report, Figure 14 shows a similar pattern, however there is a significant increase in the zero group: the number of respondents not receiving any invention disclosures at all, has increased by 25%. This may be explained by a lack of continuity among responding KTOs that took part in our survey.

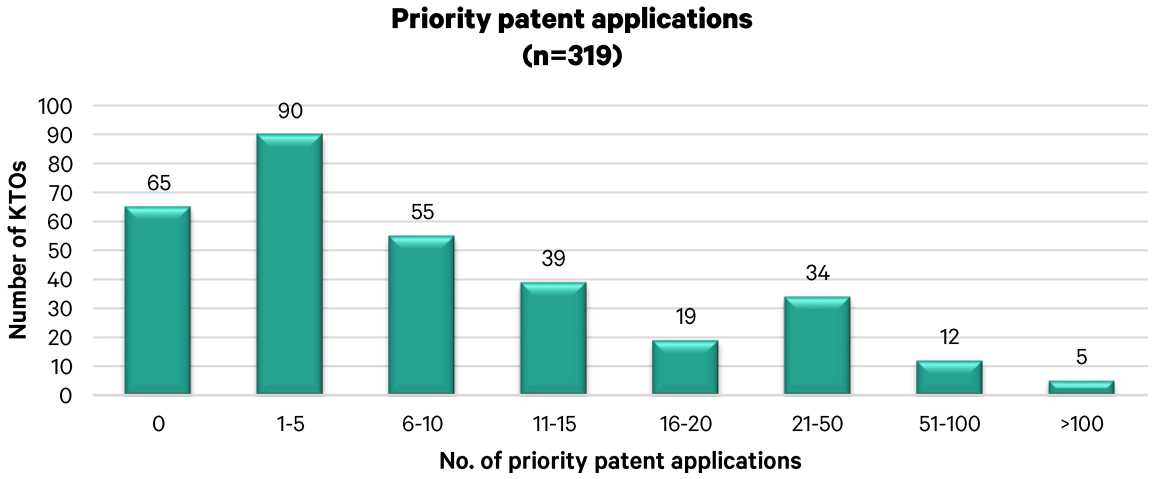


Figure 14: Distribution of the number of priority patent applications

Figure 15 shows the number of patents first granted per KTO in FY2018. It is immediately clear that most respondents (33%) reported between 1-5 patents granted in that year. Although the number of respondents doubled, the distribution pattern did significantly change year-on-year. Just as in the previous periods, only a few KTOs reported to have been granted over 50 patents in FY2018.

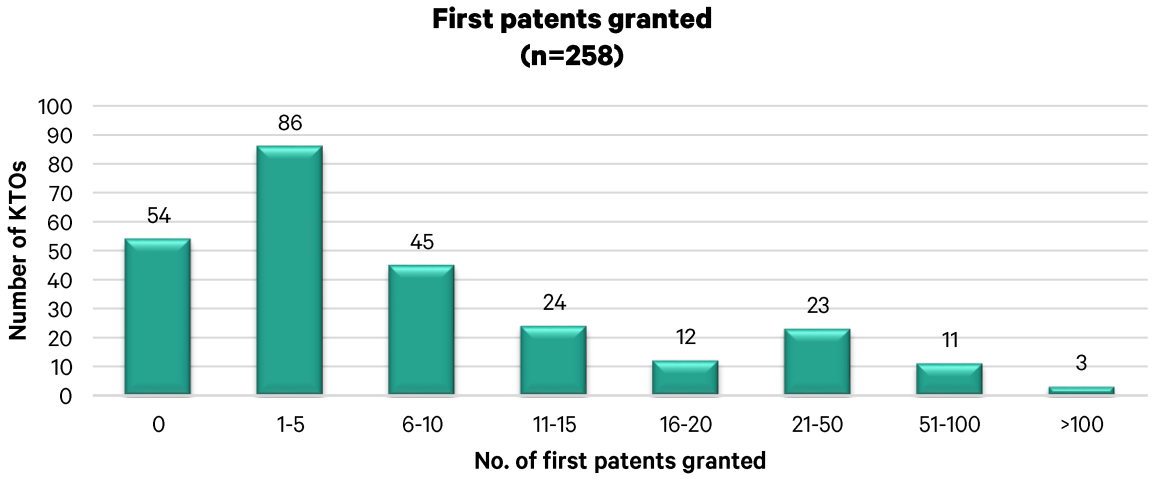


Figure 15: Distribution of the number of first patents granted

Figure 16 shows the number of active patent families in the KTO's portfolio at the end of FY2018. A total of 293 KTOs reported 30,685 active patent families. Compared to the FY2017 report, there is a significant increase in the number of respondents (+40%) and in the number of total reported active patent families (+50%). The explanation for this increase is the fact, that some of the National Associations provided data for this question this year, who had not done so previously.

Alongside this upward trend, the distribution pattern has also significantly changed from last year's as the graph shows a significant shift from the mid-range towards the higher ranges: the ratio of respondents reporting between 11-100 has significantly dropped (41% to 12%), while there is an increase (+60%) in the ratio of respondents having a portfolio consisting of above 201 patent families.

Furthermore, our findings suggest that 16% of the reporting KTOs have 1-10 active patent families and a relatively small fraction (13%) of the respondents reported zero active patent families.

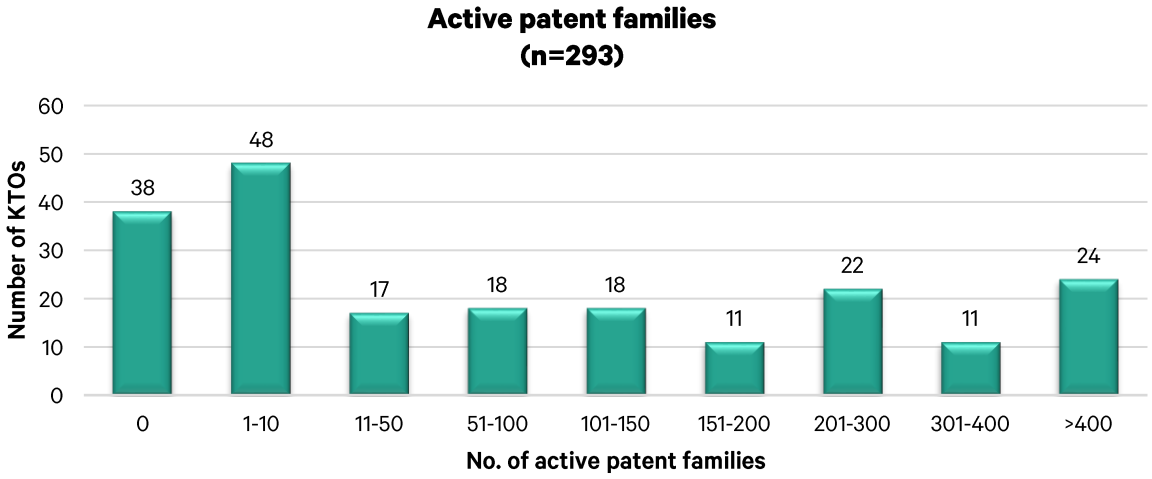


Figure 16: Distribution of the number of active patent families across KTOs' portfolio

The following graph in Figure 17 shows the percentage of patent families per KTO licensed or optioned by the end of FY2018, showing the cumulative licensing activity until the end of 2018 (and not only the activity that took place in 2018). The number of responding KTOs is significantly lower than for the active patent families, since no compatible data on this metric was available from some of the national datasets.

Nearly one fourth of the responding KTOs has a patent portfolio with no license nor option. A significant fraction (44%) of the responding KTOs has licensed or optioned up to 20% of the patent families in their portfolio. A closer look at the dataset reveals that there is no correlation between the size of the patent portfolio and the fraction of licensed or optioned patents. However, the percentage of licensed and optioned patents is likely to be higher for established IP portfolio as compared to rather "young" portfolios of entities just starting to build up an IP portfolio. Only 8% of the KTOs (n=11) reported having more than 50% of their portfolio licensed or optioned. Compared to FY2017, not only the distribution of the pattern, but even the numbers/buckets are more or less the same.

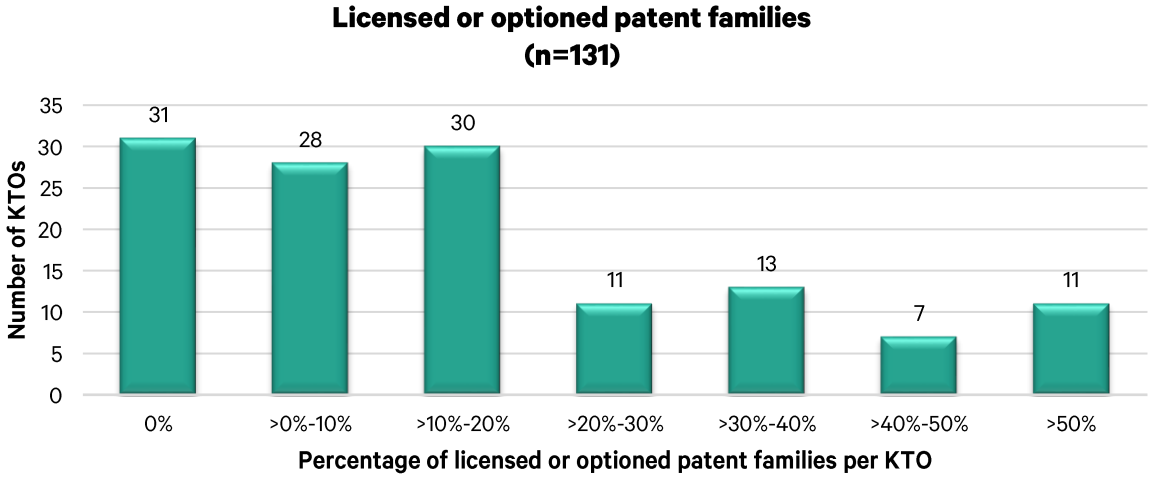


Figure 17: Distribution of the percentage of patent families in portfolio that are licensed or optioned

The final graph in this section demonstrates the overall ratio of commercialised patent families: slightly less than a quarter (22%) of the total number of active patent families reported by 131 KTOs were licensed or optioned by the end of FY2018 (3,302 out of 15,334).

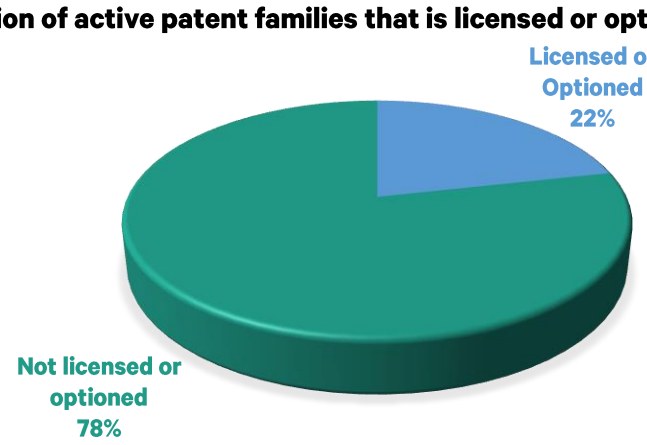


Figure 18: Percentage of patent families that are active at the end of FY2018 and are licensed or optioned

At this point it is worth noting, that the European Patent Office (EPO) has published a study on the effectiveness of commercial exploitation of European patents at universities and public research organisations in November, 2020[5]. A major finding of this study is that 36% of granted or pending European patent applications filed by universities and PROs are already actively exploited. The difference between our finding and EPO's finding is not very significant and can be explained by the fact, that the EPO has focused only on European patents, while ASTP survey covers patents outside Europe, which may be harder to commercialise for a European KTO. A fuller overview of this EPO study is described in Chapter 4 (below).

Impact Story: Belgian Patent license deal in the Spotlight by Université de Liège - Interface Enterprises

The TVT-O is a surgery device to solve incontinency problems in women. A professor at the university hospital in Liège developed this device to simplify the surgery protocol avoiding a stay at the hospital and decreasing risk of complications. A first set of prototypes were produced by a local med tech company, Mediline, to carry out a 100-patient study. Two different patents were filed by the KTO of Liege, and contacts were taken with large companies focused on female health. Finally, a licence was signed with Gynacare, a J&J company, and the production line was developed in Mediline, who is the provider of Gynacare. Today, more than one million women worldwide have been operated on using the TVT-O device, hundreds of physicians have been trained at the CHU Liège, and royalties came back to the university.

3.3. Agreements with Industry

In FY2018, European KTOs reported that a combined total of 170,764 agreements with industry have been concluded. A breakdown of these number across different industry agreement types are given in Table 3.

New industry agreements	No. of responding KTOs (n)	Total
Contract Research Agreements	354	35,341
Collaborative Research Agreements	195	8,619
Consultancy Agreements	342	126,804

Table 3: Overview of the number of contract research, collaborative research and consultancy agreements

[5] Link to EPO's published study on the effectiveness of commercial exploitation of European patents at universities and public research organisations: https://www.epo.org/news-events/news/2020/20201124.html

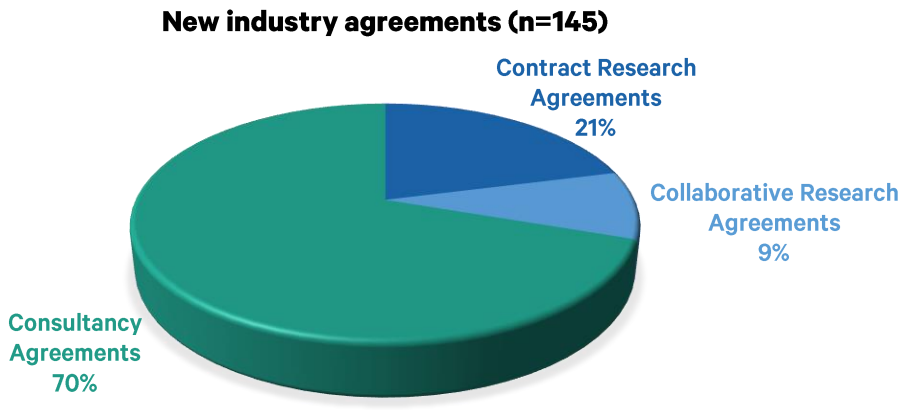


Figure 19: Percentage of new industry agreements signed in FY2018

As this report has shown in the past few years, consultancy agreements are the most frequent form of engagement between academia and industry, with this year's overview in Figure 19 showing numerically 70% of industry agreements falling under this category. Least numerous (around 9%) are Collaborative Research Agreements and Contract Research Agreements representing the remaining 21%. The variation in numbers from last year's survey shows a significant upswing in the number of consultancies while the number of Contract Research Agreements has fallen from 35% to 21%. We might start to ask if this reflects a change in the range and nature of activities being undertaken by KTOs (e.g. with more supporting new consultancies) and in particular, whether this also reflects an increase in the number of consultancy relationships for academic researchers.

