



Specific Support to Cyprus

Optimal Utilisation of Publicly Funded Research Laboratories by the Business Community

Horizon 2020 Policy Support Facility



Research and
Innovation

Specific Support to Cyprus - Optimal Utilisation of Publicly Funded Research Laboratories by the Business Community

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"How can research universities best help 21st century society to cope with old and new challenges? Our answer is, by taking a serving role: by training excellent students, performing outstanding research, forging scientific breakthroughs, producing new products and services ... In a nutshell: by engaging with society and creating societal added value".

Universities and the Future of Europe,
League of European Research Universities, 2019

The above quotation is taken from a recent policy briefing paper issued by LERU, the League of European Research Universities. The 23 members of LERU are some of Europe's most prestigious universities.¹

The briefing paper is a perfect reminder that today's top research universities and institutes recognise three core missions: teaching ("excellent students"), research ("outstanding research ... scientific breakthroughs") and innovation ("new products and services"). Universities exist to serve society and to create societal added value.

We preface our report with the above quotation because the Expert Group considers that Cyprus has built a relatively strong teaching and research infrastructure in a remarkably short period of time since the opening of its first publicly funded university in 1992. However, Cyprus has been markedly less successful in extracting societal added value from that investment.

Fortunately, this shortcoming has been recognised. Important changes have begun in Cyprus research and innovation policy through the Cyprus Research and Innovation Strategy Framework 2019-2023 published in summer 2019. We will refer to many of those changes in our report.

We wish here to emphasise that while the success of the new strategy will, of course, require new financial resources, new research initiatives, new innovative activities... it will also require a cultural change in many parts of Cyprus society, both public and private. The Expert Group has been struck by the frustrations and restrictions often experienced by the publicly funded research institutions when they engage with external public and private parties for the purpose of performing research, providing technical expertise, offering laboratory services, establishing spin-off companies ... These frustrations and restrictions appear to have their origins, inter alia, in absent, unclear or misunderstood legal and regulatory frameworks, in an excessive politico-administrative control culture, and in sometimes unrealistic expectations on the part of external parties.

The new departure in Cyprus research and innovation policy is an opportunity to "clear the decks": give the publicly funded research institutions the resources and

¹ University of Amsterdam, Universitat de Barcelona, University of Cambridge, University of Copenhagen, Trinity College Dublin, University of Edinburgh, University of Freiburg, Université de Genève, Universität Heidelberg, University of Helsinki, Universiteit Leiden, KU Leuven, Imperial College London, University College London, Lund University, University of Milan, Ludwig-Maximilians-Universität München, University of Oxford, Sorbonne University, Université Paris-Sud, University of Strasbourg, Utrecht University, University of Zurich

freedoms to fulfil an ambitious innovation mandate and require them to do the job effectively and efficiently.

THE PSF SPECIFIC SUPPORT EXPERT PANEL

Anne-Christine Ritschkoff (Chair)



Anne-Christine Ritschkoff obtained her PhD in Biosciences at the University of Helsinki, Finland in 1996. She has been at VTT Technical Research Centre of Finland Ltd, a globally networked, multi technological not-for-profit research organization, since 1987 in various research and management positions. She has more than 100 scientific publications in the fields of biotechnology, materials science and natural resources.

Anne-Christine Ritschkoff holds currently the position of Senior Advisor, bioeconomy and circular economy. Her special task is to foster technologies, knowledge and practical solutions in the area of natural resources, environmental and clean technologies and resource efficiency. Her previous position as VTT’s Scientific Director & CTO gave her an excellent background and insight in different technologies and scientific disciplines. She promotes enthusiastically new, sustainable solutions and radical innovations for the benefit of society and the economy by integration of different competences and disciplines. She is also actively building strategic networks interlinking research and development and innovation, industry and commerce and government. Anne-Christine Ritschkoff contributes to Finnish and international science and innovation systems through various position of trust. She has been a member and chair of international committees and boards of directors.

Christopher John Hull (Rapporteur)

Christopher Hull has more than 25 years high-level experience managing European networks of public and private organisations delivering research, technology and knowledge transfer services to firms, including to SMEs and start-ups, successively as an Expert for the European Commission (SPRINT Programme), Secretary General (SG) of TII, SG of FEICRO, and SG of EARTO. A core mission in each of these roles was to identify and facilitate exchanges of good practice and effective methods of service delivery.



As an Expert on the SPRINT Programme and as SG of TII, a major focus was on promoting and professionalising university-industry knowledge transfer. Also, on the SPRINT Programme and later as SG of FEICRO, a key activity was helping publicly funded research institutes to transition towards collaborative and contract research business models as well as technology

licensing and spin-off creation. As SG of EARTO, his principal goal was to develop and implant the concept of Research and Technology Organisations (RTOs). He also instituted standing working groups to continuously compare and exchange business models and practices for providing research and technology services to private enterprises. At EARTO Christopher contributed to instituting the "EUROTECH" working group, which brought together the major RTOs with high-level infrastructure facilities, notably AIT, CEA, DTI, Fraunhofer, imec, Sintef, SP, Tecnalía, TNO, VTT.

Yannis Ioanidis (Expert)



Yannis Ioannidis is the President and General Director of the "Athena" Research and Innovation Center as well as a Professor at the Department of Informatics and Telecommunications of the National & Kapodistrian University of Athens. He holds a Diploma in Electrical Engineering from the National Technical University of Athens, an MSc in Applied Mathematics from Harvard University, and a Ph.D. in Computer Science from the University of California-Berkeley. His research interests include database and information systems, data infrastructures & digital repositories, scalable data processing, data and text analytics, and personalization and social networks, topics on which he has published over 150 articles in leading journals and conferences. His work is often inspired by and applied to data management problems arising in other fields, such as life sciences, physical sciences, biodiversity, and cultural heritage. He has been a (co-)coordinator of many European research projects and infrastructures such as CLARIN, Elixir-GR, INSPIREd, HELIX. Yannis is a Strategic Management Board Member SDSN Greece (Sustainable Development Solutions Network) and OpenAIRE legal entity head. He is an ACM and IEEE Fellow, a member of Academia Europaea, and a recipient of several research and teaching awards. He was elected to serve as ACM Secretary/Treasurer for a two-year term. He is the Greek delegate to the European Strategy Forum on Research Infrastructures (ESFRI), a member of the ESFRI Executive Board, the ESFRI representative to the e-Infrastructures Reflection Group (e-IRG), and a member of the ACM Europe Council.

Bruno Lindorfer (Expert)

He studied Mechanical Engineering at the Technical University, Vienna. From 1981 thru 1990 he worked within R&D with the two large Austrian industrial companies, VOEST-ALPINE and ENGEL Machinery. From 1990 until 2008 he has been the global CTO of SIEMENS VAI, the global metallurgical engineering branch of SIEMENS. From 2008 until 2016 Bruno Lindorfer has been the CEO of the Upper Austrian Technology and Innovation Agency, until 2015 called TMG, today called Biz-up.



Bruno Lindorfer has assumed several positions within the Austrian and European RTI-community: He has been a

member of several High-Level Expert Groups of the EC, DG Industry as well as DG R&D, and he is lecturer for Technology Management and Innovation Management at the Johannes Kepler University, Linz/Austria.

Bruno Lindorfer has published numerous papers on Technology as well as Innovation Management.

Geert van der Veen (Expert)



Geert van der Veen is Managing Partner in Amsterdam and Board Member at Technopolis Group. He has more than 25 years of experience in the field of science & innovation policy. After his training as an environmental engineer (University of Twente, MSc) Geert started his career at TNO, performing research on recycling of batteries. Then he became programme manager for Senter (now Netherlands Enterprise Agency) in the area of sustainable technology. At the Wageningen UR Research Institute for Agrotechnology and Food Innovations he was director of the Business Unit Renewable Resources and member of the management team. He joined Technopolis in 2003, and has, amongst other, been involved in more than 50 evaluations of research and innovation institutes in various countries. The issue of how to make these institutes (including the infrastructure present in these institutes) useful for industry and society is of continuing interest for him.

The expert team was supported by the Commission services (DG Research and Innovation, Unit G1 – ERA and Country Intelligence) with Telemachos Telemachou as the contact point from DG Research and Innovation, who coordinated the exercise and ensured liaison with the Cypriot Authorities. The experts were also supported by Jari Romanainen (Technopolis Group) who provided expertise in the area of State aid and carried out the quality review and the project manager and author of the Background Report Nikos Maroulis, (Technopolis Group).

POLICY MESSAGES

Since the opening of the first publicly funded university in the Republic of Cyprus in 1992, the country's tertiary education and research sector has grown remarkably. Today, there are three public universities, five private ones, and three non-profit colleges. Together they count some 44,000 students, almost half of which come from abroad.

Within the tertiary education sector, the bulk of research – around 80% - is performed by the publicly funded universities.

In addition to the public and private universities, there are three private, non-profit research organisations conducting high-level research and also several public laboratories that fulfil research, testing and regulatory functions.

With regard to research quality, one may note that in 2017 about three-quarters of the total number of publications by Cyprus researchers were international co-publications (3rd place in the EU), and in 2014 more than 10% of Cyprus researchers' publications were among the top 10% of most cited publications worldwide. Noteworthy, too, is that the population of Cyprus exhibits a generally high level of education: in 2017 54.9% of the population aged 30-34 had a tertiary educational qualification (2nd in the EU).

Despite the size and strengths of the tertiary education and research sectors, there is relatively little interaction between academia and business. In 2016, just 1% of the budgets of the higher education and private non-profit research institutions were funded by business.

This lack of academia-business engagement prompted the Cypriot authorities to request a PSF Specific Support Action on the "Optimal Utilisation of Publicly Funded Research Laboratories by the Business Community", the recommendations of which should serve as a basis for the development of a government action plan. The Cypriot request was accompanied by a detailed list of issues to be addressed (cf. Annexe 1) which almost uniquely address the supply-side of the equation, i.e. what reforms should be made such that the publicly funded research institutions could/would cooperate more, and more effectively, with business.

The Cypriot authorities' PSF request asked us to focus on the following publicly funded research institutions: the University of Cyprus, the Cyprus University of Technology, the Open University of Cyprus, the Cyprus Institute, and the Cyprus Institute of Neurology and Genetics.

In addition, the list included three of the five laboratories attached to the Ministry of Agriculture, Rural Development and Environment, namely: the Agricultural Research Institute, the Department of Fisheries and Marine Research, and the Department of Meteorology. During its first country visit, the Expert Group had the opportunity to discuss with representatives of the three laboratories and we concluded that they are, first and foremost, "public laboratories" in the classic sense of the term, performing regulatory surveillance and control functions in the

public interest. Requiring a public laboratory to provide support services to the benefit of individual enterprises would risk evident conflicts of interest with respect to its regulatory functions. For that reason, we propose that our recommendations should not apply to the three laboratories,² at least not for the time being and not without careful further reflection.

From the material contained in the background analytical report, and more especially from the Expert Group's interviews with a broad range of stakeholder representatives during our first country visit in May 2019, we concluded that the key challenges facing Cyprus in relation to science-business interaction are essentially three.

First, **domestic demand for research and related services by the research institutions (RIs) is currently almost non-existent.** 95% of Cypriot businesses are micro-enterprises (less than 10 employees), mostly concentrated in traditional sectors and local services. Only the ICT and pharmaceuticals sectors, in 2016, had significant R&D expenditures, which accounted for 83% of all Cypriot business R&D expenditure (but representing only 5.5% of Cypriot Gross Value Added). It follows that attempts to improve the supply side of science-business interaction in Cyprus will inevitably disappoint without concomitant policy action to grow the demand side.

Second, although all of the RIs have committed themselves to working with business and most have put in place in-house interface organisations ("industrial liaison", "technology transfer", etc.), **the volume of activity is still very low and the services offered are generally poorly structured, often lacking in visibility, and are frequently ad hoc.** This is perhaps not surprising. There is a chicken-and-egg problem: given the absence of significant real demand it is practically impossible to develop effective sustainable services. The conclusion is the same as before: reforming the supply side needs to go hand in hand with policy action to grow the demand side.

Third, there **appear to be cultural barriers in Cyprus to developing sustainable academia-business interaction.** One such is a viewpoint, which from our interviews seems to be widespread in Cyprus, that institutions and facilities that receive public funding should provide their services free of charge. Or, to put it another way, there is a reluctance to accept to pay an economic price for a service from a publicly funded research institution – despite the fact that the service confers an individual economic advantage on the beneficiary. Another is an attitude which appears to prevail in certain political quarters that the role of publicly funded research institutions is to teach and to perform academic research; it is not to engage with business and "make money". Such an attitude is at odds with mainstream European good practice in science-business

² An exception may be the research activities of the Agricultural Research Institute (ARI), which account for an estimated 90% of its overall activity. They might be transferred to, or otherwise associated with, another research organisation, e.g. the Cyprus University of Technology's Department of Agricultural Sciences, Biotechnology and Food Science, but the Expert Group does not have the detailed knowledge of the Cypriot research landscape to be able to make a formal recommendation in this sense.

interaction, in which the “third mission” of public universities, namely to engage directly with business and civil society so as to contribute to economic progress and societal advancement, is firmly established. One practical consequence of this attitude in Cyprus is that the 2018 law allowing universities to create spin-off companies is in several respects dysfunctional.

Before summarising our recommendations, we refer to the broader Cypriot policy context. The Cypriot authorities’ request for this PSF Specific Support Action was originally made in late 2017. Since then the country has launched a wholesale reform of its research and innovation policy, which has become crystallized in the “Cyprus Research and Innovation Strategy Framework 2019 - 2023” (CRIS) document published in the summer of 2019. The declared goal of the new strategy is for “Cyprus to become a dynamic and competitive economy, driven by research, scientific excellence, innovation, technological development and entrepreneurship”. Ambitious targets have been set for raising R&D expenditure in both the public and private sectors, and major governance reforms have been announced, including the creation for the first time of a Deputy Ministry of Research, Innovation and Digital Policy. While much of what is proposed in the CRIS has yet to be translated into practice, we expect it to provide the political opportunity and operational framework for implementing the recommendations made in our report.

Table 1: The main elements of the Cyprus Research and Innovation Strategy Framework 2019-2023



SUMMARY OF RECOMMENDATIONS

The issues implicit in the Terms of Reference for this report (cf. Annexe 1) are, essentially, about supply and demand in relation to the research and related services that RIs supply to business.

The mandate given to the Expert Group asked specifically for recommendations for how the Cypriot RIs might work more effectively with the business sector. By contrast, two of the three key challenges identified in the previous section conclude that the core problem is not so much one of supply but rather one of lacking demand for the services that the RIs do/could offer business. There is, however, no real contradiction between the mandate and our conclusions, for this is a chicken-and-egg problem: when demand is low, there is little incentive, or indeed practical possibility, for RIs to develop sustainable, demand-conform services.

The Expert Group's general conclusion, therefore, is that while the policy priority for Cyprus must be to grow the demand side, the RIs also have a key role to play in that regard and require policy support in order to be able to do so.

The RIs' role can and should be multiple. They can contribute directly to growing the demand side by, first, engaging actively in the creation of spin-off companies (i.e. companies in which the RI has a corporate stake, usually involving RI-owned intellectual property) and, second, by encouraging and supporting staff and students wishing to establish their own independent start-ups. Beyond that, and something perhaps easily overlooked, RIs can help "market" and thus ensure the effective implementation of public programmes targeted at stimulating innovation in the business sector, including amongst enterprises with little or no previous innovative activity. Well-designed such programmes are a potential win-win for both parties: the RI gains a (hopefully repeat) customer and the enterprise a (potential) competitive advantage.

The recommendations of the Expert Group proceed from the chicken-and-egg problem referred to above: while it must be a policy priority to grow the demand side – which in toto is beyond the remit of our assignment – the supply side has much to contribute to achieving that objective.

Thus our first recommendation is to **reset the framework conditions under which the RIs engage with business** and, indeed, other external customer segments, notably the public and non-profit sectors. Our recommendations include: institutionalising at high level in each RI a third mandate - beyond "education" and "research" - of "knowledge transfer/innovation"; introducing a financial incentive to encourage RI engagement with business; clarifying for RIs the EU State Aid regulations regarding RI-business interaction, and revising the existing, deficient university spin-off law to align it with European best practice.

The second is to **professionalise the RIs' service offerings**, to make them more transparent for business. We recommend also a shift towards the full economic costing of RI services, in order to resolve real or imagined constraints imposed by the EU State Aid Framework.

