Taftie Insights report
Meeting 1 (15-16 February 2023):
Technology Transfer and cooperation between academia and businesses

Executive summary

- The first 2023 meeting of the Taftie network revolved around technology transfer.
- The meeting was preceded by a survey of the innovation agencies on their programmes and activity:
  - The survey showed that most respondent agencies (83%) are running some programme in tech transfer, at an average of 2-3 per agency.
  - An overwhelming majority of programmes (90%) offer financial support, often in combination with knowledge sharing (27%), matchmaking (24%), or infrastructure (12%) support.
  - Innovation agencies see a lack of expertise (51%) of the different stakeholders as the main barrier to technology transfer.
  - Measuring the impact and success of programmes is an important and challenging goal for agencies. Currently, the metrics captured focus on programme demand, outputs, outcomes, impact and satisfaction.
- The discussion of the first 2023 Taftie meeting revolved around language, commitment, filling the gap between academia and businesses and simplifying processes:
  - The language should shift towards "knowledge valorisation" to expand the scope of what is being transferred and its purpose.
  - Universities have to take steps to strategically include the Third Mission in their goals and incentive structures.
  - One way for agencies to advance this area of work at research institutions is by focusing on upskilling younger researcher generations.
  - Innovation agencies play a crucial role in filling the gap between research institutions and businesses; they can help by creating well-rounded intermediary structures that bring expertise and human resources into the process and allow researchers to focus on their areas of expertise.
  - Given the complexity of this area of work, all structures need to focus on simplicity and ease of access - to funding, information, and support.

Part 1: Introduction

The first 2023 meeting of the Taftie network revolved around **technology transfer**. Many names describe this area of work, depending on where the emphasis is placed: science commercialisation, university-business collaboration, knowledge valorisation, or the third mission of universities, among others. But the challenge of "conveying results stemming from scientific and technological research to the marketplace and to wider society, along with associated skills and procedures" (European Commission 2020) remains the same.

Many stakeholders in the technology transfer ecosystem have to work in sync to increase the impact of scientific discovery: researchers, companies, universities, entrepreneurs, venture capital, and governments, often represented by innovation agencies.

The latter have to avoid becoming blockers of the process and find ways to act as stimulators - by bringing people together, providing financial and technical support, and creating organisational structures that accelerate the transfer of knowledge and technology. And they need to measure and prove their impact, which often becomes a challenge in itself.

To frame the conversation on tech transfer and the role that innovation agencies can and ought to play in this ecosystem, the meeting was preceded by a survey on the activities of the innovation agencies, and innovation agencies, academic entrepreneurs, and tech transfer offices were invited to present and join in on a discussion panel about the main issues. The takeaways from the survey and the conversation are summarised below.

Part 2: Insights from survey data

Ahead of the 2023 Taftie meeting on technology transfer, a survey was sent to all member agencies (34) inquiring about the programmes they were running or had recently run in their area of influence as well as the main barriers they were facing and the metrics they were using to measure impact.

For this survey, technology transfer was defined as "*the process of transforming discoveries at universities and research centres into market innovations through spinning out, licensing, joint research, contract research, consulting, knowledge transfer or people movement*". The definition was chosen to maintain a broad understanding of the phenomenon and avoid bias in the responses, making sure that all possible channels of transfer were included - since certain channels (i.e. spin-outs) often received disproportionate attention.

The survey response rate was very high: 29 agencies responded and provided information on 67 different programmes. This provides a set of broad and reliable results from which to draw conclusions.