In terms of contract value shown in Table 4 (below), the impact in this swing can be seen in a downturn in the total value of income received for such contact research activities. The total has fallen from €2.8 billion to just under €1.5 billion in FY2018. Collaborative research agreements reported in 2018 led to a combined 889M€ in turnover. It is clear that the average scale and size of each collaborative agreement is much greater than the average for Contract Research Agreements. For consultancy services, a surprising inverse relationship can be seen - where despite the significant rise in the number of consultancy agreements reported, there has been a decrease in the associated value of this group of agreements. The total has dropped from 639M€ aggregate total payments to 506M€. However, the number might be higher as in quite some cases consultancy agreements are not an engagement with the academic institution and industry but with a private person.

As an illustration of possible changing dynamics in collaborations with industry, we include a specific example from the Spanish community. While this may not be reflected across the entire European landscape, it is interesting to follow this type of trend, building on the data and experiences shared via our survey.

Trends in Spain (RedOTRI): Agreements with industry

Over the last 10 years, RedOTRI has observed a trend of smaller amounts committed in signed industry agreements. More agreements are being signed but of lower economic and technical value (higher number of consultancy agreements and lower number of R&D contracts). This is particularly striking for consultancy agreements (€3,800/contract in 2018 and €15,000/contract in 2010) and Contract Research Agreements (€25,000/contract in 2018 and €44,000 in 2010). It seems that R&D contracting of a certain level and scope only occurs in the framework of "subsidised calls" and, to a greater extent, in the European context, as Collaborative Research Agreements are the only ones that are maintained (€140m/contract in 2018 and €146m/contract in 2010).

Income from Industry agreements	No. of responding KTOs (n)	Total (€)
Contract Research Agreements	339	1,478,025,832
Collaborative Research Agreements	154	889,260,035
Consultancy Agreements	311	506.322.750

Table 4: Income generated from research, collaborative and consultancy agreements

Figure 20 (below) shows that the most significant contribution by agreement with industry comes from collaborative research agreements, accounting for almost half of all value received. Consultancy agreements represent only 18%, reflecting the fact that these involve individual researchers and usually short-term projects, as compared with either contract or collaborative research projects utilising teams of researchers and access to infrastructure and materials.

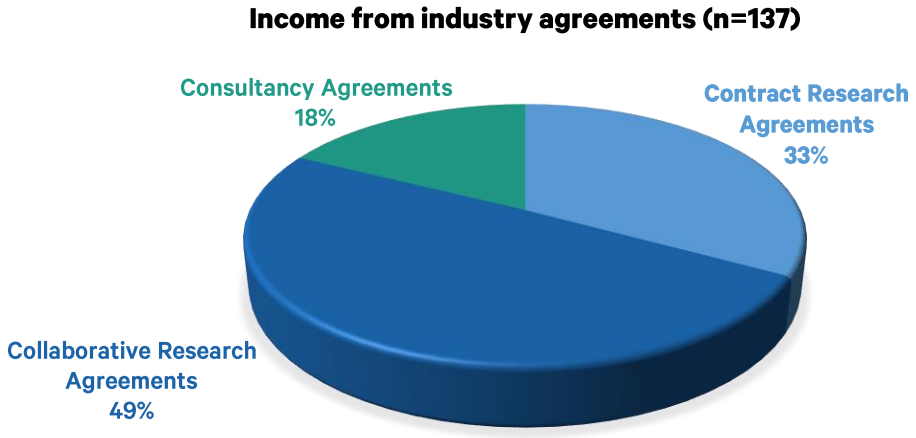


Figure 20: Percentage of income generated from research, collaborative and consultancy agreements in FY2018

3.3.1. Contract Research Agreements

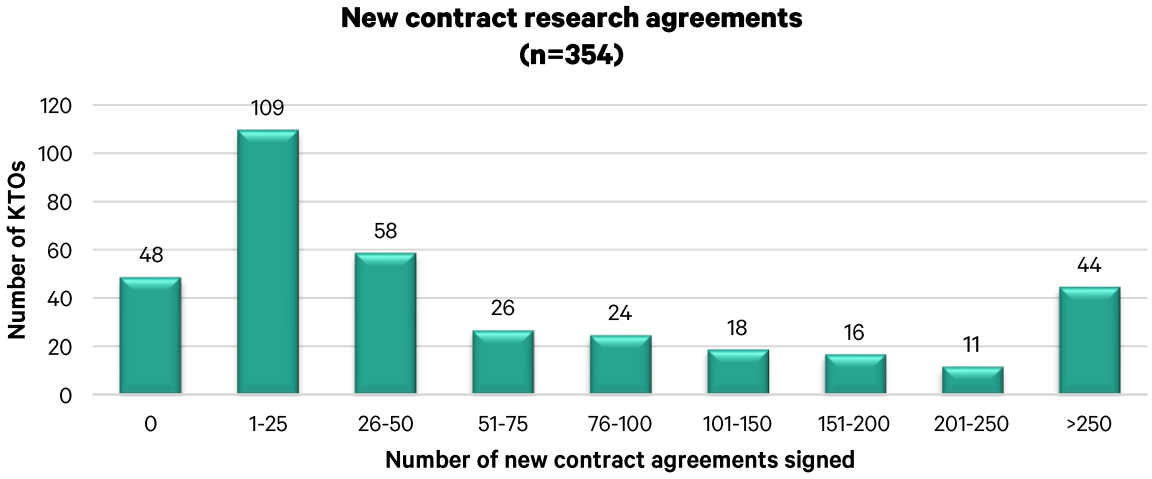


Figure 21: Distribution of the number of new contract research agreements signed

When we then go across to look at the distribution of these new contract research agreements, we can see that 30% of the KTOs entered into between 1 and 25 such deals, with the second highest frequency of between 26-50 such new agreements being entered into by 16% of offices. If we exclude those offices reporting zero new agreements, then the third highest frequency of 12% surprisingly can be found to be entering more than 250 new Contract Research Agreements in 2018.

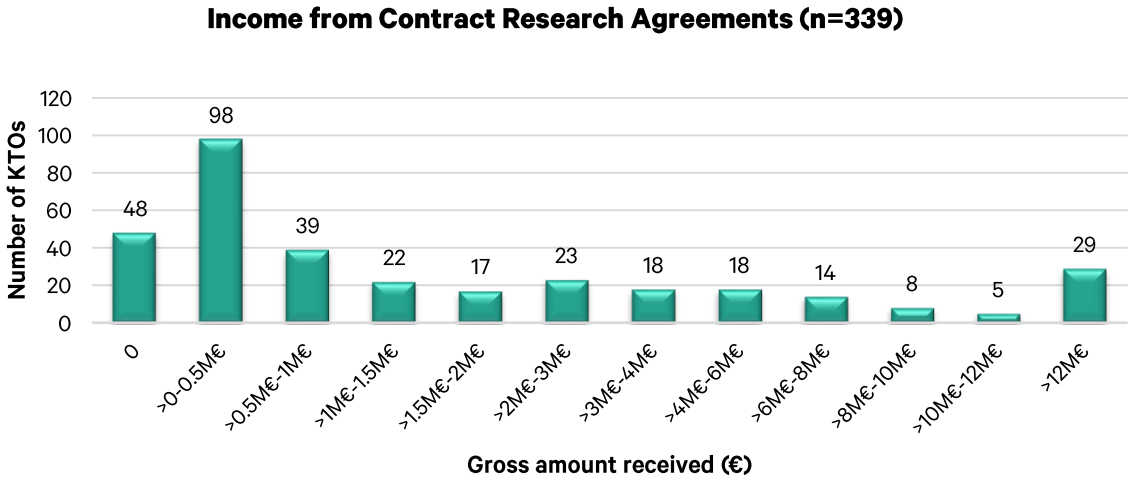


Figure 22: Distribution of the gross amount received from contract research agreements in FY2018

In Figure 22 we can see that the distribution of value associated with the new contract research agreements has heavy preponderance at either end of the spectrum. Again, excluding those reporting zero value, we see that 40% or respondents report receiving less than 1M€, while 8.5% actually received in excess of 12M€.

Impact Story: Swiss Commercial collaboration in the Spotlight by Paul Scherrer Institut

Real World Testing of Methanation Technology has been established, with Energy Partner (Energie 360°) at an operating waste water processing plant demonstrated significantly higher conversion of green waste to methane at reasonable cost. This is an example of the application of expertise from the Paul Scherrer Institute in Switzerland with partners to combine commercial opportunities with greener technologies.

3.3.2. Collaborative Research Agreements

As the 3rd category of industry contracts reviewed, collaborative R&D is the smallest in volume. However, a similar distribution can be seen as in FY2017 e.g. Figure 23 (below) shows that 10% entered into over 100 agreements while 90% entered fewer than 25 collaborative research agreements. The total number of KTOs reporting Collaborative Research Agreements has increased slightly from 179 to 195 yet counter-intuitively to total number of new agreements reported has fallen from 8,965 to 8,619, mirroring the overall downswing in the level of interaction with industry across FY2017.

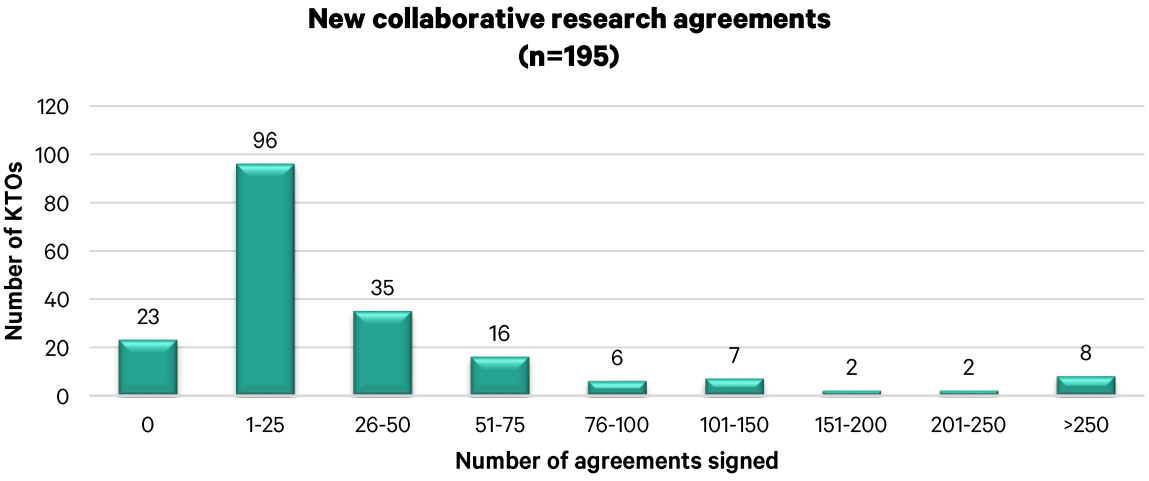


Figure 23: Distribution of the number of new collaborative research agreements signed

When we turn to look at the corresponding analysis of the value of income reported in Figure 24 (below), we see that 30% of KTOs report value up to 500k€, while at the top end of the spectrum 13% of KTOs report receiving income greater than 10M€. The distribution pattern for the income values up to 1M, 2M, 3M etc. follows the pattern seen in FY2018 with a relatively balanced distribution of reporting KTOs.

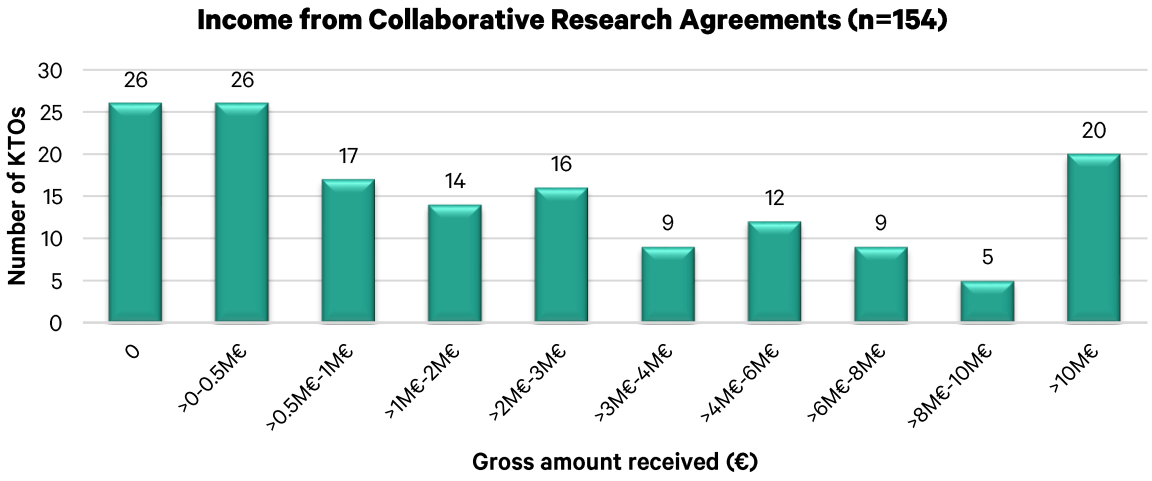


Figure 24: Distribution of the gross amount received from collaborative research agreements in FY2018

3.3.3. Consultancy Agreements

The number of KTOs reporting consultancy agreements has grown by almost 30% (from 294 to 342). The distribution pattern remains similar with the largest category being up to 25 consultancy agreements entered into (28%) with good news that other category which shows the highest level of incidence is the highest one, with almost 20% of KTOs reporting more than 250 consultancies.