Our third recommendation is to **review, revise and complement the mix of public schemes supporting research and innovation so as to actively encourage RI-business interaction.**

Optimise framework conditions so as to actively encourage the RIs to engage with external parties – business, but also the public sector, non-profit organisations – and to contribute directly to the economic and societal development of Cyprus.

Mandate each RI to pursue a third mission of supporting innovation through knowledge transfer.

Require each RI to appoint a high-level manager - "Vice-Chancellor for Innovation (VCI)" - to develop and implement the institution's third mission activities.

The VCI of each RI to be seconded by an "Innovation Manager" (IM), and such additional staff as required, with operational responsibility for the day-to-day implementation of the RI's knowledge transfer strategy.

Introduce a financial incentive scheme to strengthen the motivation for RIs to engage in knowledge transfer activities.

Ensure that RIs receive clear, practical guidance on the compatibility of their innovation activities with the European Union State Aid Framework.

Review and revise the current legislation regulating the creation of spin-off companies by RIs in order to align it with best practice elsewhere in the European Union.

Review and potentially re-inforce the support that the RIs provide to staff and students with entrepreneurial ambitions.

Ensure a productive demarcation of responsibilities between the to-be-created national Knowledge Transfer Office and the in-house knowledge-transfer units of the RIs.

Professionalise the RIs' service offerings.

Network the IMs for the purposes of exchanging experience and mutual learning and to encourage, wherever possible, aligned practices.

Develop structured service offerings for contract and collaborative research, laboratory services, and technical consultancy, underpinned by standard forms of contract (templates), clear pricing principles and practices, and ensure transparent internal administrative procedures whenever special permissions are required for specific activities.

Each RI to prepare for the implementation of full economic costing of its innovation activities once those activities have achieved sufficient volume.

Review the current mix of research- and innovation-related public programmes so as to optimally support the RIs in their engagement with business and other external parties.

Introduce a competitive Key National Infrastructure Programme so as provide the RIs with a stable, predictable source of funding for the acquisition, maintenance and upgrading of large-scale research facilities while at the same time avoiding unnecessary duplication of investment and promoting joint use of facilities.

Retain, review and expand the current innovation voucher scheme, which can be a valuable "first-time" tool for stimulating innovation appetite in small firms.

Introduce a collaborative research programme not tied to specific scientific fields or economic activities but targeting a firm-specific innovation project intended to launch new or improved products or services and/or production processes.

Introduce a graduate placement scheme whereby SMEs receive financial assistance for the employment of recent university graduates for a period of 12-24 months.

THE PSF SPECIFIC SUPPORT TO CYPRUS

The Horizon 2020 Policy Support Facility (PSF) is an instrument aimed at supporting Member States and countries associated to Horizon 2020 to improve the design, implementation and evaluation of their national R&I policies and systems. The PSF has been set up by the European Commission, DG Research and Innovation, under Horizon 2020.

Specific support services provide tailored advice, expertise and good practice to help Member States and Associated Countries in the design or implementation of a specific reform or topic concerning R&I strategies, programmes or institutions. This is provided by international and independent expert panels, which formulate concrete and operational recommendations to the national authorities on the reforms which are necessary to address the specific objectives.

Following a request from the Cyprus authorities for a PSF Specific Support on the "Optimal Utilisation of Research Laboratories of Organisations funded by the Government, by the Business Community", an international panel of experts was appointed by the Commission (Directorate-General for Research and Innovation). It started work on 15 March 2019. The panel includes five independent experts from Finland, Luxembourg, Austria, Greece and the Netherlands acting in their personal capacity.

In requesting PSF Specific Support assistance relating to "Optimal Utilisation of Research Laboratories of Organisations Funded by the Government, by the Business Community", the Cyprus authorities specified six issues, as follows:

1. Identification of the actions to be undertaken by Cyprus authorities in order to encourage and incentivise the collaboration between the Research Laboratory Institutions and the private sector in Cyprus and abroad.
2. Legal/regulatory changes to be made: possible obstacles in the laws, regulations and internal regulations of the referred organisations/institutions/departments which would hamper the optimal utilisation of their laboratories by the private sector should be identified. Special focus should notably be placed on the following issues:
 - Obstacles in the regulations that hinder the cooperation between the referred Organisations/Institutions and of the cooperation of the Organisations/Institutions with the private sector.
 - Obstacles in the regulations that hinder faculty members to work with the private sector (e.g. time restrictions between academic responsibility and commercial interest activities for the case of University Laboratories).
 - Handling of intellectual property rights e.g. in the field of patents, trademarks, copyright, industrial designs and trade secrets.
3. Adequate implementation of the State aid rules in relation to the use of publicly funded RI's, by the business community. How the Cyprus authorities can help the laboratories to organise and simplify the access of external partners to their premises, notably with regards to procedures as well as to technical, contractual and costing aspects. More specifically, the following issues are at stake:
 - Safety and training of the personnel who makes use of the equipment.
 - Maintenance and repair of the equipment used by external partners.
 - Insurance and indemnification issues.
 - Costing methodologies which take into account the duration of the use of the equipment, the number of man-hours spent by the staff of the organisation for the purpose of carrying out the work, the training

needed for the use of the equipment, the damage which may occur in the equipment due to its use, the specific upgrades of the equipment's software, the cost of laboratories' consumables, as well as VAT issues.

- Copyright and other IP issues, together with confidentiality issues.
4. Laboratories' accreditation system: the accreditation system of the R.I can contribute to their optimal utilisation. The following issues are at stake:
- Requirements/obligations for accreditation,
 - Accreditation costs and time,
 - Status of research laboratories which could not be accredited due to their size or mandate.
 - Upgrading of the referred laboratories to international competition standards.
5. Role to be allocated to the existing Technology Transfer Offices.
6. Examination of the potential issues stemming from the possible creation of a competition between the government-funded infrastructures and the private companies which also provide those types of services.

AIM AND FOCUS OF THE REPORT

This report summarises the results of the expert panel's deliberations. It provides an assessment of the current situation in Cyprus, identifies areas where policy action is required, and makes specific recommendations to boost the engagement between the RIs and the business community in Cyprus.

In Section 1 we present our analysis of the current situation in Cyprus with regard to science-business interaction, which is written in the form of a SWOT analysis, as requested by the Cypriot authorities.

In the second section we offer recommendations aimed at optimising framework conditions so as to boost science-business engagement, including strengthened management of knowledge transfer activities in the RIs, a financial incentive scheme to stimulate RI engagement with business, greater clarity regarding the constraints imposed by the EU State Aid Framework, and improvements to the law on university spin-offs.

Section 3 focusses on the service offerings of the RIs. Currently these are often disparate and poorly defined. We recommend actions to structure them and propose that this be done principally through a joint initiative between the RIs themselves. Our recommendations include preparing the ground for a general shift by the RIs towards full-cost accounting.

In the fourth section of the report we propose that, during the review of current research- and innovation-related public support programmes foreseen in the CRIS, care is taken to consider schemes that directly support the RIs in their engagement with business and other external parties.

METHODOLOGY

An initial preparation phase involved the collection of relevant evidence in the form of studies, legislation, policy documents and statistics and, based on the gathered material, an initial analysis of the current situation, which is available in the form of an “Analytical Background Report”.

Thereafter, the expert panel made a first visit to Cyprus (20-23 May 2019) during which meetings were held with government bodies, universities and other publicly funded research institutions (RIs), representatives of businesses and business associations, and other public and private innovation-support organisations. Particular emphasis during this visit was placed on gathering the various stakeholders’ views on the key factors encouraging but also limiting engagement between Cypriot publicly funded research organisations and the business community.

On the basis of the Background Report and the meetings in Cyprus, a draft report of the Expert Group’s preliminary conclusions and policy recommendations was produced and submitted to Cyprus stakeholders for review and discussion during a second country visit (23-25 September 2019), which involved two-and-a-half days of intensive exchanges with a similarly broad range of stakeholder representatives as during the first visit. Thereafter, certain elements of analysis were adjusted and a revised and more complete set of recommendations developed.

1 The challenges facing Cyprus: A SWOT ANALYSIS

As requested by the Cypriot authorities, the Expert Group made a SWOT analysis of the current situation in Cyprus with respect to the interaction between the RIs and the enterprise sector. The analysis was based on the data compiled and analysed in the Background Analytical Report, which itself draws on a great variety of sources, and on the findings from our visits to Cyprus in May and September 2019 when we had the opportunity to interview a wide range of actors from the worlds of research, enterprise, public administration and others.

We emphasise that some of our evidence is impressionistic, based on our interviews during the short period of our two visits. Moreover, hard evidence was sometimes difficult to obtain.

1.1 Strengths

Cyprus has a large and diversified tertiary education and research sector with three public universities (University of Cyprus, Cyprus University of Technology, and the Open University of Cyprus) and five private ones (University of Nicosia, European University of Cyprus, Frederick University, Neapolis University of Pafos and the University of Central Lancashire Cyprus). In addition, there are three non-profit institutions offering post-graduate studies and undertaking research (Cyprus International Institute of Management, Cyprus Institute of Marketing and the Postgraduate Research Institute of Science, Technology, Environment and Medicine) as well as three non-profit research organisations outside of the university sector (Cyprus Institute, Cyprus Institute of Neurology and Genetics, and the Research Centre on Interactive Media, Smart Systems and Emerging Technologies (RISE)). To round off the picture, there are additionally five public laboratories attached to the Ministry of Agriculture, Rural Development and Environment: the Agricultural Research Institute, the Department of Fisheries and Marine Research, the Department of Meteorology, the Geological Survey Department, and the Veterinary Services.

The university sector is young – the first public university (University of Cyprus) began operations only in 1992 – but has grown rapidly. In the academic year 2016/2017, student numbers in tertiary education totalled 44,000, almost half of which were from abroad.

The size and diversity of the university sector is a strength. It generates a sizeable output of qualified human resources each year. Noteworthy is that the population of Cyprus exhibits a generally **high level of education**: in 2017, 54.9% of the population aged 30-34 had a tertiary educational qualification (2nd in the EU).

The quality of research in the universities and other research performing organisations is, overall, respectable: in 2017 about three-quarters of the publications by Cyprus researchers were international co-publications (3rd place in the EU), and in 2014 more than 10% of Cyprus researchers' publications were among the top 10% of most cited publications worldwide.

Nevertheless, during our interviews with university stakeholders we found **pockets of real enthusiasm for working with business**, but we also heard

much frustration relating to an excessive politico-administrative control culture and dysfunctional legislation, notably the 2018 law permitting the universities to create spin-off companies (see section 1.4 Threats).

A further strength of Cyprus is **widespread fluency in English** — 73% of population can speak English,³ a legacy of eight decades of British administration up until 1960 — which is the “world language”, and especially in finance, tourism and ICT, where Cyprus has comparative strengths.

1.2 Weaknesses

Despite the strengths of the university sector, there is **little engagement of the research base with business**: figures for 2016 show that the higher education sector in Cyprus derived just 0.8% of its income from business sources, compared with 12.2% and 11.3% in the cases of two other small countries, Lithuania and Latvia, for example. The low engagement of the Cypriot higher education and research sectors with business is related, above all, to the **absence of a domestic enterprise base with significant “absorptive capacity”**, i.e. of a sufficient level of technical development as to be able to make practical use of the research, laboratory and other services that the universities and research organisations might provide.

95% of the enterprises in Cyprus are micro enterprises (i.e. having less than 10 employees) and most of those are engaged in traditional activities and local services.

Table 2: Size distribution of Cypriot enterprises

Size (Number of persons employed)	Number of enterprises	Share (%)
0-9	92,095	95.0
10-49	4,060	4.2
50-249	674	0.7
259+	107	0.1
Total	96,936	100

Source: National Registry of Cyprus

There is very little medium- to high-tech industry and few knowledge-based enterprises in other sectors capable of absorbing the outputs of publicly funded research.

In our discussions with representatives of (i) the Ministry of Energy, Commerce and Industry and (ii) the Research and Innovation Foundation (RIF), we asked for **estimates of the number of medium- to high-tech companies** in the country: in the one case, we were told there are 10-15 companies in Cyprus with

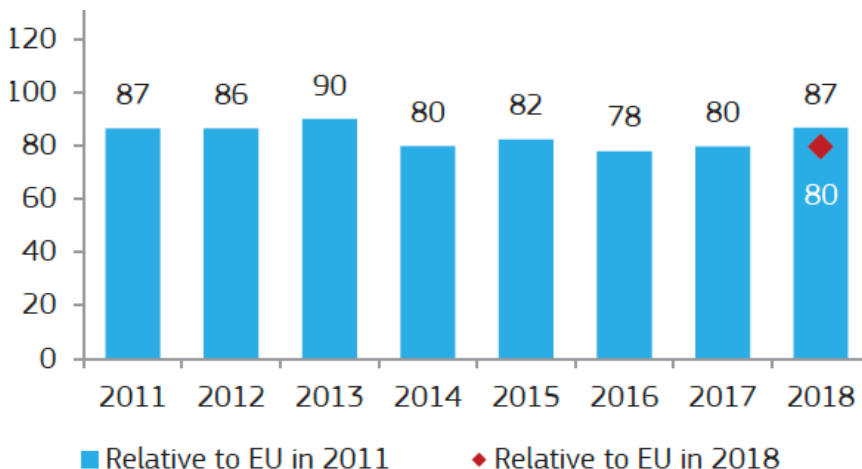
³ https://ec.europa.eu/commfrontoffice/publicopinion/archives/ebs/ebs_386_en.pdf

a formal R&D department (as an indicator of “absorptive capacity”) plus another 10-15 companies with an R&D activity.⁴ In the other case, it was suggested that there are currently about 10 companies that could benefit from cooperation with the publicly funded research organisations.

As one high-level university representative succinctly put it during our interviews: “Let’s face it, there is no high-tech industry in Cyprus which could absorb the R&D results of the universities”.

It is as if **research policy in Cyprus during the past two-and-a-half decades has largely consisted of building up the publicly funded research sector** in the belief that the benefits in terms of knowledge and human resource outputs would spill over automatically into the economy and society. If Cyprus has indeed consciously pursued such a supply-side approach, it clearly has not worked. The country’s overall innovation performance compared to other EU member states has hardly changed since 2011: Cyprus remains a “moderate innovator”.

Figure 1: Innovation performance of Cyprus – Summary Innovation Index



Source: European Innovation Scoreboard 2019

A further weakness resulting from the size and sectoral composition of the Cypriot economy is **significant brain drain**. The lack of attractive employment opportunities on the island prompts many new graduates to seek opportunities elsewhere.⁵ There is thus a drain of talent away from the island, much of which never returns in a professional capacity.

An additional significant weakness is the confusion among the RIs about the proper **interpretation and implementation of the European Union State**

⁴ The combined total of 20-30 companies probably includes the private R&D and technology consultancy providers grouped in CARIE (Cyprus Association of Research and Innovation Enterprises), who would see themselves as much as knowledge providers as knowledge absorbers.

⁵ <https://cyprus-mail.com/2017/06/20/cyprus-faces-brain-drain/>

Aid Framework regulations. It was clear from our interviews that many of them are unclear as to what is and is not permitted and as a result many have decided “to play it safe”. The safe option that some have adopted is to limit their commercial income from research, consulting, external use of equipment etc. to a maximum of 20% of total income (with residual confusion as to whether the 20% limit should apply to the overall institution, the faculty, the department, laboratory, or specific equipment).

We presume that the 20% figure is derived from the State Aid framework’s disposition that where the share of new infrastructure capacity devoted to economic activities is below 20%, those economic activities can be considered to be “ancillary” and hence may be presumed not to distort competition. But to apply the 20% figure to all commercial income is totally mistaken. The “ancillary” provision relates strictly to investment in new infrastructure.

The essential problem appears to be that there is no authoritative source in Cyprus available to advise the RIs on the proper interpretation and implementation of the State Aid framework. Yet they need clear guidance, otherwise they will hold back from working with business and other external parties.

Several of our interviewees pointed to the weakening effect of the **division of the island of Cyprus** following the annexation by Turkey of its northern part. This diverts political attention and resources, and reduces development opportunities, notably with regard to Turkey.

Finally, we note **the substantial physical distance to EU high-tech regions**. Co-operation for innovation works best under conditions of proximity. Excellent and affordable telecommunications and travel facilities are therefore essential. Historic educational and economic connections with the United Kingdom appear, however, to be intact and of value.

1.3 Opportunities

The key opportunity for Cyprus is the recently published Cyprus Research and Innovation Strategy (CRIS) Framework 2019-2023. It reflects highest-level political recognition that Cyprus has failed to extract commensurate societal and economic value from its significant public investment in the tertiary education and research sectors during the past twenty-five years or so.