Programme prevalence

**Figure 1**: Distribution of programmes by agencies
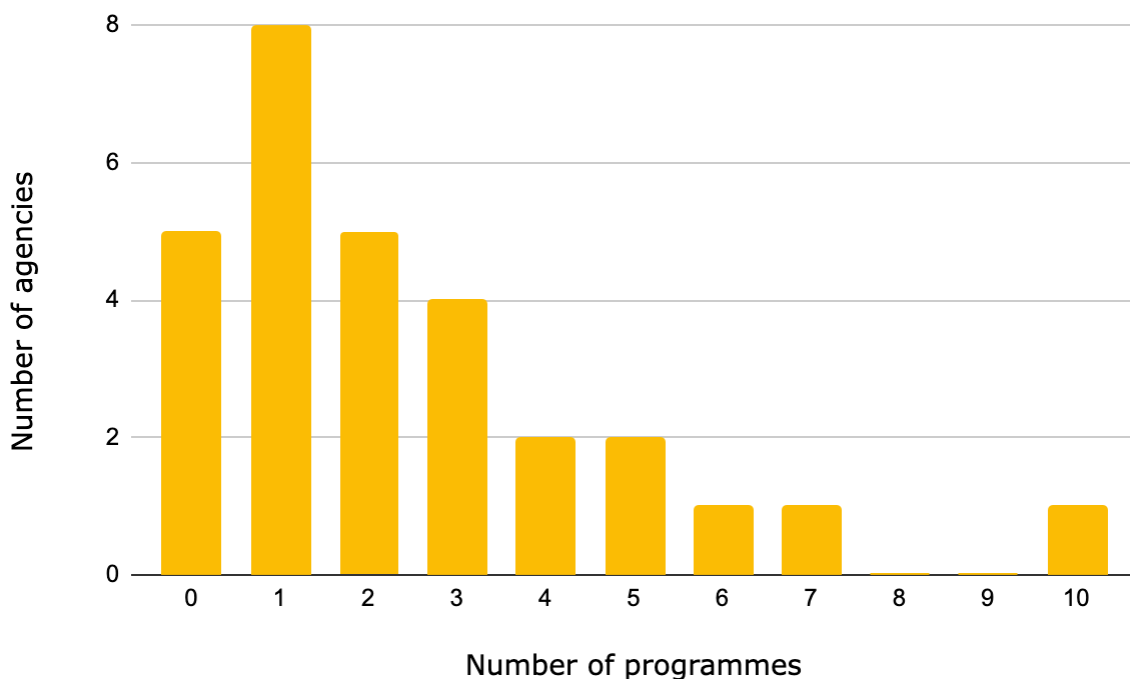
Programmes around technology transfer are widespread, as most respondent agencies (82.8%) are running some programme. Only five of the respondents said that they were not - because other organisations are responsible for it in their ecosystem.

Innovation agencies do not seem to run many programmes at the same time, however[1] (Figure 1). A majority of agencies (13 out of those with programmes) have 2 or fewer programmes, and the average number of programmes lies between 2 and 3, with some exceptions.

Types of support

Figure 2: Number of programmes by type of support
Note: There is a total of 67 programmes. Some programmes provide different types of support simultaneously and fit into different categories.
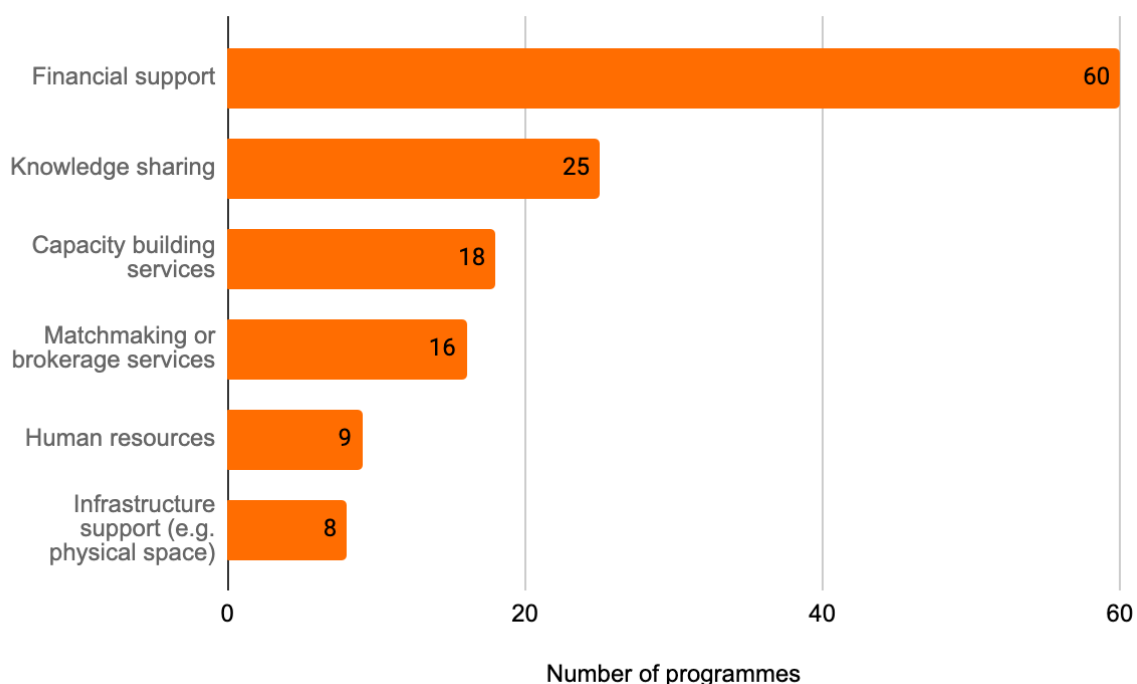
Financial support is a fundamental element of how innovation agencies are involved in technology transfer (Figure 2). An overwhelming majority of programmes (90%) offer financial support, 35% of the programmes offer financial support only, and 53% do so in combination with other types of support. Only 10% of programmes do not offer any financial support. These different types of support are often (55%) provided directly, and sometimes indirectly (25%) or in partnership (20%) with other actors in the ecosystem.