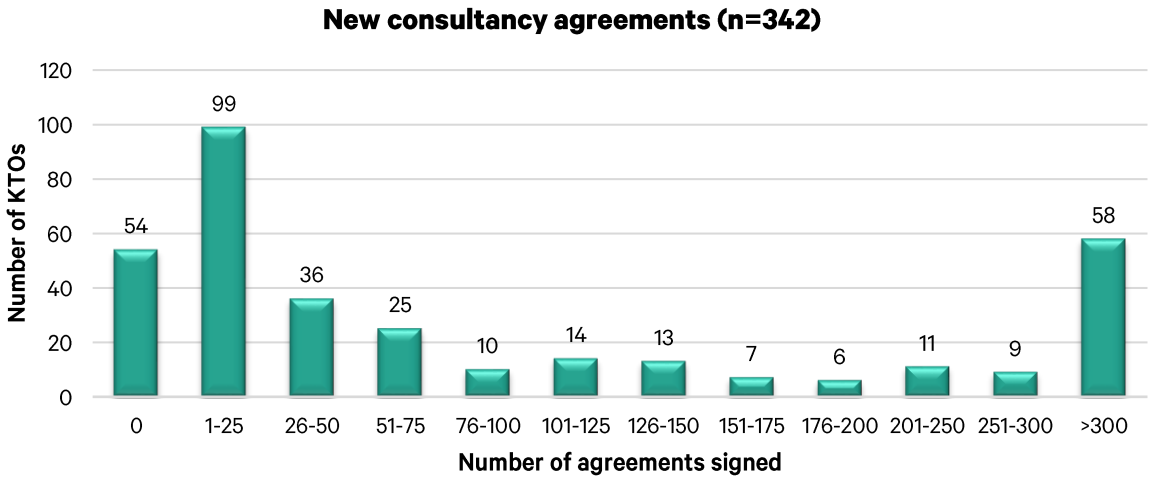


Figure 25: Distribution of the number of new consultancy agreements signed

When we look in Figure 26 (below) at the value of the consultancy agreements, we see that the largest incidence of value above zero is up to 500k€ with 47% of contracts falling here. Of considerable interest to offices actively engaged in promoting consultancy will be the figures showing total income to KTOs in excess of 10M€. While it remains a small overall percentage of offices, it is not the least frequently reported (11 offices here while only 7 report income between 6-10M€).

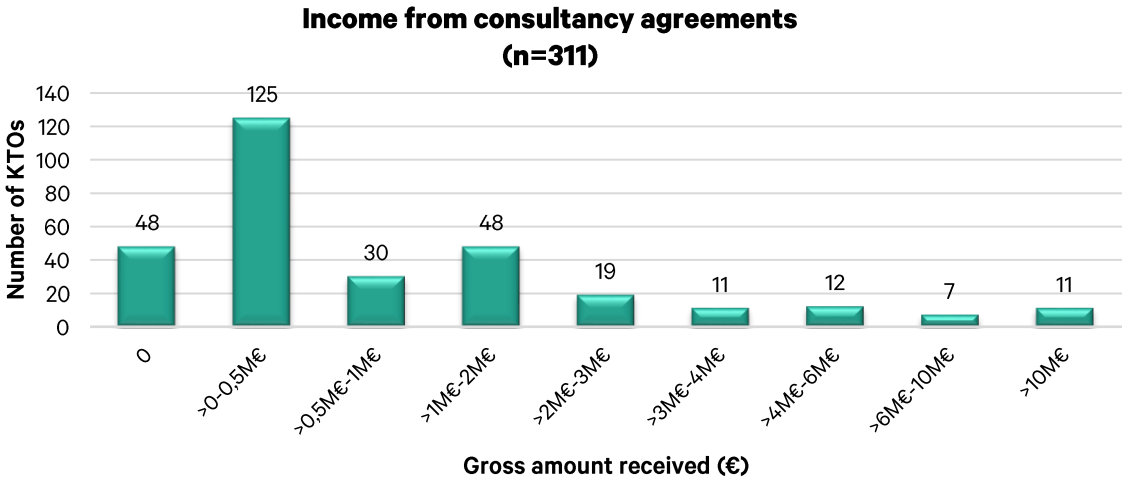


Figure 26: Distribution of the gross amount received from new consultancy agreements in FY2018

3.4. Commercial Contracts

The following section aims to provide information on the commercialisation of intellectual property by European KTOs.

Commercialisation can take a number of forms, the most common being a license agreement, which gives the license holder the right to practice under another party's intellectual property rights.

In addition to this, agreements on the transfer of ownership (assignment) and option agreements are commonly used tools as well – however much less frequently.

For licenses, we have separately asked for the number of licenses for software and for research material licenses. Licences for research materials are quite common and relatively easy to conclude but do not directly lead to new products under development or on the market.

Commercial contract	Number of responding KTOs (n)	Total number of agreements signed
Licenses	288	1,853
Options	178	152
Assignments	185	306

License agreements	Number of responding KTOs (n)	Total number of agreements signed
Patent licenses	217	868
Software licenses	78	505
Material licenses	163	314
Other licenses	119	166

Table 5: Overview of licenses, options and assignments signed

From the aggregate numbers in Table 5 (above), it is abundantly clear that, among Licenses, Options and Assignments, License agreements are by far the most common modus for commercialisation of technology/IP rights developed within academic centres across Europe.

Among the licence agreements, patent licences are the most common (48%) followed by software licences (28%) and materials licences (14%).

By “other licences”, we consider licences of IP from copyright, design, trademark, trade secret, plant breeder rights, and datasets.

3.4.1. License Agreements

The aggregate number of reported patent license agreements of 868 is distributed over the 217 reporting organisations. As shown in Figure 27 (below), the majority of the KTOs (82%) that responded indicated less than 6 licences for this year. A large number of KTOs (35%) report that they have not concluded a patent license agreement in FY2018. It remains possible, of course, that these KTOs did conclude licenses for software or research materials as well as options or assignment agreements since these subcategories were not taken into consideration for this analysis.

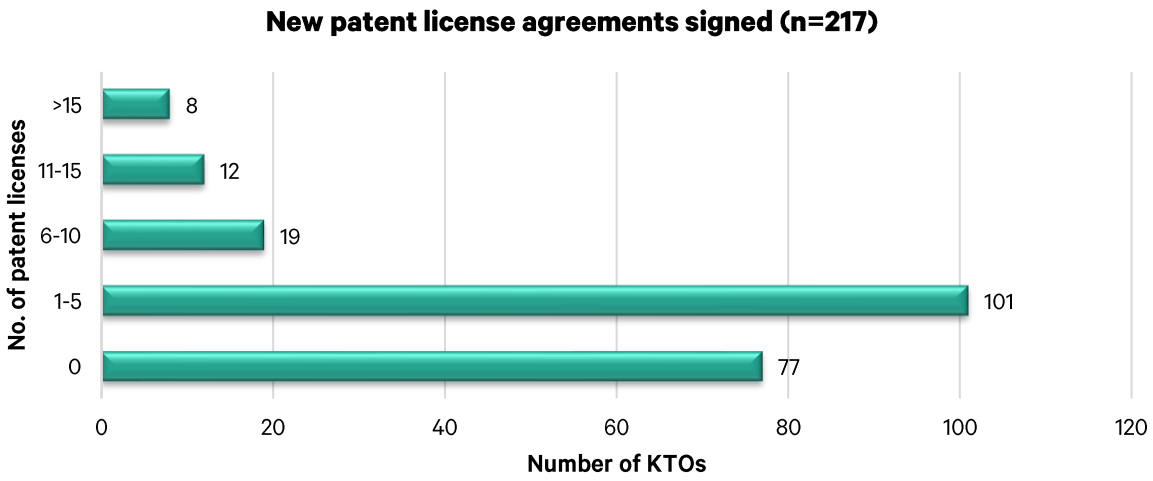


Figure 27: Distribution of the number of new patent license agreements signed

In FY2018, more than one hundred licenses for research materials were reported. Figure 28 provides a graphical presentation of the distribution of the number of licenses per KTO across all 163 reporting organisations. It shows clearly that the majority of KTOs (109/163 or 67%) have not concluded any such licenses, and just 20 have concluded more than 6 in the reporting year. For these organisations, we can therefore conclude that this activity is carried out by a structure independent of the KTO or perhaps is an activity where researchers themselves have been enabled to conclude such agreements where they are receiving or supplying materials for research use.

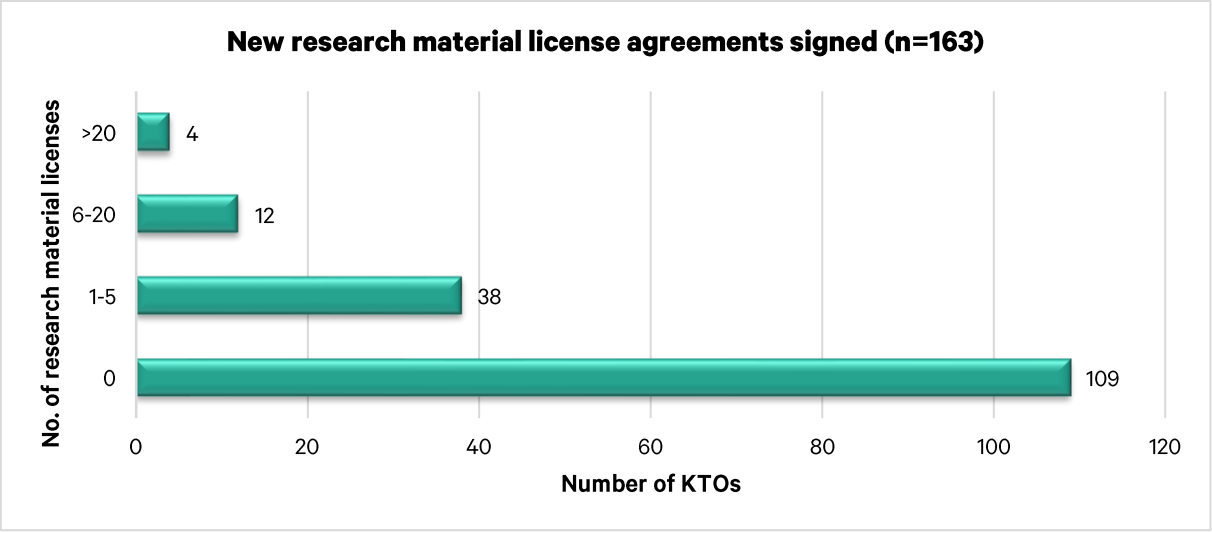


Figure 28: Distribution of the number of new material license agreements signed

In addition to patent, software and research material licenses, KTOs have also been concluding licenses for other types of knowledge, such as copyright and/or know-how.

The following Figure 29 presents the distribution of software licenses concluded per KTO across all KTOs in FY2018. Since software is often licensed on a non-exclusive basis to end-users, they can be very easy to conclude (e.g. by clicking on an "I accept" button before download and installation) and usually do not involve negotiations on standardised license terms. Popular software can in this way easily be licensed to hundreds, thousands or even more users, without requiring much additional effort from the KTO over and above that which is necessary to conclude the first license. In some institutions simple click-through software licenses may be treated in the same manner as Material Transfer Agreements, such that they are handled at departmental or researcher level, not going through the KTO at all.

The data presented in Figure 29 shows that the majority of KTOs (35/78 or 45%) have not concluded any software licenses in FY2018. On the other hand, a small number of KTOs (3/78 or 4%) declare concluding more than 20 in the reporting year. Since the aggregate number of software licenses reported is 505 (see Table 5), it figures that the 3 KTOs that report having concluded more than 20 software licenses each will have jointly concluded around 368 or 72% of the total.

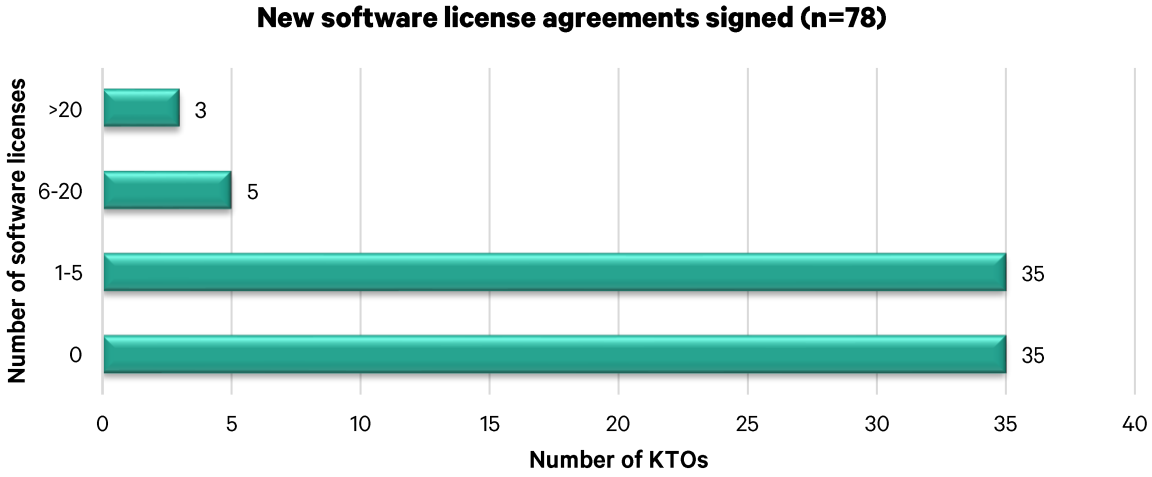


Figure 29: Distribution of the number of new software license agreements signed

3.4.2. Option Agreements

As in previous years, relatively few KTOs record concluding an option agreement, often used to provide an evaluation period to prospective licensees during which they can test-drive the technology and determine whether it is fit for the purpose they have in mind. From the data presented in Figure 30 (below), it is apparent that a large majority (133/178 or 75%) of reporting organisations have not concluded any option agreement in FY2018.

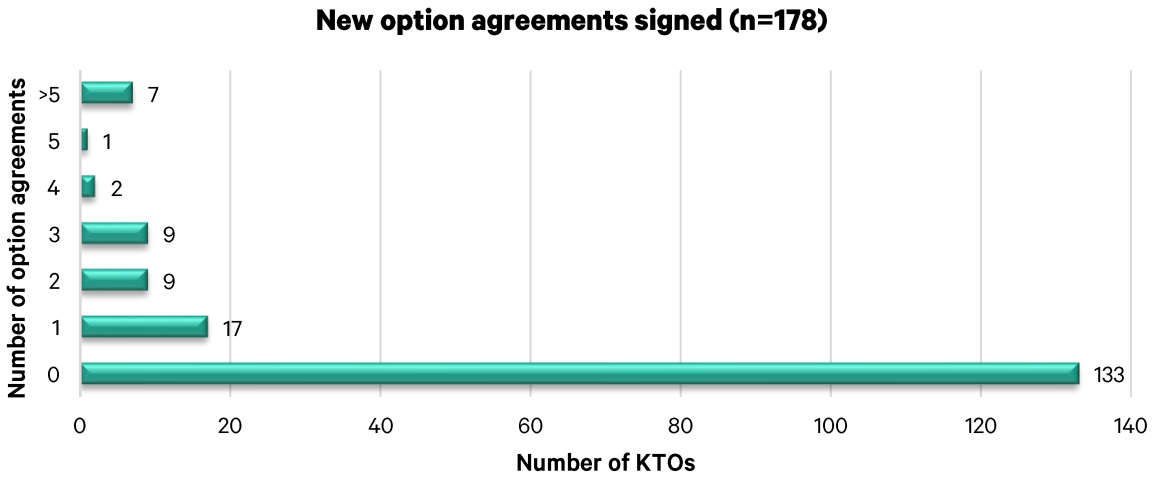


Figure 30: Distribution of the number of new option agreements signed

3.4.3. Assignment Agreements

Assignment agreements arrange for the transfer of ownership of certain property from one party to another. In the context of knowledge transfer, this usually relates to the transfer of intellectual property rights (mainly patent rights and copyright). As a result, a lot, if not all control over such rights is lost by the assigning party. Due to this, assignment is not often used as a tool in the commercialisation arsenal of a KTO. Nevertheless, we received reports that total 306 assignment contracts, the distribution of which per KTO (across all reporting KTOs) is given in Figure 24. In line with the data that was received for FY2018, Figure 31 (below) once again shows that a large majority of 64% (119/185) of KTOs have not concluded any assignments in FY2018.