Substantial reforms are planned – and some have begun already – with the objective of making Cyprus “a dynamic and competitive economy, driven by research, scientific excellence, innovation, technological development and entrepreneurship”. Ambitious targets have been set for raising R&D expenditure in both the public and private sectors and major governance reforms announced, including the creation for the first time of a Deputy Ministry of Research, Innovation and Digital Policy.

The CRIS is intended to be a game-changer. It is good to set ambitious targets, in order to focus minds, to generate enthusiasm, and to mobilise stakeholders to a common cause. But it is equally important not to overly threaten established

interests nor to raise unrealistic expectations, which in the worst case may come to jeopardise the viability of the strategy as a whole.

The CRIS is a disruptive programme. Disruption is uncomfortable and may well provoke (initial) resistance among some stakeholders. Hence the importance of the national-strategic political narrative underlying the CRIS and of governance arrangements which ensure that all significant stakeholders (enterprises, RIs, political forces and public administration) have a real voice in debates and decision processes relating to policy priorities and the consequent investment choices. Thus far, the responsible public authorities appear to have relied on ad hoc consultations to mobilise stakeholder buy-in. This may be sufficient in a small country with a limited number of key players in the different stakeholder communities,⁶ provided consultations are organised systematically, pro-actively, and conducted under conditions of transparency.

Pursuing such an inclusive approach does not mean that the pre-existing interests of each and every stakeholder or stakeholder group drive the process in a bottom-up fashion. In a context of disruptive change and limited resources the need is for a mixed top-down/bottom-up process. The first step is to establish a set of overriding national priorities that find a broad consensus among stakeholders. These priorities are then the frame of reference for subsequent policy actions, translated into action plans (annual/multi-annual) clearly describing what is to be done, who will do what, who will lead, what are the expected outcomes/impacts, how progress will be monitored, and by whom, and what may result from poor/excellent performance, i.e. feedback to the annual/periodic revision of the action plans.

At present, there is no clarity as to how the strategies of the CRIS are to be translated into tight action plans.

A second major opportunity for Cyprus are the six new EU-promoted Teaming Centres of Excellence (CoE). Cyprus has done remarkably well in obtaining six such centres; indeed, relative to the size of the country, it has outperformed all other EU member states qualifying for the Twinning and Teaming programme under Horizon 2020 (see Table 3). These new CoEs are a major opportunity – given their scientific excellence, their public-private character, their state-of-the-art research facilities, and their international connections – to build thematic innovation eco-systems that create new knowledge-based economic activity in Cyprus. Once fully operational, the six CoEs together are expected to employ about 500 doctoral and postdoctoral personnel.

Each of the new CoE's is expected to receive some €15m of national public funding over the coming years. In total - €90m – this is a substantial sum in relation to previous public spending on R&D in Cyprus,⁷ and for that reason alone

⁶ The ten members of the newly created National Board for Research and Innovation appear to have been appointed for their personal qualities rather than as representatives of different stakeholder communities.

⁷ It is almost as large as the approximately €100m budget of the current total support package for research, technology and innovation in Cyprus, RESTART 2016-2020.

it is essential that the activities of the CoE's are fully aligned with agreed national thematic priorities. There is a related risk that the high level of public funding for the CoE's may mean diverting scarce resources from other R&I activities.

Table 3: Centres of Excellence under the Teaming Action of Horizon 2020

Title	Coordinator and the Participating Organisations	Objectives of the infrastructure	Main priority areas
2016-2017 CALL			
KIOS RESEARCH AND INNOVATION CENTRE OF EXCELLENCE	<ul style="list-style-type: none"> • University of Cyprus • Imperial College London 	<p>The mission of the KIOS Research and Innovation Centre of Excellence (KIOS CoE) is to conduct multidisciplinary research and innovation in the area of Information and Communication Technologies (ICT) with emphasis on the Monitoring, Control, Security and Management of Critical Infrastructures, which include large-scale, complex systems such as power and energy systems, water systems, transportation systems, telecommunication networks and emergency management and response systems.</p>	<ul style="list-style-type: none"> • Energy • Agriculture-Food Technology • Transportation and horizontal priorities • ICT
RESEARCH CENTRE ON INTERACTIVE MEDIA, SMART SYSTEMS AND EMERGING TECHNOLOGIES	<p>Municipality of Nicosia / Max Plank Institute for Informatics, University College London, University of Cyprus, Cyprus University of Technology, Open University of Cyprus</p>	<p>The research focus of RISE is on interactive media. Interactive media have become an integral part of our lives, changing the way that information is conveyed to the user and the ways users interact with devices, with other people, and with the world around them. Such technologies provide versatile means for communication, information management, education and entertainment, with applications in almost any aspect of life and discipline.</p>	<ul style="list-style-type: none"> • ICT (interconnected to all priorities of the S3CY).
2018-2019 CALL			
Marine and Maritime Research, Innovation, Technology Centre of Excellence (MARITEC-X)	<p>Municipality of Larnaka / Marine Institute of Ireland, Marine Institute of Eastern Mediterranean, Limassol Chamber of Commerce and Industry, Southampton Marine and Maritime Institute,</p>	<p>The aim of MARITEC-X is to contribute to research and innovation projects in selected cutting-edge technologies, which are expected to bring about drastic changes in the fields of marine and maritime research in the following years until 2030. The Centre will align mature and emerging technologies with the competitive advantages of the country in order to extract gains from the societal spill over and</p>	<ul style="list-style-type: none"> • Transport • Marine • Energy • Tourism • Agriculture • Food

Title	Coordinator and the Participating Organisations	Objectives of the infrastructure	Main priority areas
	GeoImaging Ltd, SignalGenerix Ltd	commercialization of research results. This constant flow of knowledge into society and economy will eventually create a fertile ground of equal opportunities for Cypriot researchers, academics and industry, harvesting an investment on the marine and maritime capital of their own country.	<ul style="list-style-type: none"> • ICT
Eastern Mediterranean and Middle East – Climate and Atmosphere Research centre (EMME-CARE)	The Cyprus Institute / Max Planck Institute for Chemistry, Commissariat a l'Energie Atomique, University of Helsinki	<p>– To upgrade an existing centre of excellence by extending cutting edge infrastructure at the Atmosphere and Climate Division of the Cyprus Institute (CyI), to establish a world-class research and innovation centre, focused on the environment.</p> <p>- The Centre proposes a comprehensive and integrated programme to address climate challenges in the region through a combination of research, innovation and education.</p> <p>- The programme focuses on greenhouse gases, the water cycle and extreme weather atmospheric dust and air pollution.</p>	Environment including climate change, pollution, ecosystems, eco-innovation, social, economic and political sustainability and other horizontal applications. The above are interconnected to the priorities of energy, ICT, agriculture, tourism, transportation and health.
Biobanking and the Cyprus Human Genome Project	University of Cyprus/ Medizinische Universitat GraAT Biobanking and Biomolecular Resources Research Infrastructure (BBMRI - ERIC) RTD TALOS LTD	The project concerns the upgrading of the Molecular Medicine Research Center (MMRC) that has started 4 years ago, into a Center of Excellence.	Health
ERATOSTHENES: Excellence Research Centre for Earth Surveillance and Space-Based Monitoring of the	Cyprus University of Technology / German Aerospace Centre, National Observatory of Athens, Leibniz Institute for	– To upgrade the existing ERATOSTHENES Research Center established within the Cyprus University of Technology into a sustainable and viable Centre of Excellence for Earth Surveillance and Space-Based Monitoring of the Environment, which will provide the highest quality of	<ul style="list-style-type: none"> • Agriculture • Health • Transportation • Tourism

Title	Coordinator and the Participating Organisations	Objectives of the infrastructure	Main priority areas
Environment (EXCELSIOR)	Tropospheric Research, Department of Electronic Communications - Ministry of Transport, Communications and Works	related services both on the National, European and International levels. - To conduct basic and applied research and innovation in the areas of the integrated use of remote sensing and space-based techniques for monitoring the environment.	<ul style="list-style-type: none"> • Environment • ICT

Source: Directorate General for European Programmes, Coordination and Development

Despite the earlier comments about the preponderance of micro-enterprises largely concentrated in traditional activities and local services, these are generally independent companies and reflect a **widespread entrepreneurial tradition** in Cyprus.⁸ While they may have low absorptive capacity today, there may be scope to raise the technical level and innovative capacity of some of these companies so as to gradually “groom” them as future customers of the RIs.

The **relatively small size of Cyprus in terms of both geography and population of enterprises** is a potential opportunity. It means that an active, well organised industrial liaison function should have little difficulty in individually identifying those firms potentially capable of benefiting from the research and related services of the RIs.

For the sake of completeness, we note that several of our interviewees referred to an ambition for **Cyprus to act as a development nucleus or hub for the wider Mediterranean region** (“1,000 km circumference”). We understand the political merits of the ambition, but in view of the long-standing and persistent political instabilities in the region, one may question whether it is likely to result in significant growth opportunities in Cyprus, with the exception of relations with Israel and, possibly, Jordan. If there were to be a period of greater macro-political stability in the eastern Mediterranean region, then Cyprus might indeed have a major role to play as a **bridge between “core Europe” and the eastern Mediterranean**.

1.4 Threats

Historically, **a major threat is/was too great a focus on promoting the supply side of the research and innovation system**, i.e. the RIs, and a relative neglect of the demand side. With the advent of the CRIS, we expect this imbalance to be righted. It needs to be recognised, however, that there will be no “quick fixes”: two or more decades may be necessary before Cyprus has achieved a sizeable, stable, self-renewing knowledge-intensive enterprise sector.

It is beyond the bounds of our assignment to explore the different strategies the Cypriot authorities might pursue in order to grow the demand side for the RIs’ services. However, we can and will focus on how the RIs themselves can contribute to that objective. First, they can do so by working more fully with new and established companies that are able to make effective use of their services. Second, they can contribute by themselves creating new companies through spin-offs, i.e. businesses in which the RI, or a component part thereof, has a corporate stake, and typically involving the exploitation of RI-owned intellectual property. And, third, RIs can encourage and support the creation of start-ups independently by staff and students, i.e. without the RI taking a corporate stake in the venture.⁹

⁸ Analytical Background Report, p. 27.

⁹ Such is the role, for example, of the Centre for Entrepreneurship of the University of Cyprus, which “aspires to provide the training, expertise, mentorship, support and connections that UCY’s students and young scientists need to become effective entrepreneurs”. (<https://www.c4e.org.cy/>)

We see a significant threat, too, in certain **cultural attitudes** which seem to hold sway in Cyprus, of which we single out two. First, there appears to be a widespread attitude, amongst firms as well as in certain political quarters, that the **publicly financed research institutions should provide their services to business for free** or at prices that are more symbolic than real — precisely because they are publicly financed. This ignores the public-good case for funding research to generate new knowledge just as much as it ignores the private-good case for expecting a firm to pay an economic price for the individual competitive benefit that it derives from the services provided by a publicly funded research institution.

Related to this attitude is another, seemingly held in certain political quarters in Cyprus, that **the function of a university is to teach and to conduct academic research; it is not to work with firms and to “make money”**. Such an attitude is totally at odds with mainstream European good practice in science-business interaction, in which the “third mission” of public universities, namely to engage directly with business and civil society so as to contribute to economic progress and societal advancement, is firmly established.

One practical consequence of this attitude in Cyprus is that the **2018 law allowing universities to create spin-off companies is not fit for purpose**. The Cypriot document specifying the terms of reference for our assignment notes that the 2018 law came after “a long legislative process”, evidently because of the difficulty of securing sufficient political agreement. The law that finally emerged is an unfortunate compromise which places severe restrictions on universities and university-based personnel as regards holding equity in spin-offs as well as on inventors working with “their” spin-offs in an advisory or managerial capacity. There are also constraints on universities housing spin-offs and on spin-offs making use of university equipment.¹⁰ The current Cypriot regulatory framework on university spin-offs is far removed from European good practice and in need of urgent reform.

The following table summarises the findings of the preceding SWOT analysis.

¹⁰ These various restrictions are detailed in the Analytical Background Report, Section 6.3

Table 4: Summary of SWOT analysis

STRENGTHS	WEAKNESSES
<ul style="list-style-type: none"> • Large, diversified tertiary education and research sector • Some pockets of real enthusiasm for working with business • High level of educational attainment in the general population • Widespread fluency in English 	<ul style="list-style-type: none"> • Little “absorptive capacity” in the economy, notably industry; absence of a significant medium-/high-tech sector • High brain drain • Confusion about the proper interpretation and implementation of the EU State Aid Framework regulations • Division of the island of Cyprus • Substantial distance to European high-tech regions
OPPORTUNITIES	THREATS
<ul style="list-style-type: none"> • The Cyprus Research and Innovation Strategy Framework 2019-2023 (CRIS) • Widespread entrepreneurial tradition • Small size (geography, population of firms) • Possible role as hub for the eastern Mediterranean region / “core EU - eastern Mediterranean bridge” 	<ul style="list-style-type: none"> • Too much emphasis (historically) on the supply-side of the research and innovation system • Cultural attitudes against paying for services by RIs and against “third mission” for RIs • Present law on university spin-offs not fit for purpose

2 Recommendations for optimising framework conditions

The recommendations that follow are intended to actively encourage the RIs to engage with all manner of external parties – business, the public sector, non-profit organisations – so as to contribute dynamically to the economic and societal development of Cyprus.

It is our general impression that in all of the RIs with which we had discussions during our two country visits – with the partial exception of the Cyprus University of Technology – working with the enterprise sector is still largely in its infancy. In many cases, there is some, often sporadic engagement with private enterprises. There is also some, generally very small patenting and licensing activity, involvement in spin-off companies and, sometimes, encouragement of start-up companies launched by students or staff.

All the RIs which we met appear to have recently created support services for increasing their engagement with the business community, either extensions of existing “research support” offices or additional new “innovation”, “industrial liaison” or “commercialisation” services. Related to this development, we understand that Oxford University Innovation Ltd. (UK) has previously assisted the Cypriot authorities and all or most of the RIs in the design of their IPR strategies and policies. This is a good start - but it is only a beginning.

In our SWOT analysis we noted cultural attitudes in certain political quarters that oppose, or at least are reticent towards, the engagement of the RIs with business. **This is a nut that needs to be cracked as a matter of priority.** It should be tackled within “Strategic Enabler 6 - Cultural Change” of the CRIS with the argument that it is the recognised norm in Europe today that universities and research institutes have three missions: education, research and knowledge transfer/innovation.

Action Line 4.5 of the CRIS is intended to “promote the adoption of knowledge transfer as a fundamental mission of public and private universities and research institutes, along with the missions of education and research”. That is to be welcomed. We emphasise, however, the need to **ensure that there is broad political consensus in favour of this “third mission”** so as to avoid parliamentary blockages, or further dysfunctional compromises, similar to the 2018 spin-off law, in subsequent legislation or regulations for implementing CRIS-related measures.

2.1 Specific Recommendations

We offer eight recommendations for improving framework conditions so as to boost RI engagement with the business community.

2.1.1 Mandate the RIs to pursue a third mission of supporting innovation through knowledge transfer

Analysis and Rationale

It is encouraging that Action Line 4.5 of the CRIS intends to “promote the adoption of knowledge transfer as a fundamental mission of public and private universities and research institutes, along with the missions of education and research”; the need for reform has been clearly recognised. Accordingly, we propose that the Cypriot authorities should now **formally mandate the individual RIs to develop and implement a third mission of supporting innovation through knowledge transfer towards the business sector** – but also towards the public and non-profit sectors, for the broader objective should be to extract maximum value from the previous public investment in research to the benefit of Cypriot society and the economy in the broadest sense.

Our recommendation is intended to give **secure political legitimacy to the RIs’ third mission role**. It is, in a sense, the foundation stone on which to build our further recommendations for optimising the framework conditions for RI-business interaction. Thus, **we advocate making acceptance and active pursuit of the third mission a requirement for the award of public basic funding to the RIs**. Furthermore, we propose that the to-be-created new Deputy Ministry of Research, Innovation and Digital Policy should actively ally itself with the RIs, in particular with regard to their third-mission activities. We see the future **relationship between the new ministry and the RIs as critical for ensuring two-way input and feedback in the future design and implementation of CRIS-related measures**. Their future relationship will require an appropriate, high-level management interface within each of the RIs (see recommendation 2.1.2).