When the programmes are focused on providing financial support only, this support is often restricted to funding a specific aspect of the technology transfer process. Examples of this are tax rebates for the exploitation of patents, paying for infrastructure, or covering the cost associated with registering a patent or reformulating results to be more accessible to the broader public.

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[1] The amount of programmes might be underestimated here. During the conversation in Zagreb at the Insight Session, several agencies realised that they have further programmes that are acting towards technology transfer but were not included in the responses.

When the programmes offer financial support in combination with other types of support, this support also includes the provision of infrastructure, knowledge or support in match-making. Programmes that provide financial and infrastructure support (12%) often pursue the goals of creating whole new ecosystems and organisational structures. When programmes combine financial support and knowledge sharing (27%), they focus on developing instruments to foster the exchange of information, the transfer of ideas and generate feedback loops. The programmes that focus on financial support and matchmaking (24%) often centre around bringing researchers and companies together and covering the cost of having researchers join companies for a while or vice versa.

The 10% of programmes that do not offer financial support focus on coaching, knowledge sharing or match-making instead. They help to find and contact the right people for collaboration and help with negotiations and the creation of frameworks for collaboration.

Programme targets

Figure 3: Number of programmes by target

Note: There is a total of 67 programmes. Some programmes target different actors simultaneously and fit into different categories.
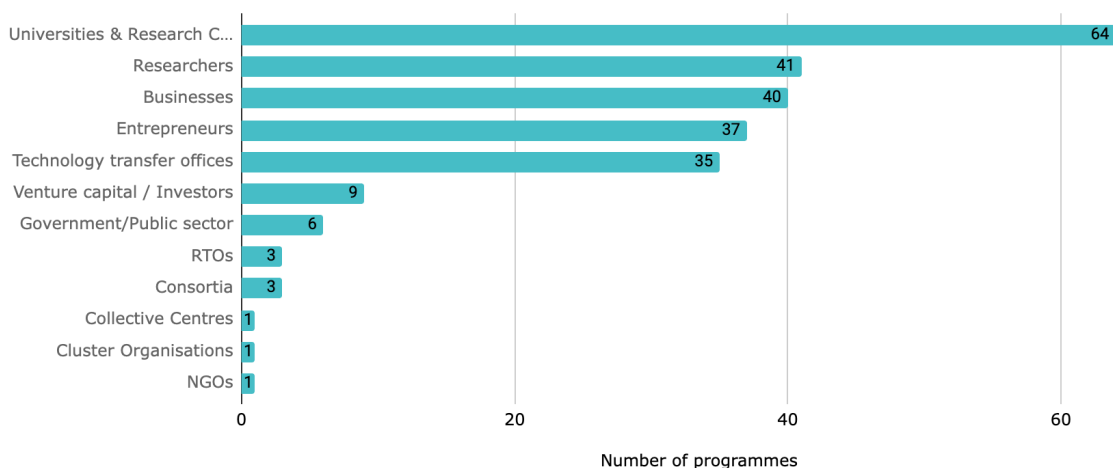
Most programmes focus on research institutions (Figure 3). The majority of them target universities and research centres (95%), often in combination with researchers (61%), technology transfer officers (52%) or businesses (56%). Only 10% of programmes target businesses or entrepreneurs alone.

Most programmes that target universities are also directed at different actors in the academic ecosystem, as researchers often cannot be directly connected. These programmes try to access the existing knowledge in universities and provide businesses with access to researchers, via consulting, networking or placement schemes.

10% of programmes do not target universities and target businesses alone, helping them improve their processes to access knowledge or funding.

No programme claimed to target technology transfer offices (TTOs) alone and only a few

focused on these actors specifically and not as a means to an end. However, the orientation of TTOs - towards impact, service or profit - and their ability to create connections, uncover opportunities and scale processes is fundamental for the technology transfer process.