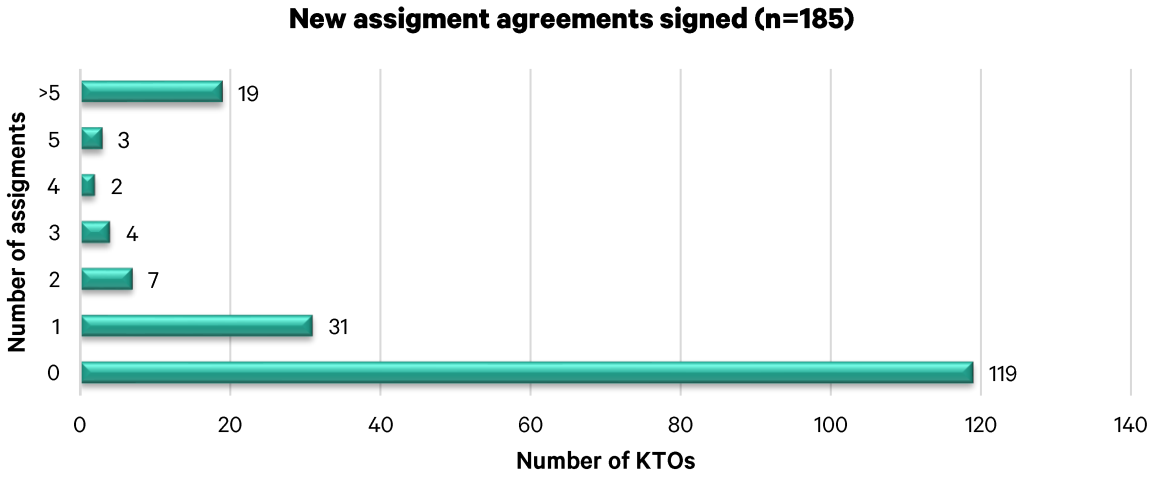


Figure 31: Distribution of the number of new assignment agreements signed

3.5. Commercial Revenues from IP

Table 6 below presents some aggregate numbers that ASTP has collected on the overall revenue from licensing IP and for a number of revenue types.

An impressive aggregate total of 522M€ in commercial revenues from IP has been reported for FY2018 by a total of 431 respondents. This is one of the most frequent metrics, with more than 84% of KTOs (431/512) submitting an answer. One added observation is to note if we compare with data from FY2017 is a clear increase in the total sum of IP revenues: a total of 458M€ (by 404 KTOs in FY2017) to 522M€ by 431 KTOs in FY2018. On average, the income in commercial revenues from IP has increased from 1.1M€ to 1.2M€ per KTO.

In Figure 32, a fraction (32%) of gross revenues consists of revenues from patent licenses. Another major revenue type comes from the sale of equity in spin-off and/or start-up companies (15%). Here, almost 66M€ is reported to have been received in FY2018 for 68% of total respondents for gross revenues (292/431).

About revenue from patent licences, the much lower number of respondents to this question (180 as opposed to 431, in the table) suggests that the actual fraction of total commercial revenue that is made up of revenues from patent licenses could (and would be expected to) be much higher.

IP Revenues	Number of responding KTOs (n)	Total (€)
Gross revenues from IP	431	522,040,301
Gross revenues from patent licenses	180	83,265,481
Cashed-in equity	292	66,004,163

Table 6: Total gross revenues from the commercialisation of IP

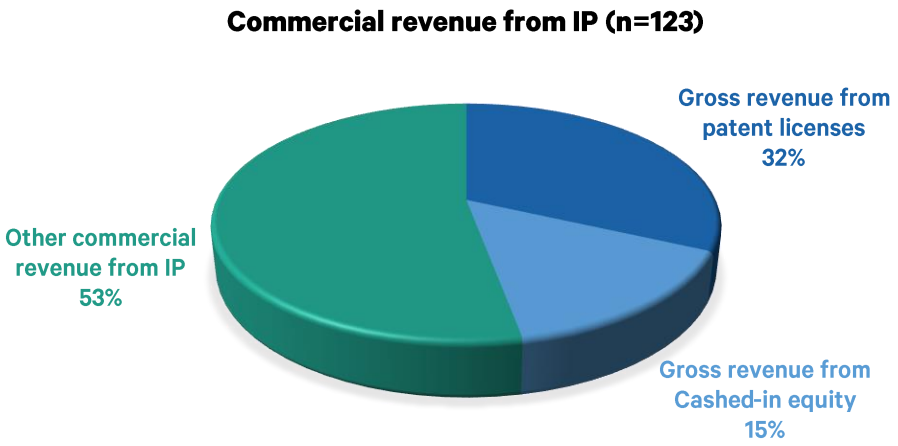


Figure 32: Percentage of gross revenues from the commercialisation of IP

If we zoom in on the distribution of gross revenues from IP across KTOs (Figure 33), 31% of KTOs (135/431) have no revenue from the commercialisation of IP and another 30% report revenues of 50k€ or less. Fifty-four KTOs (or around 13% of respondents) report income in FY2018 in excess of 1M€. It is unfortunate that insufficient information was collected on the size of the research effort of the PROs connected to these KTOs that would allow for the normalisation of these numbers and let them be expressed as e.g. 'gross revenues from IP/100M€ research expenditure'.

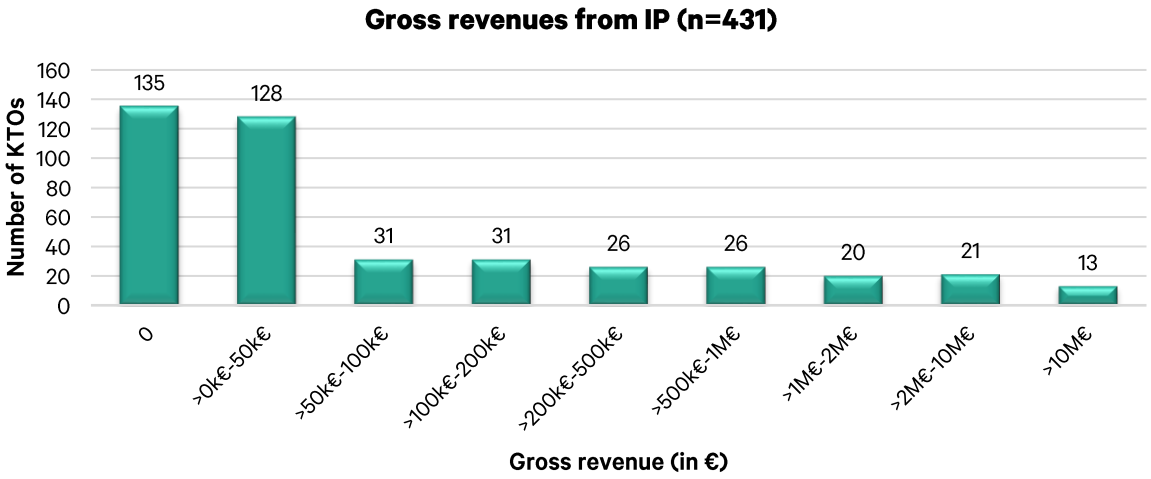


Figure 33: Distribution of gross revenues generated from IP

3.5.1. Patent licenses

Since patents are a prominent method used by KTOs to protect IP, which provide broad protection as well as enhancing value, it could be assumed that a sizeable fraction of the total reported gross revenues from IP would consist of revenues obtained under patent licenses. Unfortunately, due to the much lower number of responses to this specific question, it remains unclear exactly what fraction of the total reported revenues consists of income from patent licenses.

While just over a third of respondents report no income from patent licenses, only 13 KTOs report having received more than 500k€ in income from patent licenses (as opposed to 80 KTOs that report having received more than 500k€ total gross revenues from IP in the year, see Figure 34). We suspect that the actual numbers would be much higher if all KTOs that report on the total gross revenues from IP would also report their income under patent licenses in the year.

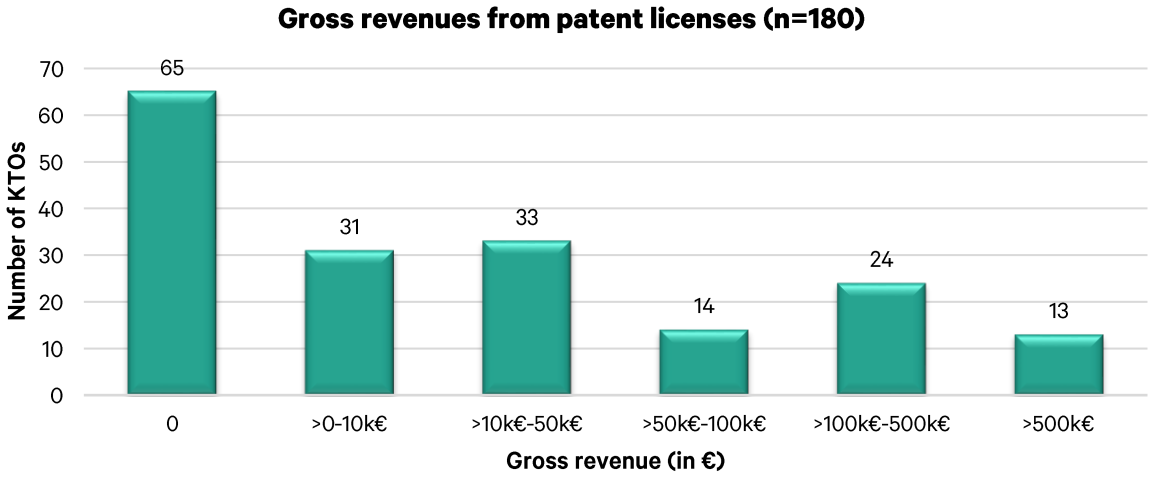


Figure 34: Distribution of gross revenues generated from patent licenses

3.5.2. Cashed-in equity

When IP is licensed or transferred (assigned) to a third party, a common form of compensation – especially in the context of spin-off companies – is in the form of equity (shares in the company that gains access to the IP). However, many PROs do not take direct equity participations (for structural, legal or strategic reasons) and as a result do not have a chance to net income from participations.

The compensation can be monetised upon sale of these shares, either as part of a trade sale of the company (which is most common), or after a company has been floated on a stock exchange or by dividends distribution.

Out of 292 respondents, 249 KTOs reported zero cashing in equity and 43 reported cashed in equity. In the graph below, the distribution of revenues from cashed-in equity across these 43 KTOs is presented. Of those that did report income, around half of respondents received less than 250k€, whereas the other half received more than 250k€.

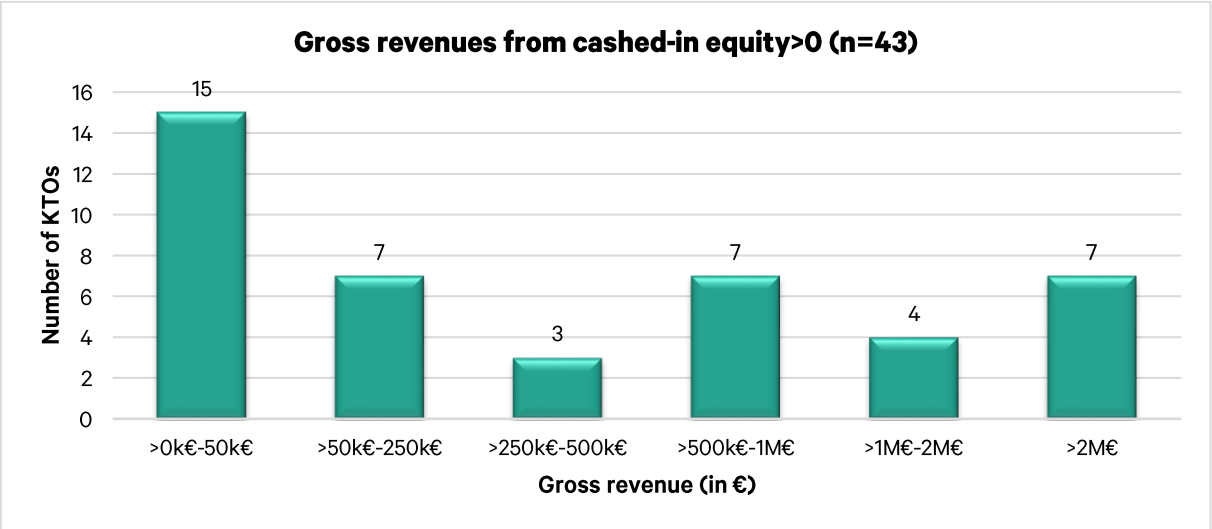


Figure 35: Distribution of gross revenues from cashed-in equity across KTOs reporting a value above 0

3.6. Spin-offs and Start-ups

New company creation is a focus for many KTOs, often supported or even driven by governmental economic development policies that aim to stimulate such activity in order to grow employment and broaden local industrial

bases. As with previous years, our survey analysis of questions 24 and 25[6] seeks to distinguish between (1) companies that have a formal agreement with the KTO or PRO to use intellectual property developed at the PRO for the development of new products or services (**spin-offs**) and (2) companies that do not rely on such intellectual property or formal use agreements (**start-ups**) yet are started by students or staff of the PRO. This distinction is important because spin-offs relate to the output of research performed by the PRO, whereas start-ups do not and thus the former are more likely to be managed and supported by KTOs. However, in order to achieve said economic development policies, governments are less likely to make such distinctions given that new companies attract investment and create new jobs wherever the business ideas may arise.