Operational Steps and Timing

We presume that a two-step process will be required. As a **first step, parliamentary approval of the principle of a third mission** will most probably be necessary. It would certainly be desirable to win parliamentary endorsement, in order to confer a bedrock of legitimacy. If it were to prove impossible to win parliamentary approval, or if approval were to be given but limited or circumscribed, there would be a risk of subsequent parliamentary blockages during budgetary debates and/or legislative scrutiny related to RI-business issues. In a **second step**, the statutes or other **governing articles of each individual RI will most probably require modification** in order to integrate the third mission.

We propose that action be launched as early as possible in 2020 (if it has not been done already), recognising that many months may be required before parliamentary approval has been secured, and many months more before transposition in the statutes of the individual RIs is complete. Lengthy political groundwork may be necessary before presenting a formal legislative proposal for parliamentary approval.

Lead responsibility

The Deputy Ministry of Research, Innovation and Digital Policy, with the support of the National Board for Research and Innovation. Ongoing consultation of the RIs at high level.

2.1.2 Each RI to appoint a high-level manager - "Vice-Chancellor for Innovation (VCI)" - to develop and implement the institution's third-mission activities

Analysis and Rationale

An appointment at highest level is needed to ensure that there is overall institutional buy-in to the pursuit of the third mission. It will be the responsibility of each VCI to plan, in agreement with their senior RI management colleagues, the detailed scale and scope of the RI's third-mission activities and thereafter to ensure their effective roll-out over time.

The VCIs of the different RIs should **network themselves for the purposes of mutual learning and to ensure, as far as possible, the development of aligned third-mission policies and practices**, such that the service offerings of the different RIs towards Cypriot enterprises and other entities are as similar as possible and, hence, more transparent for potential clients.

The Deputy Ministry of Research, Innovation and Digital Policy should **officially recognise the VCI network** as its privileged interlocutor with the RIs in the ongoing development and implementation of CRIS-related measures.

Operational Steps and Timing

A purist might argue that the appointment of the VCIs should await formal parliamentary approval of the third mission of the RIs. We would disagree. There is nothing in the current regulatory framework to prevent the RIs from engaging in third-mission activities provided that they remain within the existing rules. Moreover, an important role of the VCIs, as we have proposed, is to be the RI interlocutors of the Deputy Ministry of Research, Innovation and Digital Policy during the operationalisation phase of the CRIS, which is already underway. Thus early action is recommended.

We therefore propose that the **RIs appoint their VCI no later than early summer 2020** (but possibly – for both political and formal reasons – not named "VCI" until such time as the parliamentary discussion on the third mission has been completed and the RIs' statutes adjusted accordingly). In addition to their CRIS role, the VCIs should immediately begin the work of developing the knowledge-transfer activities of their respective RI and of formalising the national VCI network for mutual learning and aligned knowledge-transfer practices.

Lead Responsibility

Each individual RI, with short-term recognition by the Deputy Ministry of Research, Innovation and Digital Policy of their CRIS-related function.

2.1.3 In each RI, the VCI to be seconded by a middle-level “Innovation Manager”

Analysis and Rationale

The middle-level IM will have operational responsibility for the day-to-day implementation of the RI’s knowledge transfer activities.

The Deputy Ministry of Research, Innovation and Digital Policy should initiate the creation of a national network of the IMs. Rather than simply encourage the IMs to network themselves, the ministry should initiate the process as a mark of recognition of the importance of their role.

The national IM network will be a **key resource for mutual learning and for developing shared good practices** among the RIs. It will have a key role to play in developing structured service offerings, which is discussed in the following chapter.

Operational Steps and Timing

With the VCIs in place by early summer 2020, the **appointment of the IMs should follow by early autumn 2020.**

The **IM national network** should be up and running before the end of the year and the first exercises in structuring the RIs’ service offerings already launched.

Lead responsibility

Lead political responsibility by the Deputy Ministry of Research, Innovation and Digital Policy, with the guidance of the National Board for Research and Innovation. The Research and Innovation Foundation (RIF), as the executive arm of the National R&I system, is responsible for the implementation of R&I programmes and actions. The Deputy Ministry will collaborate closely with the RIF in managing the scheme.

2.1.4 Introduce a financial incentive scheme to strengthen the motivation for RIs to engage in knowledge transfer activities

Analysis and Rationale

Given that there is still generally little practical experience of RI engagement with the business community, we recommend that **the RIs be motivated financially to engage in innovation activities.** Broadly speaking, there are two options:

1. Make a percentage of RI public base funding dependent on the achievement of Key Performance Indicators (KPIs) related to working with external parties, e.g. percentage of total income to be earned from contract research and/or collaborative research and/or laboratory services, etc. The KPI’s could be further refined by client category, e.g. indigenous SMEs, multinational corporations, spin-offs/start-ups, companies from Smart Specialisation sectors, etc.

2. Alternatively, leave base funding intact and, instead, pay a bonus to reward every euro earned from external clients. As in the first proposal, the client categories could be segmented. By way of example: historically, Germany's Fraunhofer Society received €1 bonus from public funds for each €1 earned directly from SME clients.¹¹ This arrangement proved to be so attractive for Fraunhofer that the amount of the bonus was later reduced. The incentive continues today and accounts for roughly one-third of Fraunhofer's income, the monies being used to fund new fields of research.

Cyprus being at an early stage in research-enterprise interaction, where there is still much learning to be done, it would probably be wise – at least initially – not to make base funding conditional on KPIs related to client income. To do so at the outset would risk being perceived by the RIs as more of a punishment or constraint than as an incentive, and in the absence of a track record of engagement with business the numerical values assigned to KPIs would be more or less arbitrary and (un)realistic.

We therefore recommend that Cyprus introduce **a bonus scheme broadly modelled on the Fraunhofer example**. The scheme could be targeted initially at indigenous SMEs, including start-ups.¹² It should be generous in the first instance, e.g. €1 for €1, but degressive as the volume of earnings increases, and it should be guaranteed for a minimum period, e.g. an initial five years, in order to kick-start the incentive and to gain experience. Each RI should be free to re-invest the bonus in research activities as it thinks best, the logic being that the RI will tend to invest in those research areas promising to provide future income streams from third-mission activities. The scheme should be reviewed at the end of the five-year period, when consideration could be given to a KPI-based replacement.

Operational Steps and Timing

The proposed financial incentive scheme to strengthen the motivation of the RIs to engage in knowledge transfer activities will presumably require new public budgetary resources and hence parliamentary approval. It thus seems impossible that it could be launched before spring 2021.¹³ Moreover, since to the best of our knowledge no similar incentive measure has ever been deployed in Cyprus, lengthy political groundwork may be necessary. In its turn, that could delay a launch until spring 2022.

Lead Responsibility

¹¹ In practice, Fraunhofer submitted accounts after the end of each year (Y_n) showing the total revenues received from SMEs. The bonus was paid during the following year (Y_{n+1}), after auditing of the accounts. Fraunhofer was free to invest the bonus according to its own priorities.

¹² However, RI spin-offs might need to be excluded in order to avoid conflicts of interest.

¹³ From our interviews we understand that the national budget is typically voted in the spring of the current year.

Lead political responsibility by the Deputy Ministry of Research, Innovation and Digital Policy, with the support of the National Board for Research and Innovation. Lead administrative role by the Research and Innovation Foundation, which would presumably manage the scheme.

2.1.5 Ensure clear guidance on the compatibility of RI innovation activities with the EU State Aid Framework.

Analysis and Rationale

As noted earlier, there is considerable uncertainty among the RIs as to what is and is not allowed under the EU State Aid Framework, with the consequence that some of them have chosen to “play it safe” by limiting the volume of their commercial activities. The RIs need clear guidance on how to interpret and implement the State Aid guidelines, otherwise they will hold back unnecessarily from working with business and other external parties.

Cyprus has a government-appointed Commissioner for State Aid Control. We learned, however, from our discussion with representatives of the State Aid Commissioner’s office that its mission, with regard to research and innovation, is primarily to ensure that support schemes devised by granting authorities, such as the Research and Innovation Foundation, are in conformity with the EU State Aid Framework. It is apparently not part of its mission to provide guidance to individual stakeholders on how to interpret the State Aid regulations or how to implement activities such that they are not in conflict with them.¹⁴ No other public authority in Cyprus appears to offer such guidance to stakeholders.

We recommend that a **public authority be mandated to provide advice to the RIs on the interpretation and implementation of the EU State Aid regulations.** One option could be to mandate the State Aid Commissioner’s office for this purpose, although we accept that there may be objections to combining advisory and regulatory functions under the same roof. An alternative could be to assign the advisory role to the Research and Innovation Foundation or to the new Deputy Ministry of Research, Innovation and Digital Policy. An entirely different arrangement could be for the VCI network to contract its own advisor (who might, for example, be a foreign expert working for the RIs on an “on-demand” basis). The precise form of the solution is less important than that clear, pertinent advice be available to the RIs.

As a direct contribution to assist the RIs in relation to the EU State Aid issue, the Expert Group decided to seek advice from Jari Romanainen,¹⁵ a recognised expert

¹⁴ The State Aid Commissioner’s mandate does, however, include a responsibility “to train all aid granting authorities and other parties involved (our emphasis) on State aid matters” (http://www.publicaid.gov.cy/publicaid/publicaid.nsf/csac03_en/csac03_en?OpenDocument).

¹⁵ Jari Romanainen is a former Executive Policy Advisor for Business Finland (the major research funding agency in Finland), and Senior Consultant with Technopolis Group.

on the EU State Aid Framework and its practical application. His detailed advice is reproduced in Annex 2. Here we summarise the main points.¹⁶

Publicly funded RIs are by their nature producers of public goods. Therefore, if they wish to provide services to companies, those services must be available to all companies on equal terms, otherwise State Aid must be presumed to exist.¹⁷

In the case of collaborative research (jointly defined, planned and funded, risks shared, results published, balanced IP), no State Aid exists provided that all costs are based on full real cost. For the use of research infrastructure, this means the direct cost of using the infrastructure (personnel, consumables) but also depreciation, maintenance etc.

In the case of contract research or access to equipment or personnel, no State Aid exists provided transparent service contracts (deliverables, responsibilities, payments) are made and market prices (or full cost plus reasonable profit) are applied, with all costs covered by the customer. IP is typically granted to the customer, at least a right of first refusal, who covers all related costs.¹⁸

Thus the EU State Aid Framework does not set formal limits on the volume of services that RIs may provide to enterprises or other third parties. The key conditions are transparency in the conditions of supply of services and the application of market-conform pricing. This has important implications for RIs in relation to forms of contract (transparency) and analytical accounting capacity (full-costing), both of which issues are addressed in the following chapter.

Operational Steps and Timing

We have proposed three options for providing authoritative guidance on the proper interpretation of the EU State Aid Framework. An initial decision should be taken rapidly as to whether an advisory function is compatible with the core regulatory role of the Office of the Commissioner for State Aid. There is a certain urgency. The decision should be taken by spring 2020.

If the answer is negative, the remaining options, as proposed, are either (i) a solution housed in the Deputy Ministry of Research, Innovation and Digital Policy or the Research and Innovation Foundation or (ii) a solution whereby the RIs collectively engage an external advisor. The second solution would require a budget for the RIs, presumably provided by a public body, e.g. the Research and

¹⁶ For a broader discussion of how the EU State Aid Framework may limit public support schemes for innovation, see TAFTIE, State Aid Considerations When Developing Innovation Eco-Systems – A Perspective of Innovation Agencies, 2019.

¹⁷ An exception is the case where a company has contributed more than 10% of the investment cost of a research infrastructure. The company may receive preferential access and/or favourable conditions in proportion to its investment contribution.

¹⁸ IP may be granted to the RI to use the results for further academic research.

Innovation Foundation. The question of which solution to adopt should be settled by summer 2020, with implementation in autumn 2020.

Lead Responsibility

The Deputy Ministry of Research, Innovation and Digital Policy.

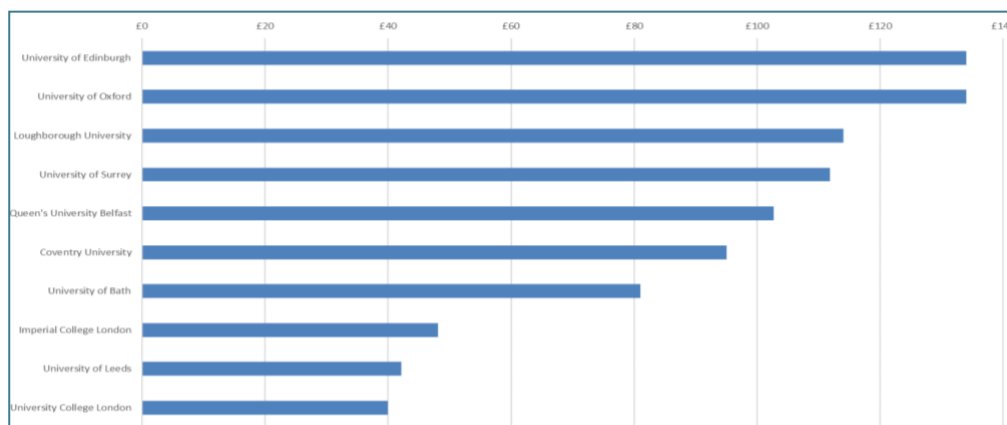
2.1.6 Review and revise the current legislation regulating the creation of university spin-off companies

Analysis and Rationale

University spin-off companies provide multiple benefits. Typically, they are founded to implement commercially knowledge generated in the university. Thus, if successful, they are a mechanism for ensuring directly the practical application of RI research results. At the same time, they generate ongoing revenues for the RI, in the form of revenues from licensing intellectual property to the spin-off and/or from capital gains if at some point the RI decides to terminate its participation in the spin-off. This return on investment can be used to seed-fund new research that may give rise to new spin-offs, thus creating a virtuous circle. In addition, successful spin-offs generally enrich the economic fabric of the region/country and create high-quality employment.

The following figures for UK universities give an indication of the value that an active spin-off policy can generate. The case of Oxford is perhaps well-known. That of Edinburgh – top of the list – perhaps less so: the University of Edinburgh has boasted a string of successes in recent years, which have contributed to the city’s reputation as a hub for technology start-ups.

Figure 2: Estimated current turnover of UK university spin-offs with some HEI ownership (£ millions)



Source: UK Higher Education Statistics Agency

In Cyprus, as noted earlier, the regulatory framework on the creation of university spin-off companies adopted in 2018 is considered by many of our RI interviewees to be at least sub-optimal and at worst dysfunctional.

The new regulations stipulate that a university, together with any participating university staff, can **jointly** hold an equity stake up to a maximum of less than 50%, i.e. a majority of the equity must be held by one or more external parties. In consequence, the university and the inventor lose control of the spin-off company, in favour of the third party/parties owning the 50%+.

This same equity rule complicates the creation of spin-off companies because of the difficulty of finding external investors willing to take a majority stake in a high-risk (because early-stage) venture.

The 2018 regulations also stipulate a clear separation between the activities of the spin-off company and the operations of the university. Thus any use of university facilities or equipment or personnel is possible only in exceptional cases. The personnel restriction appears to mean that an inventor who is still in university employment may generally not work in any capacity for "her/his" spin-off.

These are serious constraints that do not correspond to common practice elsewhere in the EU. It is quite usual, for example, for inventors in continuing university employment to participate in "their" spin-offs in a consulting or managerial function, and spin-offs are commonly located on-campus and have access to university facilities – all such arrangements being subject to institutional guidelines and corresponding contractual arrangements, e.g. inventors wishing to work with a spin-off may be given the (time-limited) option of part-time (and part-paid) university employment.¹⁹

We recommend that the Deputy Ministry of Research, Innovation and Digital Policy **contracts a study to benchmark the current spin-off regulations in Cyprus against best-in-class practice elsewhere in Europe.**

Thereafter, the VCIs and their Innovation Managers, in liaison with the ministry, should create a **working group to establish the principles of an optimised regulation**, which when agreed the ministry should action politically and legislatively.

A more flexible approach than in the existing legislation would be to **drop specific percentages and interdictions of certain practices** (e.g. inventor working at the spin-off) and **instead establish key guiding principles**, e.g. a spin-off may not receive any funds or other preferential treatment from the RI, all arrangements between the spin-off and its owners and staff within the RI must be void of any conflicts of interest or commitment, etc. Fundamentally each RI should be able to establish its own detailed practices in compliance with key guiding principles.

¹⁹ Some universities offer temporary periods of 6-24 months during which time the staff member can retain an option to go back to their previous staff position if they fail to make sufficient progress with their start-up. During this period they may receive partial salary or be on leave without pay.

Karlsruhe Institute of Technology: An Active Promoter of Academic Spin-offs

The Karlsruhe Institute of Technology is an old and a new institution. It was founded in 2009 through a merger of the Forschungszentrum Karlsruhe GmbH, originally a nuclear research facility established in 1956, and the Technical University of Karlsruhe, founded in 1825.