Main barriers in technology transfer ecosystem

Figure 4: Main barriers by number of mentions
Note: The 29 respondents could choose multiple barriers. The graph orders the barriers by the amount of mentions.
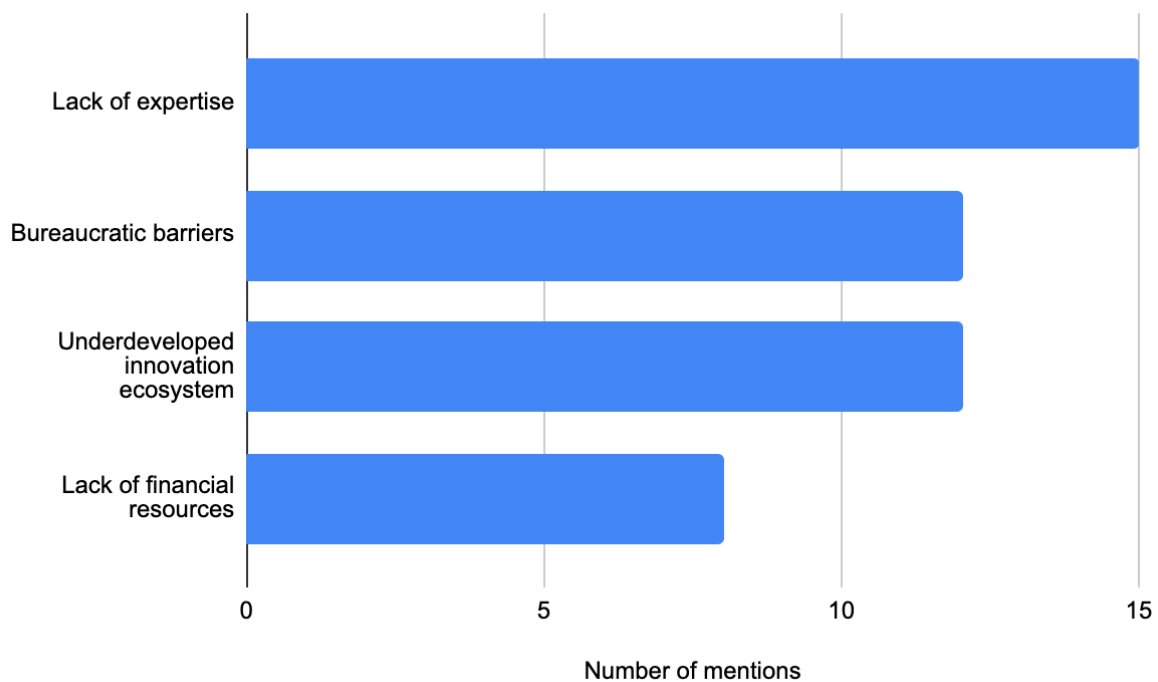
Innovation agencies see lack of expertise (51%) as the main barrier to technology transfer, often referring to the lack of expertise of SMEs (due to their reduced size and inexperience) and technology transfer officers (Figure 4). This makes the finding that only a few programmes are targeting capacity building in TTOs even more remarkable.

Next to lack of expertise, bureaucratic barriers (41%) are seen as the next barrier in technology transfer, citing administrative hurdles and governance issues derived from multi-level decision-making.

Underdeveloped innovation ecosystems (41%) seem to be an equally significant problem, with respondents citing weak university-industry relationships, the low interest of industry in academic work and vice versa, and the lack of industry partners as the key issues.

Lack of financial resources also plays a role (28%) in the difficulties that innovation agencies identify in their ecosystem. Even though many programmes offer financial support, the innovation agencies' and other actors' access to government funding seems irregular, which makes it difficult to maintain successful programmes. Many ecosystems

also have weak VC markets, so looking for sources of funding elsewhere is also further complicated.

Finally, cultural barriers were put forward as a barrier in technology transfer, citing well-known problems such as unrealistic expectations on the side of tech producers regarding the valuation of their discovery and the level of commitment they need to invest, as well as the different timescales at which for-profit enterprises and universities work.

Programme metrics

As much as developing successful technology transfer support programmes is a challenge for innovation agencies, *measuring* success is equally important and demanding. Thus, the survey also asked about how the impact of the different programmes was being measured and evaluated. The responses can be categorised as metrics of programme demand, outputs, outcomes, impact and satisfaction. Table 1 organises and captures the most common ones.