As noted in last year's report, it was considered interesting for future surveys to look into the effort dedicated to support new business creation within PROs (such as training or incubator programs, dedicated staff, etc.) and the output in terms of the number of spin-offs and start-ups. This year we indeed gathered this data by identifying levels of entrepreneurship support, which covers both types of company formation. In the future, it may also be interesting to see what output KPIs can be gathered regarding each of spin-off and start-up company types.

For a PRO however, it is important to be able to demonstrate connectivity and impact of the research bases as well as justifying the application of resources to stimulate such activity. Spin-offs have also traditionally been an effective way in which the development and utilisation of research results is taken forward, with development funds invested into a new company.

On the other hand, as understanding increases around the broader range of impacts to emerge from a PRO, resources to support start-up activity, especially around entrepreneurial students are being made available and built into impact agendas. Expertise in KTOs can be usefully harnessed in start-ups, thus expanding their remit and functions.

Table 7 (below) shows an overview of companies created by KTOs, as well as related metrics.

	Number of responding KTOs (n)	Total number of companies created
Spin-offs	455	568
Operating spin-offs	392	4,804
Staff in operating spin-offs (FTE)	200	44,406
Start-ups	369	4,878

Table 7: Overview of the number of spin-offs and start-ups created

Figure 36 (below) shows that almost 60% of responding KTOs did not create a spin-off which is very similar to the responses in FY2017. Still, the total number of spin-offs rose from 486 in FY2017 to 569 in FY2018 by reporting KTOs. Interestingly the reporting figures for both KTOs and numbers of start-ups remains quite similar with only a modest increase in company numbers from 4676 to 4878, in FY2017 and FY2018, respectively. But the other consistent message we see in Table 7 is that spin-off numbers are just under 10% of the number of start-ups.

When we look in more detail at the data around the number of KTOs reporting, while we see a jump of 26% reporting, from 359 to 455, the actual number of new spin-offs created only rises by 16%. What can we say about the distribution? A similar percentage report zero formation with 58% compared with 60% in FY2018. The remaining distribution ratios remain the same with around 70% of those reporting actual formation falling between 1-5 spin-offs.

[6] See the definitions of spin-off and start-up in the survey questionnaire (questions 24 and 25) in Appendix 2.

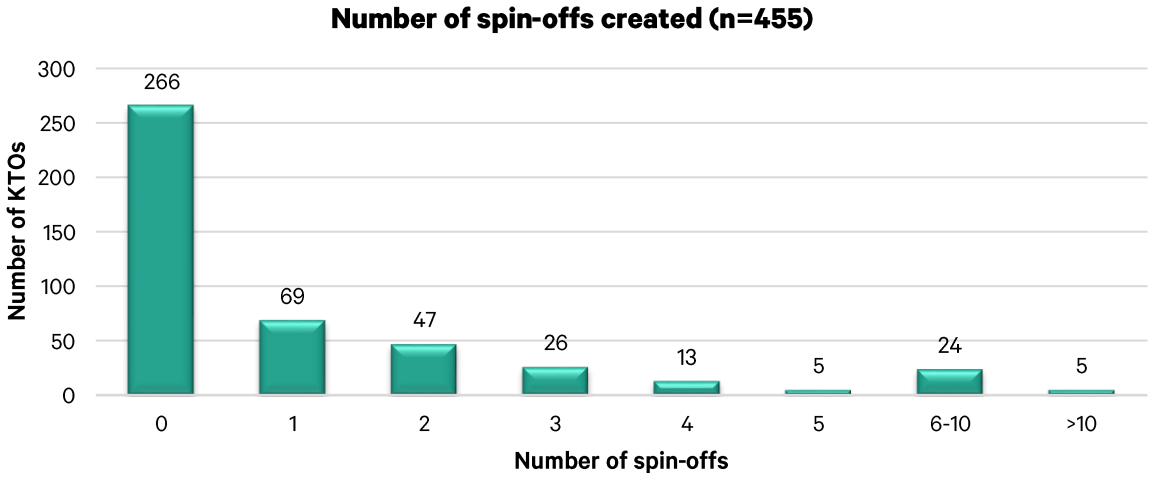


Figure 36: Distribution of the number of new spin-offs created

Impact Story: Irish Spin-off in the Spotlight by NUI Galway (submitted by KTI)

Neurent Medical is a Galway-based medical device company specialising the treatment of rhinitis, an inflammatory disease of the nose. The company, having spun out of NUI Galway, is developing a low risk, single use device that will enable a novel kind of therapy be performed in a doctor's office under local anaesthetic. This treatment option provides significantly lower risk to patients than current interventions which require the use of an operating theatre. Widespread use of the device will also remove substantial cost from the healthcare system. The company emerged from the Enterprise Ireland BioInnovate programme at NUI Galway in 2015 and benefitted from €495k in Enterprise Ireland commercialisation funding. In May 2018 Neurent Medical announced that it had raised €9.3m ($11m) in a Series A Financing round led by Fountain Healthcare Partners and with participation from Atlantic Bridge Capital, the Western Development Commission, Enterprise Ireland and a syndicate of Irish and US medical device veterans. This is the largest VC backed fundraising event for a University Medtech Spin-off company in Europe in the last decade. On the back of this investment Neurent Medical plans to recruit 25 staff into the company by the end of 2021.

When we turn to start-up creation, Figure 37 shows only a slight increase in the number of reporting KTOs than in FY2017 and the level reporting zero activity is similar (43% as opposed to 48% in FY2017). However, we do see an interesting expansion in the numbers reporting more than 30 start-ups. FY2017 only registered 35 such KTOs while in FY2018 we are able to see that this total increases to 56, with broken down detail showing 10 KTOs reporting more than 100 start-ups, with 11 reporting between 51-100 start-ups. It would be interesting to understand the policies, drivers and activities behind these large numbers and at ASTP we shall encourage the further sharing of initiatives and policies successfully implemented which drive creation and support for new companies, both spin-offs and start-ups.

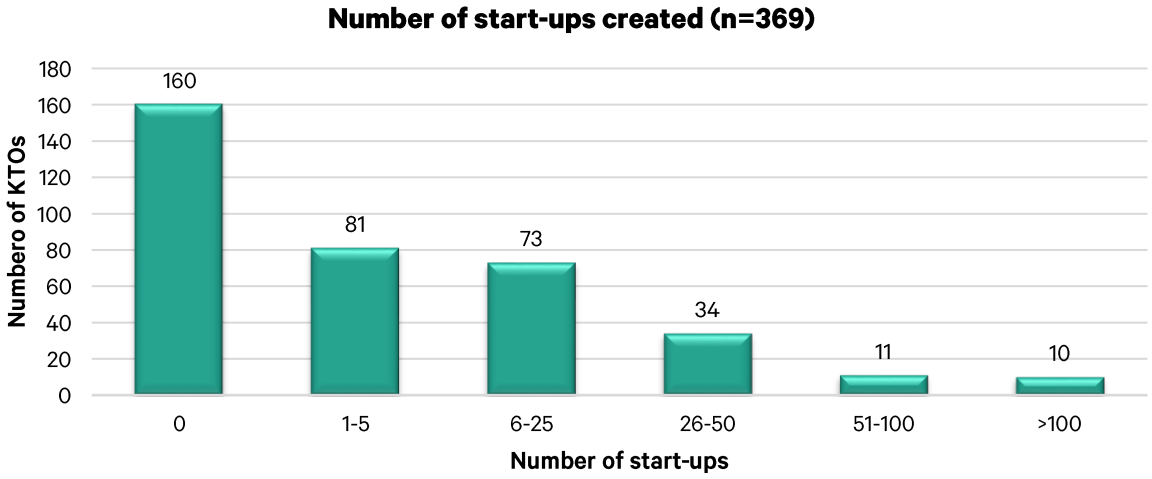


Figure 37: Distribution of the number of start-ups created

Impact Story: Hungary in the Spotlight by University of Szeged

The UNIVERSITY OF SZEGED "Virtus" Enterprise Catalyst Programme The primary objective of the University of Szeged Enterprise Catalyst Programme is to position the University of Szeged as a sustainable, entrepreneurial university, to catalyse the local start-up ecosystem and innovation milieu as well as to coordinate and integrate the activities into a single programme. An award-winning start-up has been created, called Neunos Ltd, with researchers of the University of Szeged and is combining the latest advances of neuroscience with cutting-edge microelectronic approaches in order to provide a therapeutic solution based on oscillatory interference with ongoing neuronal network activity. A minimally invasive, implantable seizure suppression system has been developed, which automatically detects the onset of epileptic seizures and promptly terminates them by transcranial electrical stimulation before fatal accidents evolve.

3.6.1. Existing Spin-offs

Gathering data around the legacy of earlier spin-off creation, such as how many are currently still operating, is an attempt to take a snapshot of potential impact in the local economy. There can often be challenges in KTOs gathering this data, especially for companies which may have relocated, or whose connections with the PRO have expired. In future analyses, it may be interesting to get information to help understand the reasons for success/failure of such companies. Is it around infrastructure availability? Marketable technology? Access to ongoing investment funds and good management? The development of sophisticated impact KPIs may lead to such comprehension being developed, which in turn can inform policy development as well as identifying where added skills or other resources may assist the economic outlook.

We can see from Figure 38 that 392 KTOs were able to deliver the snapshot data, although it would seem that 126 report a value of zero. It is difficult to know what rationale to put to such data. It could be the KTOs have not been able to identify such companies or it reflects a region where there is zero history of spin-off creation. Finally, it may reflect areas where there were historic spin-off which by FY2018 had ceased to exist.

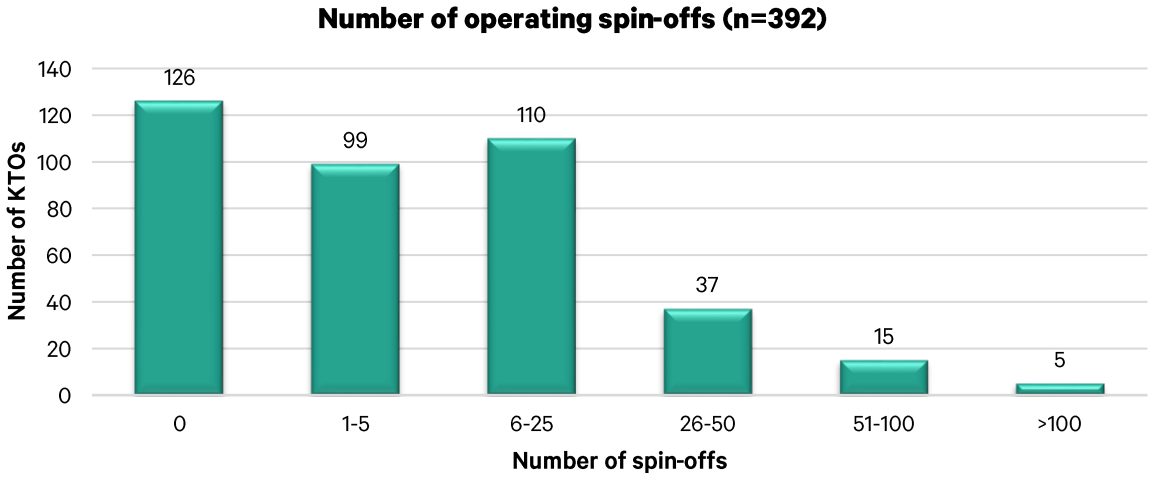


Figure 38: Distribution of the number of existing spin-offs

3.6.2. Staff in Existing Spin-offs

As with the previous snapshot data, there are inherent challenges in interpreting this data around staff numbers in existing spin-offs. As reflected in Figure 39 (below), 105 KTOs report a positive number of staff in spin-off companies. This is a slightly lower number than the previous year (n=120), but it is difficult to attribute this change in figures to lack of availability of data to the KTOs or whether in fact there has been a reduction in the number of functioning spin-offs with staff. The downstream relationship between KTOs and the spin-offs they may have been initially involved in supporting changes over time, so finding a way to gather meaningful longitudinal data is challenging for any KTO.

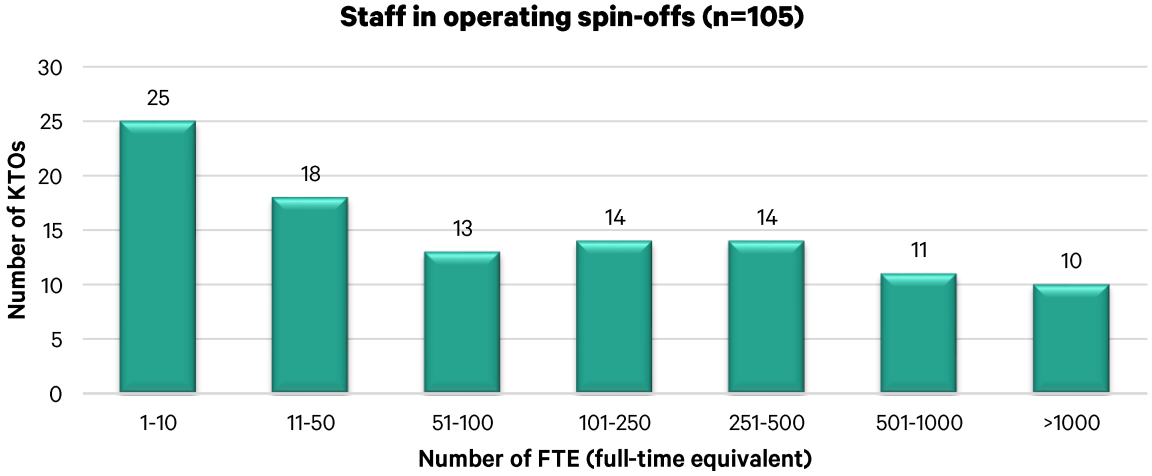


Figure 39: Distribution of the number of staff in FTEs in existing spin-offs

4. Recent Developments in Defining and Measuring KT

This chapter supplements the substantive data analysis from FY2018, with some further insights into the KT landscape, which have taken place since 2018 and may influence KT metrics in the coming years.

In particular, we highlight global collaborative work by KT professionals to generate a definition of the KT profession in the context of the Alliance of Technology Transfer Professionals (ATTP). We also include the main outputs and conclusions of the EC expert group on KT metrics harmonisation that was launched by EC JRC and ASTP in 2019 and published in 2020.

For more insights into certain quantitative data around specific trends in the use and harnessing of formal intellectual property rights, we draw attention to two reports in Chapter 5. The first is by the European Patent Office (EPO), published in December 2020 as a study covering an overview of trends in inventions patented by universities between 2008-2017. The second is the annual publication by WIPO of geographical and technical field trends in patent activity. To complete the representation of international agencies active in the field of innovation, we also include some recent work undertaken by the Organisation for Economic Co-operation and Development (OECD), which is a useful toolkit showcasing materials from over 50 countries around technology transfer and co-creation.