Today KIT has around 5,000 teaching and research staff and 20,000 students in STEM subjects.

Knowledge transfer is an integral part of its mission, including support to spin-offs by staff and students, based on technologies developed in-house, usually with the participation of external industrial partners and investors. KIT is prepared, selectively, to engage as a strategic investor taking a substantial own stake, usually involving the licensing of IP rights to the spin-off.

In 2018, KIT totalled 115 invention disclosures, 63 patent applications, €1.57m in licensing revenues, and 21 new start-ups launched.

Operational Steps and Timing

Action Line 4.4 of the CRIS appears²⁰ to propose a review of the 2018 spin-off legislation, which we welcome. Our proposal is for a benchmark of the current Cypriot legislation against best-in-class comparators elsewhere in Europe and to use the results to draft, and then to promote politically, revised legislation. We see this as urgent and therefore we suggest that a benchmark study be commissioned in spring 2020, with conclusions to be delivered by early autumn. Draft revised legislation should be on the table for political discussion by late autumn 2020.

Lead Responsibility

The Deputy Ministry of Research, Innovation and Digital Policy, with the support of the National Board for Research and Innovation. Benchmark study outsourced to an external contractor.

²⁰ Curiously, it refers to the “implementation” of the spin-off law rather than to the law’s substance.

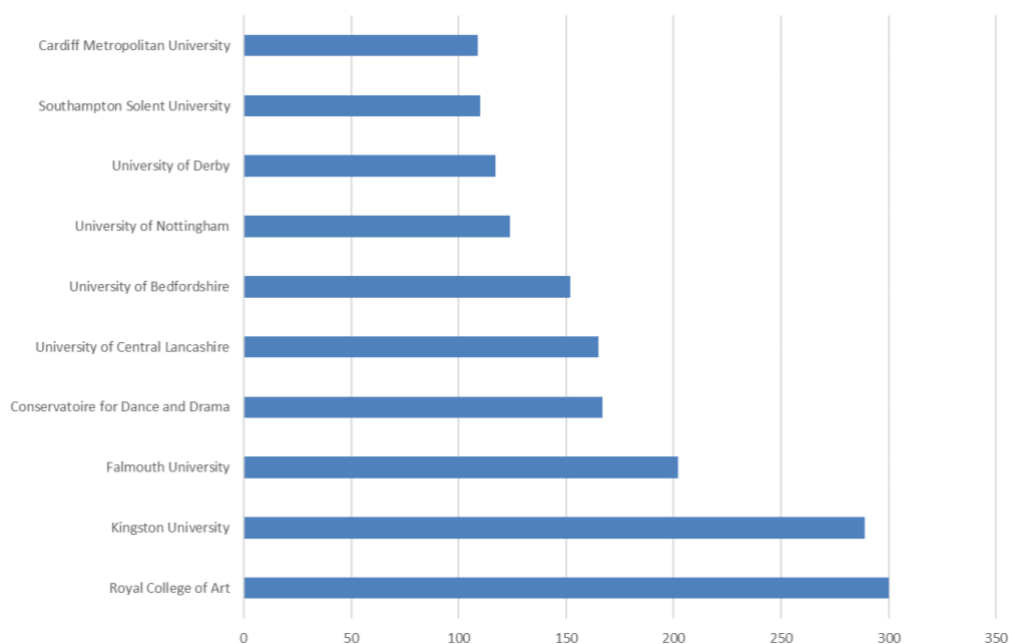
2.1.7 Review and potentially re-inforce the support that RIs provide to staff and students with entrepreneurial ambitions

Analysis and Rationale

Start-up companies launched by RI staff or students are distinct from spin-offs in that the RI has no direct involvement in such companies. The number of start-ups supported by universities can be substantial, as the following table for UK universities in the academic year 2015-2016 indicates. The figures need to be read with caution, however, because they give no indication of the long-term survival of the start-ups.

Top of the UK list was the Royal College of Art (RCA), where 300 graduate start-up companies were formed that year: the future employment prospects of art-college graduates often depends on entrepreneurial skills, and the RCA's Centre for Enterprise (InnovationRCA) provides specific help to students interested in setting up a business.

Figure 3: Number of new graduate start-ups in UK universities — 2015-16



Source: UK Higher Education Statistics Agency

We noted briefly earlier that the University of Cyprus maintains a Centre for Entrepreneurship (C4E) which “*aspires to provide the training, expertise, mentorship, support and connections that UCY’s students and young scientists need to become effective entrepreneurs*”. We have no data on the numbers of staff and student start-ups that have been supported, but we would suggest that it may be useful to review its activities for possible replication in other Cypriot RIs or, possibly and alternatively, instituting an island-wide support service based

on the C4E. Clearly, this should be done taking account of the business incubation facilities already established on the island²¹ in order to avoid overlap.

Aalto University: A Dynamic University Innovation Eco-System

Aalto University, with its campus located just outside of the Finnish capital, Helsinki, was established in 2010 by merging three pre-existing universities: the Helsinki University of Technology, the Helsinki School of Economics, and the University of Art and Design Helsinki. Through the merger the Finnish government set out to create a university that fosters innovation by multi-disciplinary collaboration between the scientific, business and arts communities.

The university has around 18,000 students and 4,000 employees. It is equipped with world-class research facilities for micro- and nanotechnology, neuro-imaging, and bioeconomy; excellent resources for computational research, radio astronomy and space research as well as for film and TV, games and animation, virtual and augmented reality, product- and user-experience testing, sensor data-analysis and fast prototyping.

Aalto hosts and promotes an active innovation ecosystem of new companies created by Aalto students and staff. In 2018, 100 new start-up businesses were generated. The ecosystem has expanded considerably over the past decade.

A core element is the Kiuas incubator, which currently runs two start-up programmes and one accelerator programme each year, hosting around 50 new (proto-)businesses.

Slush, an annual global start-up event originated and owned by Aalto students today bills itself as the world's leading start-up and tech event. The 2019 edition attracted 25,000 participants, including 3,500 start-ups, 2,000 investors and 600 journalists from over 100 countries. Slush facilitates meetings between start-up founders and investors through match-making events and pitching competitions. Slush is now an enterprise itself with a turnover of €10m.

Junction is another ingredient in the mix. It has rapidly become perhaps the leading European hackathon for programmers and designers, drawing 1,500 participants in 2019 for a 48-hour event.

A Grid has grown rapidly, too, to become one of the largest European centres for growth companies and is rated by MIT as one of the top five rising stars globally.

The Aalto Ventures Programme offer students in all parts of the university a range of entrepreneurship courses as part of the standard university curriculum.

Among the universities listed in Figure 3 is the University of Central Lancashire (UCLan), which took top place in a related listing showing the number of active graduate start-ups in 2015-16, i.e. including those set up in previous years and still in activity: the total for UCLan was 932 businesses. We note, too, that UCLan has been shortlisted three times in recent years for the *Times Higher Education's* "Entrepreneurial University of the Year" award. We make specific reference to

²¹ See Analytical Background Report pp.91-92.

UCLan because, of course, it is present in Cyprus with a branch campus in Larnaca: there may be valuable opportunities for learning from its experience.

Operational Steps and Timing

The proposed review of the activities of the University of Cyprus's Centre for Entrepreneurship (C4E) should be launched by spring 2020. It should cover the similar activities of other RIs, where they exist. Delivery of the results of the review in autumn 2020. Decision whether to replicate C4E in other RIs, or to establish an island-wide support service, before the end of 2020.

Lead Responsibility

The Deputy Ministry of Research, Innovation and Digital Policy. Review outsourced to an external contractor.

2.1.8 Clarify the relationship between the national knowledge transfer office and the knowledge-transfer units of the RIs

Analysis and Rationale

The CRIS foresees the creation of a National Knowledge Transfer Office (KTO). It characterises the national KTO as having "critical scale, experience and expertise", acting "as a support to the main universities and research organisations in Cyprus", and as being "publicly funded".

At the time of writing there remain many open questions about the precise remit of the KTO, and how it will relate to the knowledge-transfer units in the individual RIs.

A slide presentation dating from September, 2019 and made available to the Expert Group lists the KTO's services, which are to be provided without charge, as:

- general information and awareness raising;
- management of invention disclosures;
- evaluation of the commercial potential of inventions;
- IPR management advice and assistance with IPR protection and provision of funding therefor;
- technology marketing through national and international networks;
- support in negotiating licensing agreements including transfer agreements (notably to spin-offs);

- management of signed agreements, including collection and distribution of revenues.²²

The use of the term “management” could be taken to mean that the KTO is to take the lead role. This seems hardly practical and we would suggest that the knowledge-transfer functions in the RIs should continue to operate autonomously, i.e. they will not become “subsidiaries” of the national KTO. They will be the interface between RI staff and students, on the one hand, and the national KTO, on the other, and they will continue to provide front-line support to RI operating units (faculties, departments, centres) and individual members of staff and students, using the services of the KTO as an expert resource.

It is essential that the **division of labour between the national KTO and the RI knowledge-transfer functions be clearly and carefully defined**. There is considerable scope for overlap and duplication of activities and a potential risk of conflict and turf wars.

We assume that some form of **representative board will oversee the activities of the KTO, and we strongly suggest that the RIs be a member of it**, perhaps best represented by one of the VCIs nominated by the members of the VCI network.

Operational Steps and Timing

The central issue is the respective responsibilities and roles of the KTO and the knowledge-transfer units of the individual RIs.

Clarification is urgent inasmuch as the CRIS foresees the early establishment of the KTO and the operational roll-out of its services around the middle of 2020.

In view of the urgency, and since we do not envisage the appointment of the VCIs before the summer of 2020, an ad hoc ongoing consultation of the RIs at high level should be organised as early as possible to agree the precise responsibilities of the KTO in relation to those of the RIs’ knowledge-transfer offices.

²² Nothing is said in the slide presentation about the destination of the collected revenues. The usual practice in universities is that revenues are distributed between inventors, the department to which they belong, and the university. At the University of Oxford in the UK, for example, IP is handled by a stand-alone structure, Oxford University Innovation Ltd., an arrangement not unlike the national KTO model proposed for Cyprus. At Oxford, net revenues (i.e. after deduction of legal expenses) are divided 30% for Oxford University Innovation Ltd. and 70% collectively for the inventor(s), her/his department(s) and the university central administration. Of the 70%, the share going to the inventor is degressive (dropping from 60% to 15% as the absolute amount of revenue increases), while the percentages for the department and central administration are progressive.

Lead Responsibility

The Deputy Ministry of Research, Innovation and Digital Policy with the Research and Innovation Foundation (in which the KTO is to be established). Consultation with high-level representatives of the RIs.

2.2 Time Planning

The time planning for the recommendations for optimising the framework conditions is presented in Figure 4.

Figure 4: Time planning for optimising framework conditions

Recommendations	1 st -2 nd Q2020	3 rd -4 th Q2020	1 st -2 nd Q2021	3 rd -4 th Q2021	1 st -2 nd Q2022	3 rd -4 th Q2022
Mandate the RIs to pursue a third mission of supporting innovation through knowledge transfer	▶					
Each RI to appoint a high-level manager – Vice-Chancellor for Innovation (VCI)		▶				
In each RI, the VCI to be seconded by a middle-level “Innovation Manager”		▶				
Introduce a financial incentive scheme to strengthen the motivation for RIs to engage in knowledge transfer activities					▶	
Ensure clear guidance on the compatibility of RI innovation activities with the EU state aid framework		▶				
Review and revise the current legislation regulating the creation of university spin-off companies	▶					
Review and potentially re-inforce the support that RIs provide to staff and students with entrepreneurial ambitions		▶				
Clarify the relationship between the National Knowledge Transfer Office and the knowledge-transfer units of the RIs	▶					

3 Recommendations for professionalising the RIs' Service offerings

By way of introduction, some anecdotal evidence from our interview with the Centre for Entrepreneurship of the University of Cyprus is instructive.

The Centre has in the past organised pitching events to bring together university researchers and outside firms. In the first such events, research groups thinking they might have something to offer to the business community were invited to pitch to an audience of companies. The results were poor: the researchers tended to talk about research rather than what they might be able to do for the companies. So the Centre decided to turn things around: a pitching event was organised in which companies were invited to talk about problems or challenges for which they would like help. This produced better results. Several firms and research groups came into contact and began to discuss cooperation possibilities. And yet no actual consulting or research projects resulted. It turns out that in order to organise a consulting assignment or a collaborative or contract research project the researchers had to spend a lot of time negotiating with the university central administration to obtain the necessary permissions for spending time on the project, using university facilities, etc., for which no clear administrative routines and decision processes existed. Much energy was spent, and time lost, pursuing ad hoc solutions, such that in the end interest faded and finally died.

3.1 Specific Recommendations

The two recommendations that follow are intended to ensure that the RIs equip themselves with structured and transparent service offerings (contract and collaborative research, laboratory services, technical consulting, etc.) and begin the process of moving towards the full economic costing of their services in order to be in conformity with the EU State Aid Framework requirements.

3.1.1 Develop structured service offerings

Analysis and Rationale

Our interviews with the different RIs indicated to us that they often lack structured service offerings, standardised forms of contract, clear pricing principles and practices as well as routinised management procedures whenever special permissions may be required for particular assignments.

A first task should be to **characterise standardised RI service offerings**, recognising that not every RI will necessarily offer every form of service, or not in identical volume or with the same priority. In the interests of visibility and transparency for potential clients, an objective should be that, as far as possible, the different RIs offer similarly defined services.

The core services are four: contract research, collaborative research, laboratory services (including access to equipment), and technical consulting.

Table 5: Simplified Typology of Core RI Services to External Parties

Typology	Description
Contract Research	An external client requests the RI to perform research. The client specifies the subject of research and typically receives exclusive use of the results. All costs are covered by the client.
Collaborative Research	One or more external clients join with the RI in undertaking research, which is planned and executed jointly. The external partners contribute resources in kind and/or cash. The RI typically contributes in-kind. Public programmes may cover part of the cost. Research results are typically shared (e.g. non-exclusive licences), as agreed up-front. ²³
Laboratory Services incl. access to equipment	Provided on a “fee-for-service” basis, in principle at full economic cost.
Technical Consulting	As for laboratory services.

In a second step, the IM network should develop **standard forms of contract**, i.e. templates, for each type of service offering. The templates should cover, in particular, the responsibilities and liabilities of the different partners including matters of confidentiality, their respective rights to intellectual property generated, and the price or financial contributions to be paid, which latter should in principle be based on full economic cost (see 0).

Again, while each individual RI may wish to adapt each template to its specific needs, the objective should be **maximum similarity in the forms of contract** employed by the different RIs.

In matters of **intellectual property**, it would make sense that the work of the IM network be supported intellectually by the new national Knowledge Transfer Office.

We anticipate that the **IM network will require financial resources for, inter alia, buying in expert advice on occasion and for study visits to best-in-class RIs abroad.**

Referring back to the introductory anecdote in this section, in parallel to the described preparatory work by the IM network, the VCIs of the different RIs should work to **ensure that where special permissions are required for particular assignments, efficient administrative routines are established**: the decision makers should be as few as necessary, clearly identified and mandated, and the decision criteria transparent. Decision

²³ A participating firm may later, if it so wishes and the other partners agree, acquire an exclusive licence by paying an additional price such that the total amount paid corresponds to the full market price.

processes would thus become documented administrative routines and necessary permissions could be delivered without excessive delay.

Operational Steps and Timing

Recalling the objective to develop, as far as possible, in the interests of market transparency, comparable service offerings for all of the RIs, the first step should be to ensure a shared understanding (typology) of the basic service profiles: collaborative research, contract research, laboratory services, and consulting services. It should be possible to achieve this essentially through the shared prior experience of the different RIs.

The second step will be to develop standardised forms of contract, i.e. model contracts, for each of the service offerings. Here, again, models used previously by the different RIs should offer a useful basis, which can be supplemented by publicly available model contracts developed in other countries and institutions, e.g. the UK Lambert Agreements for collaborative research. Also, partner institutions abroad of the RIs could be a valuable source of information and models.

This work should advance in consultation with the in-house legal departments of the different RIs in order to minimise any risk of subsequent implementation incompatibilities. It would also seem logical that it should benefit from the expertise of the national Knowledge Transfer Office (KTO), which is scheduled to be up and running by the middle of 2020. But there is no guarantee that the KTO will be fully operational by the middle of the year and, even if it is, it may have other initial priorities. We therefore propose that the IM national network take lead responsibility for this work. The KTO's advice might be sought on an ad hoc basis, if its other priorities allow.