Table 1: Metrics used by innovation agencies to capture programme results and impact

Category	Metric
Programme demand	○ Applications ○ Company participation ○ Research institution participation ○ Dissemination actions ○ New programme participants ○ Participant demographics/diversity
Outputs *The specific results derived from executing a programme*	○ Money awarded ○ Projects supported ○ Services provided ○ Information collected ○ Annual reports ○ Evaluation reports
Outcomes *The immediate or first-order effects of a programme*	○ Expressions of interest by industry ○ Partnership/Cooperation/Matches ○ Network creation/participation ○ Dissemination actions ○ Tax deductions ○ Paid services between researchers and companies ○ TTO activity (contracts, events, royalties) ○ Intellectual property protection (patents) ○ Prototypes
Impact[2] *The mid- to long-term or second-order effects of a programme*	○ Money raised/Investment activated ○ Licence contracts ○ New products/Commercialised technology ○ Idea-to-company-ratio ○ Company/Spin-off creation ○ Company valuation ○ Sales ○ Revenue ○ Job creation ○ Publications ○ Sustained cooperation
Satisfaction	○ Satisfaction (with mentoring and consulting)

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[2] Depending on the goal and timescale of a programme, the impact metrics might be best categorised as outcome metrics and vice versa.

Part 3: Conclusions from insight session discussions

During the insight sessions, representatives of technology transfer offices, innovation agencies, and academic entrepreneurs presented and discussed the challenges and opportunities of technology transfer as they see them.

The first insight had to do with the **language used to describe this area of work**: it should be called (some variation of) knowledge valorisation. By highlighting the knowledge aspect, this wording captures the breadth of what can be transferred to society beyond specific technological assets and highlights the potential of mere information exchange to improve products, processes and discoveries. On the other hand, the term 'valorisation' allows for the efforts to increase the societal impact of scientific discovery not to be solely profit-oriented.

The second element of the discussion focused on **the need for increased commitment to knowledge valorisation**. For these processes and ecosystems to develop, universities need to make their Third Mission a strategic priority, which would result in resources being redirected to this area of work and incentives for researchers to be restructured to highlight the importance of sharing their knowledge with society. It is often difficult to influence universities, which have independent inner logics and working systems, but innovation agencies should look for ways to incentivize universities to participate in knowledge valorisation.

As part of the discussion, it was suggested that a productive approach might be to focus on providing the newest generations of researchers with the knowledge, tools and resources to consider participation in knowledge valorisation - or at least to be able to communicate their work clearly to non-expert audiences so someone else can take over. The goal is to involve junior researchers in valorisation activities in a way that does not require a full commitment to a non-academic career from the beginning and does therefore not represent such a risky move. Some options include helping them consider valorisation measures within the safe environment of the university (e.g. through within-university incubators) and providing them with incentives (i.e. financial and technical support) and safety (e.g. insurance to cover inadvertent misuse of grant money).

Third, the discussion centred around **the role of innovation agencies in helping fill the gap between research institutions and businesses**. There was a consensus that the goal of knowledge valorisation is not to turn academics into entrepreneurs, and that excellent research is needed for excellent discovery. Hence, helping academics bring their ideas to market without having to become entrepreneurs, project managers, marketers, and accountants is crucial. The goal is to create the structures to do what researchers cannot or will not do, through well-rounded intermediaries that can aid and advance the

process, easing access to external expertise (e.g. legal, taxes) and bringing people in with a commercialisation lens and purpose into academia to take over the process as much as possible (example mentioned: Sociétés d'Accélération du Transfert de Technologies (SATT)).

Fourth, the discussion highlighted **simplicity**. Making access to information, expertise, funding, infrastructure, coaching, and services easy for all actors involved in the knowledge valorisation ecosystem is crucial. Reducing bureaucratic barriers to collaboration, and to access and use of funds can go a long way in increasing efficacy and efficiency. Models that centralise the TTO function across universities or one-point entry innovation agencies that redirect clients to the services as needed (example mentioned: Wallonie Entreprendre), were put forward as innovative institutions that innovation agencies can help co-create to simplify processes.

Part 4: Ideas to take forward

The discussion of the first 2023 Taftie meeting revolved around language, commitment, filling the gap between academia and businesses and simplifying processes in technology transfer/knowledge valorisation. Any of these conversations could and should be continued to maintain an exchange around best practices, what works, and challenges in implementation.

Another area of broad interest according to the survey responses and that came up in conversation at the insight session are metrics. There is increased interest in identifying metrics of programme performance that go beyond patents and that ideally allow for live monitoring of programme success - as opposed to an ex-post evaluation. This is a discussion that should be picked up again, especially since the potential here is not just the sharing of metrics but also the unification of metrics for increased comparability of programmes.

As was mentioned repeatedly in the discussion, however, the devil is in the details when it comes to fostering knowledge valorisation. So experimenting with specific programme details and developing the right metrics to measure the effect of these changes is necessary to learn and continue an exchange around what works in knowledge valorisation.