4.1. Definition of the KT Profession

The idea that R&D organisations produce ideas or technologies that could have an effect on society or business is a key concept of modern industrialised countries. The formal organisation of technology transfer, knowledge exchange, licensing or other approaches dates back at least 40 years and most societies now assume that the funding of science and R&D will go hand in hand with professionally led processes to ensure economic or social impact.

Over these 40 years practitioners have developed increasingly rigorous training programmes to ensure consistency and high quality across the staff undertaking these roles. Over the past decade the quality of these has become increasingly recognised through a global certification activity led by the Alliance of Technology Transfer Professionals (ATTP).

It is however recognised by all the professionals taking part in this work that there is currently no formal definition of the profession. Without such a definition it is increasingly challenging to certify that individuals or training courses have met the standards required, particularly when the skills required of Knowledge Exchange/Technology Transfer (KE/TT) professionals are expanding constantly.

The fundamental difficulty is to pitch a definition at the right level to ensure inclusion of relevant professionals and yet to be precise and distinct. Take for example the healthcare sector which has separate professions for physicians and nurses. Each profession encompasses a large breadth and depth ranging from the general – physicians - to specialists like surgeons and niche specialists like cancer consultants. Knowledge exchange/technology transfer has a similar spread from people who create knowledge in partnership with users (academics, industrial scientists) to those who build partnerships, and those who ensure that the knowledge is put to use in society. Some of the latter work in commercial exploitation through licensing or business formation and others work with charities or social innovation. Some partner with companies to devise new products or processes and other develop new policies for governments or NGOs. The licensing expert is a specialist working within a much broader professional group. The community also includes people who enable and maintain ecosystems, manage information and knowledge, and provide 'back-office' functions. Currently some of the characteristics of our profession are recognised by RTTP (Registered Technology Transfer Professional) while some are not. The types of roles undertaken by people in TT/KE/KT roles are listed below. Over time, these roles will change. We believe the profession should be defined by its purpose and not just by the things that the people working in it currently do. In this way the profession is defined by its purpose and not just by the types of things that the people working in it currently do.

Roles and Activities of those working in Knowledge Transfer

People working in TT/KE/KT are expected to be committed to the exchange of knowledge for the benefit of society; to operate with honesty and integrity; and display personal and professional credibility.

They are likely to be undertaking the following kinds of roles and activities (not a comprehensive list) using a combination of the broad competencies[7] which are recognised by the global RTTP framework.

Partnership Building

- Building strategic partnerships with industry, businesses, and public organisations in regional, national or international contexts.
- Developing programmes of collaborative research and innovation between knowledge-based organisations and businesses.
- Establishing and managing centres for cooperative research and/or innovation with a translational focus.

Managing partnering services

- Running business or sector networks to encourage engagement between the knowledge base and partners.
- Managing consultancy and services/ facilities which transfer knowledge and know-how.
- Developing programmes of collaborative education and training between knowledge- based organisations and businesses.
- Managing B2B and U2B marketing campaigns.

IP exploitation

- Managing, advancing and de-risking knowledge assets such as inventions, innovations, and intellectual property portfolios.
- Creating commercial intellectual property strategies leading to licensing intellectual property and creating spin-offs that create products and services.
- Providing legal advice or counsel on protecting inventions and innovations for example through patents, design rights, trademarks and copyright and other forms of non-formal intellectual property rights such as know-how.

Knowledge economy

- Building regional or national innovation infrastructure to promote economic development.
- Running incubators, science parks and scale-up programmes.
- Raising and managing funding for translation and future utilisation of knowledge and research.
- Raising and managing proof of concept, accelerator and venture capital funds.

Innovation leadership

- Reshaping and restructuring organisations such as companies, universities and public bodies to optimise innovation and transfer/exchange of knowledge/technology.
- Training and developing people to become entrepreneurial and to gain skills for collaboration and transfer of knowledge and technology.
- Acting as public stewards of innovation for economic and societal benefit.
- Advocacy, awareness raising and lobbying in innovation, intellectual property and commercial research policy development.

[7] Link to RTTP's core competencies: https://attp.info/core-rttp-competencies

A Global Definition

ATTP and its partnership of national associations of KE/TT gives it a unique global view which will help uncover new activities in the profession and enable it to support new education programmes and certification. It will also be able to take account of the varied development stages and the different focus of KE/TT across the world.

The specific definition agreed in 2019 is captured here:

"TT/KT/KE* is a collaborative, creative endeavour that translates knowledge and research into impact in society and the economy

*[*use as relevant to the country]*

This definition combines three elements which form the essential process for effective transfer or exchange of knowledge or technology:

A) using skill and creativity ***to collaborate with partners***
B) effectively ***translating*** *and* ***mobilising*** *output from knowledge generators*
C) leading to ***benefits*** *and* ***impact***

We recognise that individual countries may want to stretch some of the descriptors while retaining that basic three-part structure. This is allowed within the definition. For example, a country may want to add something to section B) to describe the types of knowledge generators e.g. industry and universities; another country may want to add something to section C) to describe different types of benefit e.g. impact in society, the economy AND the environment or culture, or to add beneficiaries e.g. students, patients, people etc."

There is no requirement that any country or its KE/TT Association must represent the whole breadth of activities identified in this definition scope. But it is hoped that having a definition of the profession will serve as something to relate to and possibly strive for. It can assist in designing policies, decision-making around priorities for each region as well as assist in the building of capacity by recognising certain skills and knowledge that ought to be harnessed by those working professionally in the sector. The ATTP definition documents[8] can be found on the websites of many National Associations.

4.2. European Commission study on KT Metrics Harmonisation

In 2019, a new Expert Group was launched by the European Commission's Joint Research Centre (JRC) together with ASTP to identify optimum metrics for knowledge transfer, with a view to developing a set of European-wide harmonised indicators on such KT metrics. Their KT Metrics Report[9] was published in 2020 and while worth careful reading in its entirety, we take the opportunity here to provide an overview of its key findings.

One of the key values of this report is that its authorship draws on the expert views of European experts from both academic and practitioner points of view on the topic. Thanks to its National Associations Advisory Committee (NAAC), ASTP is uniquely positioned to play a key role in such European- wide studies. For this report, access to the NAAC allowed 30 direct interviews to take place with people across the community of national KT associations, enabling broad representation across the diverse spectrum of situations and contexts in Europe.

The Report is not the first to address such metrics and the Expert Group reviewed previous work such as Finne et al. (2009)[10] who (as well as inspiring all ASTP survey activity) described very precisely a set of relevant indicators to measure KT activities and outputs. The findings over a decade later contained in the Expert Group report, included interviews with KT practitioners representing 25 countries, and did not deeply modify this set of

[8] Link to ATTP definition documents: https://attp.info/defining-the-tt-ke-kt-profession/

[9] Link to the 'Knowledge Transfer Metrics - Towards a European-wide set of harmonised indicators' Report: https://ec.europa.eu/jrc/en/publication/knowledge-transfer-metrics-towards-european-wide-set-harmonised-indicators

[10] Finne H., e. a. (2009). *Metrics for knowledge transfer from public research organisations in Europe. Report from the European Commission's expert group on knowledge transfer metrics.* EC-JRC. Available at: https://op.europa.eu/en/publication-detail/-/publication/d0dbd13d-6b28-4398-896b-0fe9cf0ed2cb

indicators. However, they went on to formulate several propositions regarding a set of metrics designed to facilitate their implementation by a large number of KTOs and countries facing very different situations across Europe. The following are of interest regarding our focus:

- Granted patents or applications are not listed as core indicators. Patenting depends on the capacity and budget of the KTO as well as on the fields of knowledge or technology (e.g. in sectors where private investments are required, based on exclusive rights of the basic research results). The recommendation is to include these indicators when relevant, as secondary indicators.
    - The recommended indicators are split into four groups (Input indicators will describe the environment in which the KTO operates and the internal factors that characterise the PRO. The availability of funding, entrepreneurial and innovation support tools as well as the KT strategy and features of the PRO will influence the results and the meaning of the measured outputs.
    - Output indicators include usual KT activities as well as impact related indicators. The report evaluates if and how these could be used in a European-wide measurement. However, it does state that simple quantitative metrics cannot capture impact indicators such as "societal benefit" or "internal cultural change of PRO". A least some qualitative narrative has to be considered.

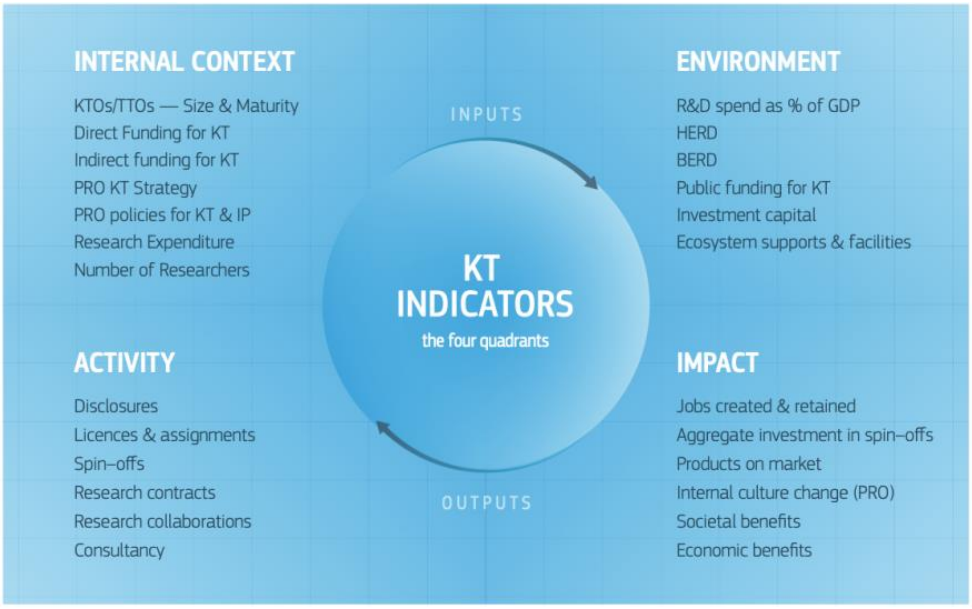


Figure 40: Input and Output KT Indicators: the four quadrants (Source: KT Metrics Report[9])

The four quadrants proposed illustrate perfectly the fact that **context matters**. It is not possible to look at outputs without taking into account the whole environment in which they are produced, as also highlighted in a recent academic study[11]. This will be crucial when/if aggregating figures from different countries or territories. Creating a spin-off in a deep-tech highly supportive environment with plenty of VCs around or in a region with no incubator or entrepreneurial culture and funding will not have the same value in terms of efforts, achievement and cultural impact.

The published KT Metrics Report shows that knowledge transfer is a complex activity. The KTO acts as an intermediary in open innovation (only one aspect of which is linear commercialisation of research results) between university and various external actors. These complex strategies generate new types of activities that will be more difficult to capture in traditional metrics: cross licenses, free licenses, service agreements to complement license agreements, use of the whole range of IPR, where trade secret or rights to data can complement patent rights. When counting assignments and revenue of license agreement there is a risk of adding pears and apples (it makes

[11] Kreiling, L., Scanlan, J. (2020) "A European clustering study with Knowledge Transfer Office DNA", International Journal of Intellectual Property Management. Available at: https://doi.org/10.1504/IJIPM.2020.10030658

no sense to aggregate the number of free software non-exclusive licenses and a patent license of 15 years' duration in life science).

KT Metrics harmonisation... still a long way to go

Despite the will of national associations and the recommendation of European Experts, the way to harmonised KT metrics in Europe remains a long one.

In some KTOs data are not available for organisational reasons. Indeed, certain figures may be not centrally collected, or may not available to KTOs. For example, KTOs may have difficulty accessing to the amount of revenue generated by IP agreements as billing and accountancy may be done by another department of the PRO.

As ASTP knows from the experience of its own Annual Survey, data may also not be compatible among countries: metrics will not be aggregated the same way or definitions will not be exactly the same. For example, "Start-up" may include (or not) student start-ups; or software licenses may have a minimum threshold to be taken into account (and varying from one country to the other, from 500€ to 1000€).

In the 2019 Survey Report[12], ASTP analysed the metrics for which they got the highest number of answers: *"By analysing the number of respondents, we see that the most common metrics available and collected at KTO level are: invention disclosures (n=452), licence agreements (n=413), gross revenue from IP (n=404), the number of spin-offs (n=359) and start-ups (n=333)."*. For all the other indicators used by ASTP, the number of respondents is below 300 (out of a total number of 475 respondents)

In the previous 2018 Survey Report[13], priority patent applications were also included in the list of most popular metrics available, that is those data that are collected, that are available and for which the definitions among countries are compatible.

When discussing the possibility of shared impact indicators across European countries, the Experts concluded that the following must be borne in mind: if new metrics are to be recommended, the difficulty will be availability of data. And if the recommendation is to use existing metrics, the difficulty will be to collect compatible data. Sometimes, even the slightest variation in the details of a definition could prevent the aggregation of data.

ASTP and the JRC continue to explore how the European landscape may arrive at a harmonised set of KT metrics. The joint report in 2020 was a first important milestone in this regard.

4.3. Impact Story Collection and Future Work

ASTP has a long tradition of encouraging its members to share and inspire others with stories of successful knowledge transfer endeavours. Obviously, these combine the efforts of researchers but critically also involve the staff of KTOs who have been catalysts in turning the opportunities into key relationships and partnerships to enable the utilisation and development of research results across all sectors. Some may recall the ASTP formal publications in 2012 and 2015 entitled Impact Report for Europe[14].

Since then, some of our member communities have also developed a keen interest in being able to share their own examples of sector-specific activities. So, we have seen the Digital Innovation Special Interest Group (SIG) and the Social Sciences, Humanities and the Arts SIG have been sharing their stories in dedicated sessions at annual conferences or dedicated SIG meetings.

In this most recent survey, we also included a question inviting KTOs to propose an impact story, with the opportunity to then generate examples to be added to the wider digital resources library available to members. This activity has started to generate some traction and as our world has become even more digitally interactive,

[12] Link to the ASTP 2019 Survey Report: https://www.astp4kt.eu/assets/resources/impact/Survey-Report-2019.pdf

[13] Link to the ASTP 2018 Survey Report: https://www.astp4kt.eu/assets/resources/impact/Survey-Report-2016.pdf

[14] Link to ASTP Impact Report for Europe (2015): https://www.astp4kt.eu/assets/resources/impact/Impact-Report-for-Europe-2015.pdf

ASTP plans to focus efforts in more fully developing these case studies with interested KTOs. We have taken some examples to illustrate a few of the engagements with industry in Chapter 3 but look forward to developing more of them for the digital library on the ASTP website. As we continue to evolve the gathering of information, data and case studies from across the KT landscape, the art of KT storytelling will also be supported, since both qualitative and quantitative outputs are essential in reflecting the impact of knowledge transfer activities.