Assuming that work begins in late 2020, we anticipate delivery of a set of model contracts by summer 2021.

The third step will require each RI to make any necessary adaptations to the different model contracts to make them fully compatible with the interests and needs of each individual institution. The work should be completed by autumn 2021.

Lead Responsibility

The national IM network, pooling the acquired prior experience of the different RIs. Where sufficient own experience is lacking, the network will need to seek advice from elsewhere, e.g. from good-practice exemplars abroad, possibly including existing foreign partner institutions of the Cypriot RIs.

Ongoing consultation with the in-house legal services of the RIs to ensure compatibility with other legal and regulatory frameworks and to avoid subsequent implementation difficulties.

The national KTO could provide support .

The VCIs to ensure that efficient administrative procedures are in place within each RI to deliver special permissions which might be required for specific projects.

3.1.2 The RIs to move towards implementing the full costing of their services

Analysis and Rationale

All RIs should, in principle, move towards the full costing of their services to third parties, which is the surest way of avoiding conflicts with the EU State Aid Framework regulations and of competing on equal terms with private sector providers.²⁴

There is no need for a “big bang” revolution whereby all RIs implement full-costing at the same time: different RIs – and even different centres, units or departments within a given RI – will want to move forward at their own pace. In other words, the time to implement full costing operationally is when there is a real prospect of sufficient, stable income to justify the necessary investment of effort. However, preparation for the ultimate move towards full costing should be undertaken in advance.

The IM network should take the lead role in preparing for full costing. The IM network – each IM working with the Finance Department of their RI – should prepare a **standard accounting framework for full-costing each of the different service profiles**. This is demanding work, also because the framework should ideally be scaleable from small administrative units up to whole centres or departments, depending on the managerial locus of operational activity²⁵. Calculating and allocating personnel costs is not so difficult; developing methodologies for calculating the depreciation costs for major equipment per hour of use or for devising allocation keys for institution-wide consumables such as electricity or water is more challenging. But there is now much accumulated experience in many European countries that can be mobilised for this purpose.

Once such a flexible full-costing framework methodology has been developed, each individual RI will be responsible for adapting it to the needs of a specific operating unit, department, centre etc. when it considers that the volume of external service justifies the shift to full-costing.

²⁴ The question of competition between publicly funded services and private providers was specifically raised in the Cypriot request for this PSF Specific Support Action. Often, the problem is more theoretical than real in the sense that private service providers tend to offer routine technical services, whereas RIs offer high-risk research services, i.e. characterised by uncertain outcomes. But there are exceptions. The relatively late development of the Cypriot RI sector has allowed space for a private-sector technical consultancy/R&D sector to develop (cf. the membership of CARIE – the Cypriot Association of Research and Innovation Enterprises). The only satisfactory solution for ensuring fair competition between public and private research providers is to require RIs to offer their services at market prices.

²⁵ State Aid jurisprudence does not give a simple answer to the question: “At what administrative level should accounts be kept and costs calculated?”. The general answer is: “At the level of the managerial unit offering the service in question”.

In the preceding paragraphs we have discussed full costing only in relation to the provision of infrastructure and equipment services to external parties, since the frame of reference is conformity with the EU State Aid Framework. But there is equally a case to be made for applying full-costing to the use of facilities by internal partners, i.e. by other units, departments or centres within the same RI. Doing so makes the true cost of providing facilities visible, and staff requirements and costs for managing infrastructure facilities, as well as revenues to cover them, will tend to be more stable compared with managing only the share of capacity offered to external clients. Charging for infrastructure capacity internally does not create extra total expense, rather it re-allocates who contributes what to cover the costs of operating the infrastructure. We note that there may be knock-on consequences of internal charging, e.g. the funding rules for publicly co-funded collaborative research projects might need to be adapted so as to allow internal invoicing as an eligible cost. We make no formal recommendation in this report with regard to internal charging, which we recognise may be a step too far at this time.

Operational Steps and Timing

We would see this work commencing once the work on structured service offerings is underway, in early 2021. While the IMs, via their national network, should take the lead, the work will need to be undertaken in close cooperation with the finance departments of the different RIs.

The work should progress in four steps. The first step will be to ensure a common understanding of the need for full costing, and of its scope, in relation to the EU State Aid Framework as well as its more general management utility in relation to financial transparency among the different activities of an RI.

We repeat our earlier remark that there is no need for a “big bang” revolution whereby all RIs introduce full-costing simultaneously: the time to practically implement full costing operationally is when there is a real prospect of sufficient, stable income to justify the necessary investment of effort. There may, therefore, be an opportunity to establish a sub-group of “first mover” RIs, i.e. those likely to be the first to implement full-costing, to take the work forward.

The second, third and fourth steps will be: (i) to develop a generic full-cost accounting framework, (ii) to operationalise the generic framework, and (iii) to adapt the operationalised framework to the specific circumstances of each individual RI.

The initial generic accounting framework to be developed in the second step needs to identify all of the individual elements of cost that constitute the full economic cost of a service provided to a client. They include the obvious direct costs, such as personnel costs and consumables, but also indirect and often “hidden” costs such as the notional rent of office space or the depreciation costs for equipment. Again, assistance can probably be sought from partner

universities abroad, for full economic costing is now the norm in several countries, e.g. in the United Kingdom.²⁶

The third step is the most demanding. Here the need is to identify appropriate methodologies for estimating the cost categories identified in step two. Direct costs generally pose few difficulties. Indirect costs can be more challenging. The objective is not forensic precision, but realistic estimates. Often estimation will require the use of allocation keys, e.g. for electricity consumption in an energy-intensive project (if it cannot be metered directly). Once again, partner universities abroad could be a valuable source of advice.

The final, fourth step is for each RI to fine-tune the operationalised framework of step three so as to align it with its in-house accounting system, which in practice may also require refinements to the latter in order to make it fit the former.

As regards timing for the delivery of this work, and recognising that those involved will often have other demanding responsibilities, we would suggest a target of summer 2021 for delivery of the generic framework (step two), late autumn for step three, and the end of the year 2021 for step four.

Lead Responsibility

The IMs with their respective RI finance department. Contribution from the State Aid Commissioner’s Office.²⁷

3.2 Time Planning

The time planning for the recommendations is presented in Figure 5.

Figure 5: Time planning for professionalising the RIs’ service offering

Recommendations	1 st -2 nd Q2020	3 rd -4 th Q2020	1 st -2 nd Q2021	3 rd -4 th Q2021	1 st -2 nd Q2022	3 rd -4 th Q2022
Develop structured service offerings		▶				
The RIs to move towards implementing the full costing of their services			▶			

²⁶ See, for example, the UK Engineering and Physical Science Research Council and the UCL (University College London) websites.

²⁷ The State Aid Commissioner’s existing mandate – “to train all aid granting authorities and other parties involved on State aid matters” surely applies for this task.

4 Review the current mix of PUBLIC research and innovation PROGRAMMES

The CRIS foresees a broad review of the current package of funding programmes supporting research and innovation.²⁸ Within this review, we recommend that existing programmes should be retained, and new ones introduced, that facilitate the RIs' engagement with external clients. Our reasoning is also that support schemes that offer benefits to business when they work with RIs are, equally, valuable marketing tools for RIs when they seek to engage with companies.

4.1 *Specific Recommendations*

Five specific recommendations follow. In view of the already programmed CRIS review of support schemes, we make no proposals of our own as regards operational steps and timing. Moreover, we assume that lead responsibility for this review will be given by the Deputy Ministry of Research, Innovation and Digital Policy to the Research and Innovation Foundation.

4.1.1 Introduce a competitive Key National Infrastructure Programme

This proposal is intended to provide the RIs with a more stable source of funding for the acquisition, maintenance and upgrading of large-scale research facilities, while at the same time avoiding unnecessary duplication of investment and promoting joint use of facilities.

During our meetings with the RIs we were informed that there is relatively little cooperation between them with regard to the **joint purchase and use of research infrastructures and equipment**. We learned also that the current arrangements for the ongoing maintenance and subsequent upgrading of equipment are erratic. The usual source of public funding for the latter purpose appears to be periodic but infrequent calls for proposals issued by the RIF.

The Expert Group initially considered that, at a minimum, an arrangement be put in place to facilitate the joint acquisition of infrastructures and large equipment. This could take the form of a requirement that any RI wishing to acquire infrastructure/equipment beyond a certain value – e.g. €50,000 – should first notify, for example, the RIF, which would then organise a rapid consultation of the other publicly funded RIs to examine the opportunity of a joint acquisition and/or shared use.

However, recognising that **the issue is as much about avoiding unnecessary duplication as about joint ownership**, we came to propose a different approach.

We propose a **Key National Infrastructure funding programme**. The programme would provide funding for the acquisition/construction of new

²⁸ cf. CRIS Strategic Pillars 3 (Research Excellence), 4 (Knowledge Transfer and Commercial Exploitation) and 5 (Innovative Entrepreneurship)

infrastructure and large-scale equipment (e.g. to a value of €50,000 minimum) including major upgrading of existing facilities (without a minimum limit for a facility already designated as a Key National Infrastructure) which are of priority interest for the RIs for the purposes of their scientific work and/or their services to external parties. The programme would be competitive and open to all RIs. Proposals would be evaluated by an independent expert jury, the members of which – given the small size of Cyprus – would need to be recruited from abroad. The top-ranked proposals would receive funding. The evaluation of proposals should take account of factors such as the willingness of the applicant RI to grant access to other RIs, as well as to companies or other external users (% of capacity, financial conditions, other terms of access); applications should also include an estimate of the costs for maintenance, which however in keeping with common practice in Europe would not be eligible for funding, with a clear indication of how the applicant RI proposed to cover them.²⁹

In addition, we propose a corollary programme to provide **financial assistance to companies and other external customers wishing to use Key National Infrastructures** (possibly extended to include other specialist infrastructures, outside of the Key National Infrastructure framework, for which there is demonstrated external demand). The rationale for doing this is the already noted reluctance to pay an economic price for the use of originally publicly funded equipment. Hopefully, in the course of time, attitudes would change and the programme could be run down. Such a scheme could be designed as a “taster” programme, e.g. an individual company might be allowed to use it once only, or a small number of times with degressive financial support per use. The programme should be implemented through an open, competitive call. Application should be on the basis of a clearly defined enterprise-related innovation project, specifying how access to the equipment is necessary for attaining the intended project outcome. The programme and/or level of financial assistance could be targeted, e.g. restricted to SMEs or with higher funding rates for SMEs.³⁰

²⁹ In both Austria and Finland, for example, funding for major new equipment is conditional on a multi-year plan (a ten-year plan in the case of Austria) showing how the maintenance costs will be covered.

³⁰ The terms of reference for this PSF assignment (see Annexe 1) also address issues about the safety and training of external personnel granted access to RI equipment; coverage of the costs of maintenance and repair in such cases, and matters of insurance and indemnification. Our general response is that such issues rarely arise in practice. Specialist equipment tends to require specialist operators, i.e. RI staff, who perform the work as part of the service (or, at the very least, accompany an external party using the equipment) and the cost of the specialist operator is factored into the price for the service. Similarly, (estimated incremental) maintenance costs are included in the price. Issues of liability (e.g. repair as a consequence of negligent use) and indemnification are usually covered by the contract for the provision of the service. If insurance cover is considered necessary, it is similarly included typically in the price invoiced for the service.

The Management of Physical Research Infrastructures: Some Illustrations from ESFRI Experience

Most ESFRI physical research infrastructures³¹ are conceived from the beginning as separate organisational entities and are designed and built to be open and to offer services to the relevant scientific community. By contrast, Cypriot RI facilities appear mostly to have been established within larger RIs and to have been dedicated originally to serve the small research group of a particular professor or researcher who pursued its funding and acquisition. If Cyprus wished to transition from such closed “private-use” facilities towards open infrastructures, it could be useful to consider the kinds of organizational, access, and funding models employed by many ESFRI infrastructures.

Organizational model: Most ESFRI infrastructures are set up as separate, dedicated legal entities, often as ERICs (European Research Infrastructure Consortium), but some using other legal models. For both financial and administrative reasons, as indicated elsewhere in this report, a separate legal entity is the best way to manage a research infrastructure service offering.

Most ESFRI infrastructure legal entities are based on a membership scheme. The potential users fall into various categories, e.g., full members, associate members, academic non-members, and industry.

A similar solution could be employed for Cypriot RI-housed infrastructures. Each could be set up as a distinct legal entity, or at least be operated as a separately managed unit within its hosting RI. Membership of the infrastructure could be at the RI level, with different RIs becoming members through an MoU with the host RI. Given the size of Cyprus and its research ecosystem, one could simplify membership to being at just one level (no associate members) and/or to assuming that all public RIs have member privileges in any facility that takes that route.

Access model: It is typical for ESFRI physical research infrastructures to adopt access models that partition access time into three components: standard access to members according to their proportion on some key parameter, e.g., percentage of ownership or financial contribution; competitive access to members and associate members based on excellence (of a scientific proposal that sets a research goal whose achievement requires the use of the infrastructure); and possibly a fraction of competitive access open to non-members and/or fee-based access to the market.

Currently in Cyprus infrastructure facilities would seem to operate essentially on the basis of ownership, thus having the host consuming the entire use time of the facility. In order to open up the facility to additional users, a model might be adopted that grants standard access to the host institution, excellence-based access to members, and fee-based access to non-members including industry. In addition, the government could mandate minimum time percentages to be devoted to access by industry or to members besides the host.

³¹ The following remarks relate to physical infrastructures (telescopes, wet labs, etc.) as distinct from digital infrastructures (data and software infrastructures). The management of physical infrastructures is more demanding than that of digital infrastructures which latter tend to employ open access as their general use policy and to offer their content for free at the point of use for all users.

Funding model: ESFRI infrastructures are set up generally to manage both economic and non-economic activities. The same could be done in Cyprus. Research infrastructures could offer services to the host organisation and members for non-economic activities (research, education) as well as to industry for economic activities. The former should be funded by the government through the usual (academic) research funding schemes, while the latter could be funded through other schemes discussed in this report, e.g. for collaborative research. As mentioned also in the report, at least the latter should be based on full cost accounting.

Implementation of a National Infrastructure Roadmap: The Case of Greece

Like most member states, Greek participation in ESFRI infrastructures is related to the establishment of a national infrastructure roadmap involving only Greek institutions and only the Greek scientific community. The procedure for implementing the Greek national roadmap was similar to the ESFRI procedure. After strict evaluations by international committees, a total of 28 proposals were selected for initial participation in the Greek roadmap. Each of the selected proposals was given a budget of 4M€, typically, and an initial deadline of two years in which to produce a detailed design of all aspects of the research infrastructure concerned (instrumentation, scientific functionality, usage protocols, administrative processes, governance, etc.) and/or advance its implementation, depending on the case. At the end of the two-year period, the scientific and implementation maturity of these infrastructures will be evaluated and, taking also into account any strategic priorities the government may have, some will be chosen and will receive longer-term funding for completing their construction and operation.

Cyprus could follow a similar procedure to establish a national research infrastructure roadmap in conjunction with the Key National Infrastructure funding programme described in the report. The facilities chosen for funding through the programme (whether new facilities or upgrades) would enter the national roadmap, with their long-term sustainability depending on the results of a periodic evaluation of their achievements. The infrastructure sustainability, the funding predictability, and the potential return on investment thus afforded will shed a very different light on the current RI facilities and will go a long way in transforming the mentality of scientists and politicians alike towards openness of public infrastructures to external industrial use.

4.1.2 Retain, review and expand the current innovation voucher scheme

Innovation vouchers have proven themselves in many countries to be an effective way of giving SMEs an easy first contact with research institutions. At the same time, they are a valuable marketing tool for research institutions wanting to increase their outreach to new SME customers.

The budget for the current Cypriot scheme is just €260,000 spread over five years, which is sufficient to fund only 10-20 vouchers nationally per year on average (the vouchers having a face value of €5,000 or €2,500). We have no data on actual demand and real supply during the recent past, but the budget

seems extremely low. We recommend a **review of the effectiveness of the present scheme, including its marketing and administrative implementation, during the past few years**, prior to a relaunch with an expanded budget.

The audit should include a review of the types of project eligible for funding. The current lower-value voucher scheme (€2,500) supports: “consulting services for the development of technological applications”; “consulting services for technology transfer and technical knowhow”, and “techno-economic studies for innovative products and services”.³² The **current eligible services are perhaps pitched too high**: consideration should be given to expanding the coverage of the scheme “downwards”, such as to target it as a “taster” programme to help grow the demand side for RI services by reaching firms with no previous significant innovation activity.