5. Related Reports, Tools and Initiatives

5.1. ASTP conducts ad-hoc COVID-19 Survey in 2020

The COVID-19 pandemic struck Europe in early 2020 which was the moment in the annual KT metrics cycle when the data on FY2018 which is presented in this report was combined in a holistic dataset (as it originates from different sources: the primary data from the ASTP survey and the secondary data from the National Associations). It became quickly apparent that the pandemic will also impact KT professionals and their KT offices that will not be reflected in this dataset.

Consequently, the ASTP Survey Committee created a dedicated ad-hoc survey to identify the challenges faced by European KTOs, the new practices that have been adopted, and how ASTP can provide further support to its members and the KT community.

252 respondents from 31 countries participated in this survey within just 2 months, between 15 July and 15 September 2020. They hold a variety of roles in KT offices, including project and IP managers, support staff and senior management. Their feedback provided valuable insights on the impact of COVID-19 on KT activities and stands as testimony to ASTP being a powerful representative of the knowledge transfer sector and the professionals working in it.

The detailed analysis is still underway, but we can already see the crucial role of KT activities propelling important innovations and how KT professionals stepped up at this time of international crisis. In fact, many KTOs have reported on how they have been working on life-saving projects such as the development of a vaccine and ventilators and other essential medical devices.

Key points from the survey which are further highlighted in the infographic:

- 71% of KT professionals have been impacted by COVID-19, thankfully not all negatively.
- While 35% indicated that their KT offices suffered from cancelled projects and a further 21% from reduced budgets, an impressive 56% have reported new funding and/or business opportunities linked to COVID-19.

The infographic (Figure 41) was published in September 2020. It is the first in a series of insights that ASTP will share with the KT community regarding the impact of the COVID-19 pandemic on the KT community.

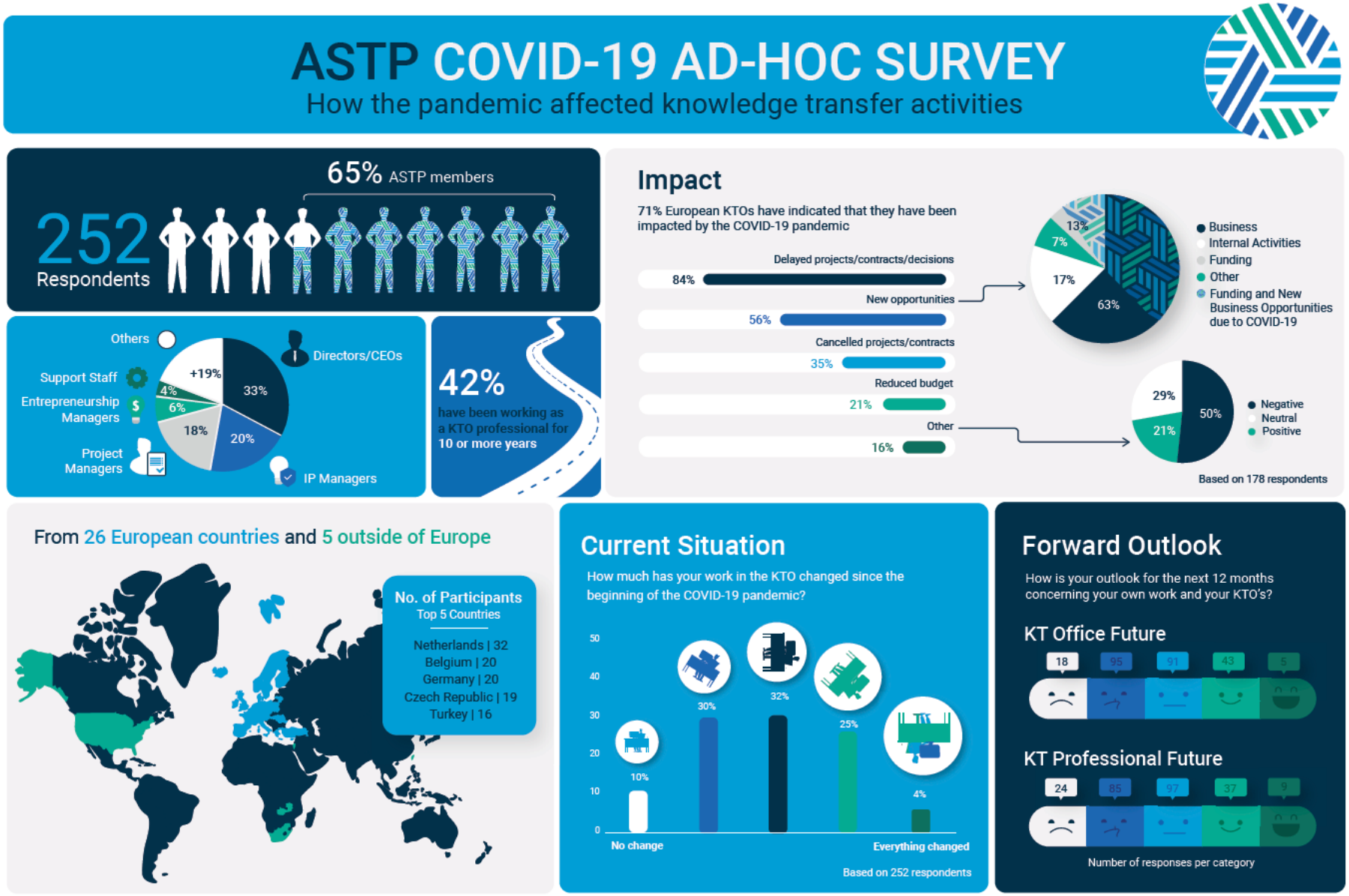


Figure 41: Infographic illustrating top level results of the ASTP COVID-19 survey

5.2. EPO Report on Commercialisation of University Patents (2007-2018)

In November 2020, the European Patent Office (EPO) published a study entitled Valorisation of Scientific Results: Patent Commercialisation Scoreboard: European Universities and PROs[15].

In contrast to the ASTP survey which presents annual data across a wide spectrum of KT activities all as reported by relevant KTOs, the EPO study looks specifically at the fate of a selection of around 1500 patents (pending and granted) which were filed by universities or PROs originally between 2008-2017. The data, gathered by way of targeted surveys and interviews, sought to group data across three geographical regions of Europe as well as across three technical sectors. Patents were therefore grouped accordingly and then the relevant universities and PROs identified, many with portfolios of up to 10 patent families, to become the subject of survey and interviews. The report then shares the data gathered and for those interested in identifying certain trends per region, or to gain some insight into the challenges facing KTOs trying to commercialise their patent portfolios, there is interesting data presented, particularly in Chapters 5 and 6. They sought to capture the top-ranking challenges, and also presented them per region. For example, data showing lack of commercialisation in over 70% of cases due to lack of ability to take technology into development phase, therefore suggests that a lack of proof-of-concept support mechanisms seems to play a significant role in impeding successful exploitation.

The geographical splits looked at South/Eastern Europe as one region, with North/Western as the second and Germany on a standalone basis. The technical fields were ICT, Health/biotech/chemistry and the third category was Mobility/Mechatronics.

The report may provide useful quantitative data to support the development and adoption of policies and initiatives to reinforce the ability of effective KTOs to deliver even more impact where patent applications are an essential part of the relevant innovation sector.

Since 2019, ASTP has been developing closer links with the EPO, which should open up even more opportunities for the EPO to further support innovation processes, with direct input from the KT practitioners.

5.3. WIPO KPIs and Indicators for Commercialisation

Many readers will be familiar with the World Intellectual Property Indicators 2020[16] publication by the World Intellectual Property Organisation (WIPO), but in terms of relating to the gathering of data around university and research focussed-patents, it is referred to here as a possible resource showing trends in geographical and technical spheres of patent activity, which may assist KTOs.

As the United Nations agency promoting worldwide use of IP, one of the key attributes of WIPO is its ability to draw on the data it holds to generate additional information showing "the latest trends in IP, innovation and creativity to promote the use of IP for the benefit of all", as they state. They produce their unique, 2020 World Intellectual Property Indicators (WIPI) report, which analyses IP data from 150 national and regional offices around the world. and covers 2019 data, predating the human and economic shock of the COVID-19 pandemic. WIPO states further that "In 2019, trademark and industrial design filing activity increased by 5.9% and 1.3%, respectively. A 3% decline in global patent applications, the first fall in a decade, was driven by a drop in filings by Chinese residents amidst an overall shift in regulations there aimed at optimising application structures. Excluding China, global patent filings rose 2.3% – the highest rate of growth in years. The rich data and insights contained in this report are of critical value to a broad audience. "Acknowledging this filing activity all predates the pandemic, WIPO expresses the view that these should all demonstrate "a strong foundation of IP activity that will serve as a base for new advancements as the pandemic subsides."

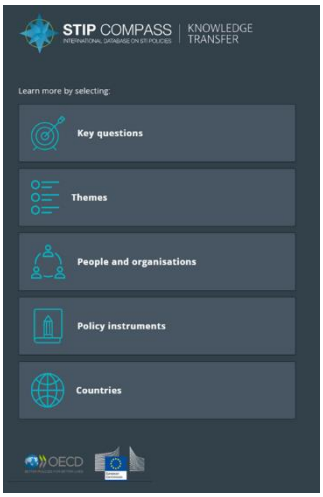
Of direct interest to some KTOs may be table in the patent statistics section which show a distribution of technology fields for selected universities and PROs based on patent families filed 2015-2017, or the tables showing

[15] Link to EPO's published study: https://www.epo.org/news-events/news/2020/20201124.html

[16] WIPO (2020). World Intellectual Property Indicators 2020. Geneva: World Intellectual Property Organisation. Available at: https://www.astp4kt.eu/assets/wipo_pub_941_2020.pdf

incidence of female inventors. However, the overall report contains vast amounts of data covering not just patents but all types of intellectual property rights, including a chapter on creative industries (albeit limited to books and music) but providing interesting information about the prevalence of copyright as a significant economic activity in several countries. The data amassed goes beyond filing data but also incorporates the results of different surveys which WIPO conducts, often in partnership with other organisations, and their approach to the challenges of obtaining standard definitions and comparable data are briefly described in their final chapter.

5.4. Explorable Policy Guide on Knowledge Transfer and Co-creation



Have you ever wondered what co-creation in the 21st century is? How to support the creation of academic spin-offs? How to enhance the commercialisation of public research? Or the contribution of Higher Education, Public Research Institutes and Technology Transfer Offices to knowledge transfer?

If you are interested to learn more on knowledge transfer and co-creation, visit this new online toolkit[17] on knowledge transfer and co-creation. Developed by the OECD, this Explorable Policy Guide makes a wealth of information on knowledge transfer and co-creation accessible to policy audiences, entrepreneurs, researchers, and professionals in knowledge transfer.

You can enter journeys of discovery to explore the field, identify topics of interest to them, and learn about examples of policy practice. Moreover, find answers to key questions in the field, policy themes, information on key people and organisations as well as policy instruments.

Launched in June 2020, it consists of over 100 pages today and brings together insights from a wide range of sources - empirical case studies, publications from the EC and OECD and academic articles – and uses extensively the STI policies microdata and Science, Technology and Innovation (STI) indicators. Empirical case studies, as well as dedicated country profiles present insights on knowledge transfer and co-creation in the national context of over 50 countries.

[17] Link to the new online toolkit: https://stip.oecd.org/stip/knowledge-transfer

6. Acknowledgements

The ASTP Board and Survey Committee remain enthusiastically committed to the continued pursuit of collecting and presenting data on the KT landscape. As you saw in the final chapter of this report, there are increasing number of initiatives which collect and present focused data. Yet our efforts are novel in that we collect and draw on cross-border data from the experts directly engaged in the process: KT professionals. A special thanks to all 98 respondents to the ASTP survey for contributing data from their respective university or research organisation and for taking the time to diligently fill in our questionnaire. This data is crucial not only for the preparation and quality of this report, but also helps indicate where there are developments in the sector, as well as challenges and issues which can be spotted from the trends observed.

National Associations and the ASTP National Associations Advisory Committee (NAAC) deliver an incredible commitment in the collection of European KTO data. Their continued collaboration in terms of either promoting our questionnaire or sharing data with ASTP is the reason that we have been seeing annual increases in the number of total datasets. We are very grateful to these most pro-active NAs driving individual completion by the KTOs in their regions: FinnChamps (Finland), PACTT (Poland), Réseau LIEU (Belgium), SNITTS (Sweden), TransferAllianz (Germany), Transfera (Czech Republic), ÜSIMP (Turkey), and VSNU (Netherlands).

Those NAs that are collecting data in their respective countries continue to inspire us with their dedication to the challenge of gathering KT metrics, all in the name of understanding better the endeavours of this KT landscape. Not only do they face the challenges with their own surveys, they also willingly collaborate with our Survey Committee to facilitate the transfers of data so that the European-wide KT community can be more effectively informed. For this we remain eternally grateful and look forward to further engagement with all NAs as we work together to further enhance the recognition of the achievements of the KT community. Our thanks go this year to Knowledge Transfer Ireland (Ireland), Netval (Italy), RedOTRI and CRUE (Spain), Research England (previously known as HEFCE, UK), Réseau C.U.R.I.E (France), Universities Denmark (Denmark) and Hungarian ETTF for their invaluable willingness to cooperate and share national data collected through their own national surveys.

Conducting the Annual Survey and producing this report would not have been possible without the driving energy of the volunteers in the ASTP Survey Committee. Their outstanding efforts and dedication to ASTP Survey Committee activities enabled a smooth transition when Cécile Cavalade (its Chair since 2018) became President of the Association in June 2020. Her position was taken on by Laura Kreiling who acted as interim Chair. This ensured the continuation of routine activities in the Survey Committee as well as the addition of an ad-hoc ASTP COVID-19 survey to better understand the pandemic's impact on the KT landscape. The challenges of 2020, including working from home, have not daunted them in rallying to continue their work. Finally, special thanks to Koen Verhoef - one of the longstanding champions of the ASTP Survey and Impact data - for working hard on the feedback tool, coordinating its evolution with our external ICT partner throughout these challenging months in a pandemic.

The ASTP Survey Committee continues to evolve. We all look forward to the next exciting developments as we continue to gather expertise, cement partnerships to add value, develop valuable tools and continue to raise awareness about the role and impact of KT in innovation.

6.1. Survey Committee Members (2020 Report)

Cécile Cavalade
Former Chair, VP Survey and Impact
Université libre de Bruxelles, Belgium

Laura Kreiling
Interim Chair
Paris-Saclay University, France

Koen Verhoef
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Netherlands Cancer Institute, Netherlands

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PROvendis GmbH, Germany

Appendix 1 – List of Figures, Tables and Abbreviations

List of Figures

List of Tables

List of Abbreviations

ATTP	Alliance of Technology Transfer Professionals
EC	European Commission
EU	European Union
CDA	Confidential Disclosure Agreement
EPO	European Patent Office
FTE	Full Time Equivalent
FY	Financial Year
IP	Intellectual Property

IPR	Intellectual Property Rights
ICT	Information and Communications Technology
JRC	Joint Research Centre
K€	Thousand Euros
KE	Knowledge Exchange
KT	Knowledge Transfer
KTO(s)	Knowledge Transfer Office(s)
LOA	Licensed with an Option to Assign
M€	Million Euros
MTA	Material Transfer Agreement
NAAC	National Associations Advisory Committee
NA(s)	National Association(s):
CRUE	*Conference of Rectors of Spanish Universities*
ETTF	*Technology and Knowledge Transfer Forum of Hungarian Universities*
FinnChamps	*Informal Knowledge Transfer Association in Finland*
HEFCE	*Higher Education Funding Council for England (it ceased to exist as of 1 April 2018), now known as Research England*
KTI	*Knowledge Transfer Ireland*
NATT	*Russian National Association of Technology Transfer*
Netval	*Italian Knowledge Transfer Association*
PACTT	*Porozumie Akademickich Centrów Transferów Technologii (Polish Association of Centers for Technology Transfer)*
RedOTRI	*Red de Oficinas de Transferencia de Resultados de Investigación (Spanish Knowledge Transfer Association)*
Réseau C.U.R.I.E.	*French Knowledge Transfer Association*
Réseau LIEU	*Belgian Knowledge Transfer Association*
SNITTS	*Swedish Network for Innovation and Technology Transfer Support*
swiTT	*Swiss Technology Transfer Association*
TechnologieAllianz	*German association for knowledge and technology transfer*
Transfera	*Knowledge Transfer Association in Czech Republic*
Universities Denmark	*Danish association for knowledge and technology transfer*
ÜSIMP	*University-Industry Collaboration Centres Platform of Turkey*
VSNU	*Vereniging van Samenwerkende Nederlandse Universiteiten (Association of Dutch Universities)*
OECD	Organisation for Economic Co-operation and Development
PCT	Patent Cooperation Treaty
PRO(s)	Public Research Organisation(s)
R&D	Research and Development
RTTP	Registered Technology Transfer Professional

STI	Science, Technology and Innovation
TT	Technology Transfer
TTO(s)	Technology Transfer Office(s)
VP	Vice President
WIPO	World Intellectual Property Organisation
WIPI	World Intellectual Property Indicators

Appendix 2 - FY2018 Survey Questionnaire

The questionnaire (below) has been fulfilled by direct respondents to ASTP Annual Survey.

Some information about yourself

1. Do you allow us to share your data with your national knowledge and technology transfer association?

- ○ YES
- ○ NO

If yes, please choose your national association:

Austria - Austrian TT Network
Belgium - Réseau LIEU
Belgium - TTO Flanders
Croatia - Croatian TT Network
Czech Republic - Transfera
Denmark - Universities Denmark
Finland - FinnChamps
France - Réseau C.U.R.I.E.
Germany - Technologie Allianz e.V.
Greece - PRAXI Network
Hungary - Technology and Knowledge Transfer Forum of Hungarian Universities
Ireland - IKTIG (Irish Knowledge Transfer & Innovation Group)
Italy - NETVAL
Netherlands - VSNU (Vereniging van Samenwerkende Nederlandse Universiteiten)
Norway - FIN
Poland - PACTT (Porozumie Akademickich Centrów Transferów Technologii)
Portugal - UTEN/GAPI
Russia - NATT (Russian National Association of Technology Transfer)
Slovenia - SI-TT (Association of Technology Transfer Professionals of Slovenia)
Spain - RedOTRI
Spain - Redtransfer
Sweden - SNITTS (Swedish Network for Innovation and Technology Transfer Support)
Switzerland - swiTT (Swiss Technology Transfer Association)
Turkey - ÜSIMP (University-Industry Collaboration Centers Platform of Turkey)
Ukraine, Azerbaijan, Georgia & Maldova - TTIRA (Technology Transfer Inter-Regional As
United Kingdom - PraxisAuril
Other

If your national association is not listed above, please fill in below:

Name of National Association

Name of contact person

Email address of contact person

2. Please provide us with some information about yourself, should we need to contact you. *

Your name

Email address

Phone number

ASTP complies with all GDPR requirements and is committed to honesty and transparency, to protecting your data, and to never use it inappropriately.

Demographics and KTO age

3. Please provide some basic information on your Knowledge Transfer Office (KTO) or Public Research Organisation (PRO). *

Name of KTO or PRO of which the KTO is a part of

Address 1

Address 2

City

Postal code

Country

4. In what year was your KTO first established? *

5. What is the total number of PROs your KTO serves? *

Please include the total number of PROs for which you are submitting aggregate data in this survey.

KTO staff and IP expenditure

6. What was the total number of KTO staff in Full-Time Equivalents (FTEs) at the end of FY2018?

If you wish to use a decimal point, please use a period (.) instead of a comma (,) as the use of commas in numbers is not allowed and the comma will be removed (e.g. 12,4 will become 124.

Total FTEs

*One **Full Time Equivalent (FTE)** is equivalent to one employee working full-time, however the value is not necessarily equal to the actual number of employees. In case of part-time employees, FTE value will be less than the number of persons. E.g. two employees spending 30% of their work time each at the KTO will add up to 0.6 FTE.*

7. What percentage (%) efforts of the total FTEs reported under Question 6 were directed towards the following activities:

Research Support *including MTAs, CDAs, Collaborative Research Agreements, etc.*	
Commercialisation *including IP protection and commercialisation, licensing, consultancy agreements*	
Entrepreneurship Support *including training, business planning, incubation*	
Business Development *including industry liaison*	
Others *none of the above*	

0 out of 100% Total

8. What total amount was spent for IP protection by your KTO and PRO(s) combined (€)?

Please include both the charges from external IP specialists as well as fees paid to IPR-granting authorities (e.g. the EPO) excluding internal staff-related costs.

Research Effort, Agreements with Non-Academic Parties

9. Please give the aggregate Research Expenditures in FY2018 for all PRO(s) for which your KTO is reporting data under this survey (€).

Include share of academic costs dedicated to research (e.g. salary costs of permanent academic staff, costs of administrative support, capital expenditures on new equipment). Exclude cost of new buildings or land.

10. What was the (combined) research effort of your PRO(s) in FY2018, expressed in FTEs?

Include time spent by academic staff on research (also include FTEs for post-docs, PhD students, research fellows, technicians and the like). Exclude time spent by staff on teaching.

11. Please use this comment box to provide context where necessary to any of the numbers provided under Questions 9 and 10. Insert comment if there are reasons to assume that the numbers provided may not be comparable with those provided by other European institutions.

e.g. for some PROs, a lot of research work is being performed by PhD students on stipends, who do count towards the number of FTE in research but are not on the payroll of the PRO and so do not contribute to the Research Expenditures etc.

12. Please provide the number of new agreements with non-academic parties that were signed in FY2018:

Contract Research Agreements	
Collaborative Research Agreements	
Consultancy Agreements	

13. Please provide the gross amount (€) received directly by your PRO(s) from non-academic parties under the following agreement types in FY2018:

Contract Research Agreements	
Collaborative Research Agreements	
Consultancy Agreements	

Contract Research *means research performed by a PRO at the request of and paid for by a non-academic organisation, using existing knowledge, know-how, materials, equipment and other resources available at the PRO.*

Under a Contract Research Agreement, the project is typically designed by the non-academic party and all results and IP are typically owned by the non-academic organisation and PROs may not be allowed to publish the results of the research. The incentive for the PRO to engage in such research is not academic output. For the purposes of this survey, technical services provided to non-academic parties (e.g. scientific measurements, testing, analysis) will qualify as contract research.

Collaborative Research *means research performed by at least one PRO and at least one non-academic party, where all parties contribute to the design of the research project, its implementation and share the project outputs. Include all collaboration agreements involving non-academic organisation, including those under which the non-academic party does not make any cash payment to the PRO directly (e.g. in case the project is fully subsidised).*

Under a Collaborative Research Agreement, the results and IP are typically owned by the party or parties that generated them (or are jointly owned). All parties share the data/results and academic parties have the right to publish the results of the research. The incentive for the PRO to engage in such research is primarily academically-driven (generation of new scientific knowledge).

Consultancy *means the provision of expert advice in a specific field by academics working in a PRO for the benefit of an external, non-academic organisation. Exclude consultancy agreements concluded by individual staff members directly with third parties (i.e. not through the PRO) or those that relate to research or technical services, testing of equipment and the like.*

The services do not typically involve experimentation, measurements, use of specialised equipment or generating new data (such activities would normally qualify as 'contract research') but make use of the academic's specialist knowledge and skills of the field in which he/she works.

Invention disclosures, patent applications and patent grants

14. What is the number of invention disclosures received by your KTO in FY2018?

Formal or informal descriptions of inventions or discoveries that are discussed with and/or evaluated by the KTO staff or other technology experts to assess their utility outside academia.

15. Please give the total number of priority patent applications filed in FY2018.

A priority patent application constitutes the first patent application for a technically unique invention. If priority patent applications relating to the same technically unique invention are submitted simultaneously in multiple patent offices, or are submitted after the first priority patent application within the priority year, only a single priority application should be counted.

16. How many patents were first granted in FY2018?

The first grant in any territory of a patent for a technically unique invention. Count a patent grant for the same invention in two or more countries as one technically unique patent. If a first patent grant for a technically unique invention has been counted in a previous year, no further patent grants for such invention should be reported. Please only count the first granted patent in each patent family.

17. What is the total number of patent families in the patent portfolio of your KTO that are active at the end of FY2018?

A patent family is a collection of patent applications and granted patents that relates to a single invention.

18. Please give the number of active patent families in the patent portfolio provided under Question 17 that is licensed or optioned at the end of FY2018.

Include both patent applications and granted patents for which, as of the end of the reference year, an option agreement or a license agreement is active for at least one patent family member. Note that assigned patents are not considered as part of active patent families.

Licenses, options and assignments involving IP

19. What is the number of licenses signed in FY2018 by type:

Patent Licenses	
Research Material Licenses	
Software Licenses	
Others	

20. What is the number of IP options and IP assignments signed in FY2018:

Options	
Assignments	

Commercial Revenues

21. What are the gross revenues from commercialisation of IP earned in FY2018 (€)?

Gross revenues from the commercialisation of all types of know-how and IP (e.g. patents, copyright, designs, trademarks, software, trade secrets, plant breeder rights, etc.) before distribution within the PRO or to inventors. Include license issue fees, annual fees, option fees, milestone payments, running royalties, change-of-control payments, dividends and proceeds from cashed-in equity. Exclude license income forwarded to third parties other than individual inventors.

22. Of the gross revenues reported under Question 21, what amount was generated by patent licenses (€)?

Note that the amount should not exceed the amount submitted under Question 21.

23. Of the gross revenues reported under Question 21, what amount relates to cashed-in equity (€)?

Note that the amount should not exceed the amount submitted under Question 21.

Spin-offs and start-ups

24. How many spin-offs were established in FY2018?

*A spin-off is a company **expressly established to develop or exploit IP** created by a PRO and **with a formal contractual relationship** for the use of this IP. Include, but do not limit to, spin-offs established by PRO staff. Exclude companies that have no formal agreement for commercially developing IP or know-how created by the institution.*

25. How many start-ups were established in FY2018?

*A start-up is a newly registered company that is **founded by PRO students or employees** but that is **not directly involved with the exploitation of intellectual property** generated **within that PRO.***

26. How many operating spin-off companies (in aggregate) were there at the end of FY2018?

How many staff members (FTEs) were employed by your operating spin-off companies (in aggregate) at the end of FY2018?

Please disregard any change in the number of FTE after take-over or merger of the spin-off company by/with another company. Use the last FTE count before such event instead.

Call for Successful Impact Stories

Knowledge Transfer aims to maximise the economic and societal benefits of ideas, knowledge or inventions coming from research activities. ASTP would like to promote the variety and importance of KT impacts through the publication of case studies. Impact shall not only be on commerce, services and economy but also on health, policy, law or arts and culture. Share your successful stories (achieved in FY2018) and get them featured on ASTP best practice library and other channels.

27. Does your KTO have a successful impact story?

- ○ Yes
- ○ No

Would you like to share this impact story with ASTP?

- ○ Yes
- ○ No

Please provide a 3 line description of your proposed success story.

Who should we contact to collect this impact story?

It should not exceed one A4 page.

Name of contact person

If different from the one provided under the contact details.

Email address

If different from the one provided under the contact details.

Personalised Feedback Report

The ASTP Survey Committee has developed a tool that enables the creation of an individual report in a standardised format for each KTO that has submitted data to the annual ASTP KT survey. The report contains a number of metrics (or ratios) using data submitted in the respective survey. The data reported by an individual office is presented next to the data of all other KT offices for which data has been collected on the respective metrics. This is presented as a box plot, meaning that it will only give information on a dataset at an aggregate level. Individualised reports are specific to an individual KTO and will not be shared with or be made available to any other organisation.

With this personalised report, the ASTP Survey Committee would like to acknowledge the KTOs' contribution to the ASTP survey by providing a service in return for their efforts to complete the survey. Its primary aim is to enable KTOs to analyse their metrics in relation to the European KT community.

The feedback report is available on request for free. Please know that it will be created at the end of the data collection and analysis process which will be in mid-2020.

Do you wish to receive the personalised feedback report?

- ○ Yes
- ○ No

To which email address should we send the feedback report to?

If different from the one provided under the contact details.

In order to get the most value from the feedback report, please try to provide us with as much data as possible. Submitted data to the following questions will be included in the feedback report: 4, 6, 8, 9, 10, 12, 13, 14, 15, 17, 18, 19, 20, 21, 24 and 25.

Feedback

Please use this space to give us your opinion on any aspect of the survey, e.g. the relevance of particular questions, its length, whether you think something is missing or what you'd like to have changed, if anything.