This could be done, for example, by offering funding for **SME efficiency audits**. Luxembourg, for example, operates a Fit4Innovation programme which uses a pool of business-organisation and change-management consultants – pre-selected by the programme management agency – to help firms optimise their business processes. Schemes of this type can variously be targeted at simple optimisation of production processes (factory floor layout, cutting down on waste, reducing stocks of input materials, etc.), sales and marketing, or (incrementally) improved product or service offerings. The firm achieves a cost saving or market gain and the RI builds a contact that may grow into a future research customer.³³

³² The current innovation voucher scheme is further described in the Analytical Background Report, p. 65.

³³ The scope of our report is limited to recommendations directly implicating the RIs. With regard to the broader issue of growing the demand-side for RI services, and in view of the great preponderance of micro-enterprises in traditional activities and local services in Cyprus, we suggest that serious consideration be given to a scheme to stimulate “low-tech” clustering initiatives targeting micro-enterprises with the aim of gradually raising their collective absorptive capacity and innovation appetite, at which point the RIs may be able to provide services. We have noted that there is an agriculture and food “Green Cluster” established in Cyprus but we have no detailed information as to its activities and impact.

Innovation Vouchers: Experiences from The Netherlands

The Dutch were the first to introduce an innovation voucher scheme, and many countries have since followed their example. In the Netherlands itself 19 separate voucher schemes are currently in operation, at regional as well as national level.

Innovation vouchers are “tickets” that are distributed to companies, often SMEs, that can be used by the companies to pay for services from “knowledge providers”, often universities or other research organisations (possibly specifically authorised by the programme management agency for the purposes of the particular scheme). These voucher schemes aim to help SMEs connect to research institutions and so strengthen the knowledge position of the SMEs. At the same time, they improve the practical application of knowledge of the research institutions. As we have suggested in this report, they can be used as a “taster” programme to facilitate a first contact between firms with no significant innovation experience and an RI.

Vouchers are highly adaptable in the sense that they can be targeted in many different ways: at specific types of firm, at specific economic sectors, or for a specific kind of service, for example coaching/training, performing a feasibility study or hiring a knowledge supplier to answer a technical question. Vouchers may pay for only part of the service, e.g. 50%, the rest being contributed by the beneficiary itself.

Voucher schemes can have high administration costs if all applications are to be reviewed individually. However, the administrative effort can be balanced against the cost of the voucher. In the Netherlands, for example, applications for low-value vouchers are often done digitally, based on a structured application form asking for a simple project plan, a price quotation from a knowledge supplier and a de-minimis statement.

The Netherlands Enterprise Agency (RVO) offers vouchers at a national level for SMEs in specific ‘top-sectors’ that have a knowledge question for renewing their products, production processes or services. The SME pays 50% of the total costs, the voucher being used to pay the other half. Each year there is a budget of €2 million available for the knowledge vouchers, with a maximum value of €3,750 per voucher.

Vouchers are also widely offered by regional governments. Examples are vouchers for a feasibility study, vouchers to support growth activities, vouchers for consultancy, skills development or strategy support, etc. Regional vouchers are offered for services from €500 (e.g. for coaching) to €30,000 (e.g. for feasibility testing of a new technology in a manufacturing process).

4.1.3 Introduce an innovation-targeted collaborative research programme

Analysis and Rationale

Cyprus currently operates several programmes with **collaborative research** characteristics under the RESTART Programme, e.g. “Excellence Hubs”, “Research in Enterprises”, “Integrated Projects”. The former is targeted at scientific disciplines (life sciences, physical sciences and engineering, social sciences and humanities), while the latter two are targeted at Smart Specialisation priority sectors.

It could be useful to have a “general-purpose” collaborative research programme targeting a **significant business innovation project – but without narrow thematic or sectoral limitations**. Such a scheme could involve a single enterprise and single RI or multiple enterprises and more than one RI. It might be wise to begin with a pilot scheme targeting one or several enterprises and a single RI. Many countries operate collaborative research schemes, frequently with funding rates of 50% of total costs.

Experience in some countries, e.g. Norway, suggests that these kinds of schemes work best when the funding is allocated to the participating company or companies, who then subcontract R&D work to the RI. In the case of the suggested pilot scheme, however, given the generally low R&D competence of Cypriot firms, we would suggest awarding the funding to the RI in the first instance. If the pilot scheme is evaluated as successful, consideration might be given to making the enterprise the beneficiary.

4.1.4 Introduce a graduate placement scheme for SMEs

We propose a scheme to provide SMEs with financial assistance for the employment of recent university graduates for a period of six to 24 months.

The scheme could be modelled on the United Kingdom Knowledge Transfer Partnerships.³⁴ In this UK scheme, a company partners with a university, which places one or more new graduates in the company for a two-year “fellowship”. The benefits are double: the participating graduates are exposed to the world of business, while the company profits from the knowledge of recent graduates (STEM or broader).

Experience from several countries suggests that recent graduates who take employment in SMEs can raise a company’s absorptive capacity and, at the same time, build connections between the company and the graduate’s alma mater, which is to where the graduate is most likely to turn for technical advice or assistance.

Placements should be made on the basis of a clear project plan (not just hiring to do any work) and be for a period of between six and 24 months. The scheme would require a facility for matching company interests with graduate profiles.

As with any new scheme, it would be wise to run a pilot programme, e.g. for an initial period of five years, to test both supply and demand. It might be particularly efficient to run the pilot operation based on a single RI with a strong technological profile, e.g. the Cyprus University of Technology.

³⁴ The findings of a government-commissioned, independent evaluation of the UK Knowledge Transfer Partnership scheme, published in 2015, can be found here.

4.1.5 Provide assistance with laboratory accreditation in justified cases

The terms of reference for this PSF assignment refer to issues of laboratory accreditation, notably the cost of acquiring accreditation, as well as of upgrading facilities to international competitive standards .

Requirements for accreditation are set by the potential users of the services which the laboratory would wish to supply. A laboratory that does not have the necessary accreditation must expect to be refused by a potential user. We were informed, for example, that the Chemistry Department of the University of Cyprus has been unable to provide certain services to pharmaceutical companies for lack of ISO 9000 certification. We were also told that one Cyprus-based pharmaceutical company requires GMP accreditation³⁵ for certain services.

There are many additional accreditations – beyond ISO 9000 and GMP – which intending customers might require of Cypriot RIs, e.g. ISO/IEC 17025 for testing and calibration laboratories. Moreover, laboratories dealing with dangerous materials may require other, specific accreditation, e.g. relating to biosafety in microbiological and biomedical facilities.

It is not possible to generalise about the costs and time required for accreditation. Much of the cost is typically in-house for the RI as the procedure for obtaining accreditations is based largely on the applicant preparing detailed protocols of its internal procedures designed to guarantee minimum standards of quality/safety.

Very demanding accreditation is, indeed, likely to be problematic for Cypriot laboratories as the volume of probable demand in a small country may be insufficient to justify the effort and expense of obtaining accreditation.

We recommend that consideration be given to the provision of government funding to cover accreditation costs where an RI (for a specific laboratory or other relevant facility) can provide plausible evidence (e.g. letters of intent from potential customers) that the additional revenues expected as a result of accreditation would exceed the costs of accreditation. The evidence provided should be independently audited prior to an award decision, with the costs of the audit covered by the award.³⁶ For practical purposes, and to avoid an inflation of “mini-schemes”, such a facility could perhaps be integrated into the Key National Infrastructure funding programme proposed above (see 0).

³⁵ GMP (Good Manufacturing Practices) relate to the guidelines recommended by agencies that regulate the manufacture and sale of food and drink, cosmetics, pharmaceutical products, dietary supplements, and medical devices. GMP requirements are broadly aligned to ISO 9000.

³⁶ Possibly only if the award decision is positive, i.e. if the award decision is negative, the applicant would be required to cover the costs of the audit. This would tend to discourage highly speculative applications.

5 Summary of conclusions and recommendations

This final brief chapter summarizes the Expert Group's main recommendations for boosting science-business engagement in Cyprus and sets them in relation to the six issues for which the Cyprus authorities requested policy support.

The original Cyprus request for this PSF action was focused, in the main, on issues related to optimizing the supply side in science-business engagement in Cyprus. The Expert Group, based on its critical reading of the Background Analytical Report, coupled with the findings from its broad-ranging discussions with stakeholders during its first country visit in May 2019, came to the conclusion that there is a need to stimulate both the supply and demand sides simultaneously: to do the first without the second seemed bound to result in disappointment, not to say failure.

Thus, in the opening "Policy Messages" section of this report, we noted that "domestic demand for research and related services by the research institutions (RIs) is currently almost non-existent" and, hence, that "reforming the supply side needs to go hand in hand with policy action to grow the demand side". In consequence, throughout our work, we have sought to address the original supply-side issues whilst simultaneously addressing related demand-side matters. Finding the right balance has not been easy because there are approaches to growing the demand side that do not necessarily implicate the science-based supply side: one example is seeking to grow demand by attracting to Cyprus, e.g. through fiscal incentives, foreign direct investment by knowledge-based firms from other countries and continents.

For good or ill, the Expert Group has tried to square the circle by limiting itself to recommendations for growing the demand side to which the supply side, i.e. the publicly funded research institutions in Cyprus, can themselves contribute directly, e.g. through the creation of spin-off companies or via support services to students or researchers wishing to start up their own independent companies.

Against this backdrop, the Expert Group's main recommendations for boosting science-business engagement in Cyprus are as follows:

- Optimize framework conditions to encourage the RIs engagement with business and the public sector
 - Mandate each RI to pursue a third mission of supporting innovation through knowledge transfer.
 - Require each RI to appoint a high-level manager - "Vice-Chancellor for Innovation (VCI)" - to develop and implement the institution's third mission activities.
 - In each RI, the VCI to be seconded by a middle-level "Innovation Manager.

- Introduce a financial incentive scheme to strengthen the motivation for RIs to engage in knowledge transfer activities.
- Ensure clear guidance on the compatibility of RI innovation activities with the European Union State Aid Framework.
- Review and revise the current legislation regulating the creation of university spin-off companies.
- Review and potentially reinforce the support that the RIs provide to staff and students with entrepreneurial ambitions.
- Clarify the relationship between the national Knowledge Transfer Office and the knowledge-transfer units of the RIs.
- Professionalise the RIs service offerings
 - Develop structured service offerings.
 - Enable RIs to move towards implementing the full costing of their services.
- Review the current mix of public research and innovation programmes
 - Introduce a competitive Key National Infrastructure Programme.
 - Retain, review and expand the current innovation voucher scheme.
 - Introduce a graduate placement scheme for SMEs.
 - Provide assistance with laboratory accreditation in justified cases.

The following table relates the Expert Group’s main recommendations to the six issues for which the Cyprus authorities requested PSF support.

Table 6: Correspondance of the recommendations with the six issues the Cyprus authorities requested PSF support

<p style="text-align: center;">TOR Issues</p> <p style="text-align: center;">Recommendations</p>	<p style="text-align: center;">1. Encourage and incentivise the collaboration between the Research Laboratory Institutions and the private sector in Cyprus and abroad</p>	<p style="text-align: center;">2. Legal/regulatory changes to be made regarding possible obstacles in the laws, regulations and internal regulations of the referred organizations/institutions/donors/ventures</p>	<p style="text-align: center;">3. Adequate implementation of the State Aid rules in relation to the use of publicly funded RI's, by the business community.</p>	<p style="text-align: center;">4. Laboratories' accreditation system</p>	<p style="text-align: center;">5. Role to be allocated to the existing Technology Transfer Offices</p>	<p style="text-align: center;">6. Examination of the potential issues stemming from the possible creation of a competition between the government-funded infrastructures and the private companies which also provide those types</p>	<p style="text-align: center;">Ownership of implementation</p>
Optimize framework conditions to encourage RIs engagement with business and public sector							
Mandate the RIs to pursue a third mission of supporting innovation through knowledge transfer	●						Deputy Ministry of Research, I and Digital Policy with the support of the NBRI
Each RI to appoint a high-level manager - "Vice-Chancellor for Innovation (VCI)" - to develop and implement the institution's third-mission activities	●				●		RI's governing boards, recognition by the Deputy Ministry of Research, Innovation and Digital Policy
In each RI, the VCI to be seconded by a middle-level "Innovation Manager"	●				●		RI's governing boards
Introduce a financial incentive scheme to strengthen the motivation for RIs to engage in knowledge transfer activities	●						Deputy Ministry of Research, Innovation and Digital Policy /RIF with the support of the NBRI
Ensure clear guidance on the compatibility of RI innovation activities with			●				Deputy Ministry of Research,

TOR Issues	Recommendations						Ownership of implementation
	1. Encourage and incentivise the collaboration between the Research Laboratory Institutions and the private sector in Cyprus and abroad	2. Legal/regulatory changes to be made regarding possible obstacles in the laws, regulations and internal regulations of the referred associations/institutions/donors	3. Adequate implementation of the State Aid rules in relation to the use of publicly funded Rl's, by the business community.	4. Laboratories' accreditation system	5. Role to be allocated to the existing Technology Transfer Offices	6. Examination of the potential issues stemming from the possible creation of a competition between the government-funded infrastructures and the private companies which also provide those types	
the EU State Aid Framework							Innovation and Digital Policy
Review and revise the current legislation regulating the creation of university spin-off companies	●	●					Deputy Ministry of Research, Innovation and Digital Policy with the support of the NBRI
Review and Potentially Re-inforce the Support that RIs Provide to Staff and Students with Entrepreneurial Ambitions	●						Deputy Ministry of Research, Innovation and Digital Policy
Clarify the Relationship between the National Knowledge Transfer Office and the knowledge-transfer units of the RIs					●		Deputy Ministry of Research, Innovation and Digital Policy in consultation with RIs
Professionalise the RIs service offerings							
Develop structured service offerings		●	●			●	National Innovation Managers network in consultation of RI Governance Board and the National KTO

TOR Issues	Recommendations						Ownership of implementation
The RIs to move towards implementing the full costing of their services	1. Encourage and incentivise the collaboration between the Research Laboratory Institutions and the private sector in Cyprus and abroad	2. Legal/regulatory changes to be made regarding possible obstacles in the laws, regulations and internal regulations of the referred associations/institutions/donors	3. Adequate implementation of the State Aid rules in relation to the use of publicly funded RI's, by the business community.	4. Laboratories' accreditation system	5. Role to be allocated to the existing Technology Transfer Offices	6. Examination of the potential issues stemming from the possible creation of a competition between the government-funded infrastructures and the private companies which also provide those types	Innovation Managers & RI Finance Department
Review the current mix of public research and innovation programmes							
Introduce a competitive Key National Infrastructure Programme	●						Deputy Ministry of Research, Innovation and Digital Policy /RIF
Retain, review and expand the current innovation voucher scheme	●						Deputy Ministry of Research, Innovation and Digital Policy /RIF
Introduce an innovation-targeted collaborative research programme	●						Deputy Ministry of Research, Innovation and Digital Policy /RIF
Introduce a graduate placement scheme for SMEs	●						Deputy Ministry of Research, Innovation and Digital Policy /RIF
Provide assistance with laboratory accreditation in justified cases				●			Deputy Ministry of Research, Innovation and

Recommendations	TOR Issues
	1. Encourage and incentivise the collaboration between the Research Laboratory Institutions and the private sector in Cyprus and abroad
	2. Legal/regulatory changes to be made regarding possible obstacles in the laws, regulations and internal regulations of the referred associations/institutions/donors
	3. Adequate implementation of the State Aid rules in relation to the use of publicly funded Rl's, by the business community.
	4. Laboratories' accreditation system
	5. Role to be allocated to the existing Technology Transfer Offices
	6. Examination of the potential issues stemming from the possible creation of a competition between the government-funded infrastructures and the private companies which also provide those types
	Ownership of implementation
	Digital Policy /RIF

ANNEXE 1: ISSUES TO BE ADDRESSED BY THE PSF

SPECIFIC SUPPORT ACTION

In requesting PSF Specific Support assistance relating to “Optimal Utilisation of Research Laboratories of Organisations Funded by the Government, by the Business Community”, the Cyprus authorities specified six issues to be addressed, as follows:

1. Identification of the actions to be undertaken by Cyprus authorities in order to encourage and incentivise the collaboration between the Research Laboratory Institutions and the private sector in Cyprus and abroad.
2. Legal/regulatory changes to be made: possible obstacles in the laws, regulations and internal regulations of the referred organisations/institutions/departments which would hamper the optimal utilisation of their laboratories by the private sector should be identified. Special focus should notably be placed on the following issues:
 - Obstacles in the regulations that hinder the cooperation between the referred Organisations/Institutions and of the cooperation of the Organisations/Institutions with the private sector.
 - Obstacles in the regulations that hinder faculty members to work with the private sector (e.g. time restrictions between academic responsibility and commercial interest activities for the case of University Laboratories).
 - Handling of intellectual property rights e.g. in the field of patents, trademarks, copyright, industrial designs and trade secrets.
3. Adequate implementation of the State aid rules in relation to the use of publicly funded RI's, by the business community. How the Cyprus authorities can help the laboratories to organise and simplify the access of external partners to their premises, notably with regards to procedures as well as to technical, contractual and costing aspects. More specifically, the following issues are at stake:
 - Safety and training of the personnel who makes use of the equipment.
 - Maintenance and repair of the equipment used by external partners.
 - Insurance and indemnification issues.
 - Costing methodologies which take into account the duration of the use of the equipment, the number of man-hours spent by the staff of the organisation for the purpose of carrying out the work, the training needed for the use of the equipment, the damage which may occur in

the equipment due to its use, the specific upgrades of the equipment's software, the cost of laboratories' consumables, as well as VAT issues.

- Copyright and other IP issues, together with confidentiality issues.
4. Laboratories' accreditation system: the accreditation system of the R.I can contribute to their optimal utilisation. The following issues are at stake:
 - Requirements/obligations for accreditation,
 - Accreditation costs and time,
 - Status of research laboratories which could not be accredited due to their size or mandate.
 - Upgrading of the referred laboratories to international competition standards.
 5. Role to be allocated to the existing Technology Transfer Offices.
 6. Examination of the potential issues stemming from the possible creation of a competition between the government-funded infrastructures and the private companies which also provide those types of services.

ANNEXE 2: STATE AID AND COMPANY ACCESS TO PUBLIC RESEARCH INFRASTRUCTURES

What are research infrastructures?

According to GBER "research infrastructure' means facilities, resources and related services that are used by the scientific community to conduct research in their respective fields and covers scientific equipment or sets of instruments, knowledge-based resources such as collections, archives or structured scientific information, enabling information and communication technology-based infrastructures such as grid, computing, software and communication, or any other entity of a unique nature essential to conduct research. Such infrastructures may be 'single-sited' or 'distributed' (an organised network of resources) in accordance with Article 2(a) of Council Regulation (EC) No 723/2009 of 25 June 2009 on the Community legal framework for a European Research Infrastructure Consortium (ERIC)"

In practice, this means that all facilities, laboratories, research equipment, software, databases, etc. are considered as research infrastructures if their primary use is conducting research. This includes all physical and virtual resources owned and/or managed by public research organisations (including universities), except personnel. Access to university facilities such as laboratories or residency at university campus in a university owned building or access to a research equipment or a pilot plant, or access to a software or database, etc. are therefore all equal with respect to State aid.

Public research organisations are by their nature producers of public good. This means that they cannot be selective in their activities towards economic actors. It is therefore mandatory, that all services public research organisations offer to companies must be available for all companies without any preferential treatment or exclusion towards any companies. Only companies that have contributed more than 10% of the investment cost of a specific research infrastructure may receive preferential access and favourable conditions, but even then, only up to the value of their contribution to the investment cost.

How to arrange company access to public research infrastructures?

Considering State aid, there are three ways companies can access public research infrastructures (Further details can be found from the Framework for State aid for research and development and innovation (2014/C 198/01)).

Collaborative research

Research activity is jointly defined, planned and funded, risks are shared, and results are published.³⁷ Companies can benefit from the research infrastructure

³⁷ Publication may be delayed or limited to safeguard commercial interests of companies. Patents and other forms of IPR protection may also be used as part of publication strategy.

through the joint project. Company funding in these projects can be their own contributions (salaries, costs of using their own research infrastructures, etc.) or money they allocate to their public research partners to cover similar costs, including costs arising from the necessary use of public research infrastructures to implement the joint project.

All costs in collaborative research are based on full real cost. In the case of research infrastructures, this means direct costs of using the infrastructures, but also depreciation, maintenance and other indirect costs. Costs cannot include any profit.

Potential benefits of collaborative research should in principle be balanced. In practice, this is ensured by each partner having rights to the IPR they create during the project. When the project is funded by all partners covering an equal share, the IPR can be cross licensed without any additional payments, if the partners agree on this prior to the project. Cross licensing is possible also in other cases but may incur additional payments to balance the uneven funding or uneven commercial value of IPR created.

This way of accessing research infrastructures doesn't normally include State aid. State aid may need to be considered if sharing of results and IPR (both background and foreground) is not done according to contributions (i.e. unbalanced). However, payments between partners can be used to address possible unbalances, if they reflect normal market pricing.

Contracted services

Company procures research to a research organisation (contract research) or research organisation grants access to a company to use their resources (research infrastructures, personnel). Both must be based on service contracts, which clearly state deliverables, responsibilities and payments.

The pricing of the resources (research infrastructures, personnel) the public research organisation grants to the company based on the service contract must align with the price of similar commercial services (full market price), or in case similar services are not commercially available, the price must cover full real cost plus a reasonable profit. The latter pricing model is often more appropriate when the service has unique features, or it is particularly innovative. It may also be useful in cases, where a similar service is not locally available, but can be procured from another country.

Normally all IPR resulting from these service contracts regardless of who creates them belongs to the company as they cover all costs. The research organisation may be granted a licence to use the results in further academic research. If the research organisation is granted more extensive rights to the IP, the company may ask a price for them. However, the pricing can't exceed what is normally paid for similar IP under normal market conditions.

Contracted services don't normally include State aid if all transactions are carried out at full market price. Should any of the transactions be carried out at prices which don't align with full market price, the transaction may include State aid

either for the company or for the research organisation. The latter case is possible if the research organisation is engaged in economic activity.

Support schemes

Government organises a support scheme for companies which is delivered through public research organisations. This situation may arise when companies need services which are not available on the local market or their price exceeds what companies can afford. These services are often defined as Services of General Economic Interest (SGEI).

Providers of these services must be selected openly and transparently, which in practice means that services providers are selected through a competitive process. Similarly, services must be provided to all interested companies without any discrimination.

Provision of these services must be done using separate accounting and fully cover all related costs.

As long as government funding covers all costs and especially if the funding doesn't exceed those costs, no State aid is considered to be received by the provider of these services. All funding is considered to be aid for the final recipient, i.e. the company that receives the service. The aid received by the company must be aligned with respective State aid regulations, which may include e.g. de-minimis (typically used if State aid intensity exceeds 50%), aid for innovation support services, or any other appropriate provision depending on the nature and content of the services.

In case government funding covers the costs of these services only partially, the rest must be collected from the companies receiving these services (i.e. service prices are subsidised).

How should access to research infrastructure be managed?

If a research organisation is engaged in economic activities, **non-economic and economic activities must be accounted separately**. All costs related to economic activity must be included and they must be covered for the revenues of economic activities. No funds or other resources from non-economic activities can be used to cover costs arising from economic activities. In practice this means that separate accounting must be organised for economic activities.

Separate accounting may often be easier to organise if the research infrastructures are managed by a dedicated entity (e.g. an organisational unit or a separate legal entity). This entity may be set up only to manage economic activities, i.e. services offered to companies. Alternatively, it may be set up to manage both economic and non-economic activities. If the dedicated entity is an organisational unit, it may offer services to its host organisation(s) for non-economic activities (research, education) without any State aid implications. **State aid may have to be considered if services are offered to other public research organisations** (even for non-economic activities), if similar services are commercially available. It may therefore be viable for several research

organisations to consider setting up **joint research infrastructure units**, as host organisations can freely use the services of the joint unit without any State aid concerns.

When a research infrastructure is offered for both economic actors (e.g. companies) and public research (host or any other public research organisation) State aid depends partly on the share of resources offered to economic actors. If this share is ancillary, i.e. less than 20% of the total capacity, and fully integrated into the non-economic activity, then investments made to improve or extend the infrastructures are not considered to include State aid.

If the economic activity exceeds 20%, the further investments into improving or extending the infrastructure include State aid only to the extent they are used for economic activities (see 4.3). GBER provisions provide conditions under which the aid is allowed.

In practice, research infrastructures that the research organisation wishes to offer to economic actors (companies) and/or external non-economic actors (public research organisations) should be organised into **a separate entity**. This entity may be **an internal unit** of the research organisation (or set up as a **shared unit** of several research organisations), or it may be organised as **a separate legal entity** (company). The former case is typically more suitable especially if economic activities are ancillary, i.e. their share of total capacity is below 20%. If the share of economic activities is significant and especially if the use is not always closely integrated to public research (and education), a legal entity (a company) may prove to be a more practical model.

As long as the legal entity is fully owned by the host organisation(s) (public research organisations), it may continue to offer services to its hosts without any State aid concerns, provided that the prices for these services don't exceed normal market prices.³⁸ **Setting up a legal entity to manage research infrastructures is in practice viable only if the legal entity owns the research infrastructures.**³⁹

Costs must be calculated separately for each individual research infrastructure. This is required for several reasons, including verification of ancillary activity,

³⁸Collecting higher than market prices would in practice mean public funds being transferred to support economic activities through profits, which is not allowed. Lower than market prices or prices that don't even cover full cost are possible from State aid point of view in cases where the host is engaged in academic research, as they represent transfer of funds from economic activities to support non-economic activities. However, prices not fully covering all costs cannot be used in cases, where the host is collaborating with companies as this may constitute aid for the companies (they may get access to the research infrastructure at cost which is below full market price).

³⁹If the legal entity doesn't own the infrastructure, it would be forced to rent it. This would in practice lead into an overly complex structure, where the public research organisation would have to manage two units engaged in economic activities, one owning, investing and renting, the other selling services.

calculating the volume of possible preferential access and favourable conditions for investees, verifying that no funds from non-economic activities are used to support economic activities, etc.

Typical cases

Allowing company access to existing research infrastructure established using public funds

As state earlier, if the company is granted access to a research infrastructure as an integral and necessary part of a collaborative research project, this doesn't include State aid when all costs related to the activity are fully calculated and real costs without any profit.

When access to research infrastructures are granted to a company as a service, State aid is not included for the company as long as the price for the service is full market price (i.e. same as price for similar to services available elsewhere) or if such a price can't be established (e.g. similar services not available elsewhere), a price that covers all costs for providing the service + a reasonable profit. Costs for providing the service must include all personnel costs, consumables, energy, rents, depreciation of infrastructures, etc.

In assessing State aid for the company, it doesn't matter how the infrastructure was originally funded, as long as the pricing is aligned with market conditions.

If similar services are commercially available and the full market price calculated from real costs + a profit margin is well below pricing of these commercial services, the owner of the research infrastructure may cause a temporary market distortion with the help of earlier public funds (existing infrastructure). While this distortion will eventually disappear as the infrastructure needs to be upgraded through further investment, it may be advisable to use full market price similar to commercial actors instead of that calculated from cost + margin, simply to avoid or at least minimise the potential market distortion.

There is normally no State aid for the owner of the research infrastructure (i.e. the entity managing the infrastructure and thereby recipient of the payment company makes for the services) when access is granted to private entities (companies). However, if access is granted to a publicly owned company or any other entity highly dependent on public funds, State aid may need to be considered if pricing of services exceeds that of normal market prices.

All research infrastructure services must be **openly and transparently offered to all interested companies at the same conditions.**

Providing services to companies using existing infrastructure partly funded by companies

The conditions are the same as for the previous case, except for one additional consideration. If the company participated in the funding earlier when the infrastructure was established or extended, the company may be subject to

favourable conditions. However, to make to this possible, the contribution of the company must be able to be verified from formal accounts.

Allowing favourable conditions is based on the GBER Art 26, which states that "Undertakings which have financed at least 10 % of the investment costs of the infrastructure may be granted preferential access under more favourable conditions. In order to avoid overcompensation, such access shall be proportional to the undertaking's contribution to the investment costs and these conditions shall be made publicly available."

Companies that have invested more than 10% may receive priority access compared to other interested users and/or more favourable conditions (such as price). However, the cumulative value of priority access and favourable conditions may not exceed the value of the company's initial contribution to the investment cost. If this requirement is not met and services are offered selectively only to some companies or not allowing services to selected companies, the owner of the research infrastructure can no longer be regarded as a public research organisation and is therefore subject to the same State aid treatment as any private company.

Establishing a new research infrastructure or extending an existing one

The same conditions apply as for the previous cases. The only further consideration is related to the anticipated share of economic activity of the total capacity of the research infrastructure.

If less than 20% of the total capacity is used for economic activities, the investment can be made with public funds without any State aid considerations. This is based on the R&D Framework Chapter 2.1.1. paragraph 20, which states that: "*Where a research organisation or research infrastructure is used for both economic and non-economic activities, public funding falls under State aid rules only insofar as it covers costs linked to the economic activities. Where the research organisation or research infrastructure is used almost exclusively for a non-economic activity, its funding may fall outside State aid rules in its entirety, provided that the economic use remains purely ancillary, that is to say corresponds to an activity which is directly related to and necessary for the operation of the research organisation or research infrastructure or intrinsically linked to its main non-economic use, and which is limited in scope. For the purposes of this framework, the Commission will consider this to be the case where the economic activities consume exactly the same inputs (such as material, equipment, labour and fixed capital) as the non-economic activities and the capacity allocated each year to such economic activities does not exceed 20 % of the relevant entity's overall annual capacity.*"

If the anticipated share exceeds that of 20%, then the investment must be divided according to the shares of anticipated use. The share that is anticipated for non-economic use can be funded 100% from public funds. However, the share that is anticipated for economic use (research infrastructure services offered to companies) can only be funded up to 50% from public funds. The rest of the funding must be collected from non-state sources, e.g. contributions from private companies, loans from financial institutions, profits related to revenues from

earlier research infrastructure services, etc. The EARTO paper offers an illustrative example calculation (see Relevant source material).

Almost exclusively for non-economic activity (ancillary economic activity) and entity's overall annual capacity are relevant for assessing State aid in the context of research infrastructure investments. There are no specific guidelines how an entity may define its research infrastructures. They may be individual equipment, ICT solution, database, etc. or they may be larger installations or facilities consisting of several individual equipment, software, databases, buildings, etc. What is relevant is how new investments are made and especially how external funds are allocated to them. If a company wants to extend the research infrastructure by partially funding a specific new equipment, then from the State aid point of view, the share of this particular equipment's overall annual capacity needs to be the basis for assessing if the economic activity is ancillary or not. However, if a company decides to invest in a larger research facility without specifying particular equipment or any other individual item, then the basis for assessing if the activity is ancillary may be based on the overall annual capacity of the whole facility, provided that the overall investment in which the company participates is made to the facility covering several individual items.

GBER Art 26 paragraph 7 further states, that "Where a research infrastructure receives public funding for both economic and non-economic activities, Member States shall put in place a monitoring and claw-back mechanism in order to ensure that the applicable aid intensity is not exceeded as a result of an increase in the share of economic activities compared to the situation envisaged at the time of awarding the aid." What this means is that Member States need to monitor the share of economic use and if it later exceeds beyond the originally anticipated, must take action to ensure that the investment aid the owner/manager of the research infrastructure received doesn't exceed the max allowed 50%. What this means in practice is that aid might need to be recovered. Alternatively, there might be a possibility to provide evidence of further private investment, thus indicating that a higher than anticipated total investment was necessary and the share of aid doesn't exceed 50% of the new total.

Relevant source material

<https://www.earto.eu/wp-content/uploads/EARTO-Note-on-EU-state-aid-rules-for-RDI-final.pdf>

https://ec.europa.eu/regional_policy/sources/conferences/state-aid/prague/1400-1520w1-lida-balta-state-aid-and-infrastructure-prague.pdf

<https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:02014R0651-20170710>

https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv%3AOJ.C_.2014.198.01.0001.01.ENG

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The Horizon 2020 Policy Support Facility (PSF) is an instrument aimed at supporting Member States and countries associated to Horizon 2020 to improve the design, implementation and evaluation of their national R&I policies and systems.

Following a request from the Cyprus authorities for a PSF Specific Support on the “Optimal Utilisation of Research Laboratories of Organisations funded by the Government, by the Business Community”, an international panel of experts was appointed by the Commission (Directorate-General for Research and Innovation).

This report summarises the results of the expert panel’s deliberations. It provides an assessment of the current situation in Cyprus, identifies areas where policy action is required, and makes specific recommendations to boost the engagement between the RIs and the business community in Cyprus.

Studies and reports

