



POLICY  
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# **A new method for evaluating universities' third mission activities in Italy**

Case study contribution to the OECD TIP Knowledge Transfer and Policies project

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## *Table of contents*

<b>Executive summary .....</b>	<b>4</b>
<b>1. Main features of the policy .....</b>	<b>5</b>
<b>2. Development of the initiative.....</b>	<b>7</b>
<b>3. Impacts .....</b>	<b>13</b>
<b>4. Implications.....</b>	<b>14</b>

## Executive summary

The evaluation of technology transfer and third mission activities of universities and PROs is comprised among ANVUR institutional aims. Since its institution, ANVUR has started a path to better understand how to analyze and evaluate this kind of activities, an issue far to be solved.

The departure point has been the demarcation of the perimeter of the third mission concept and the creation of a map of all the activities involved in the processes of interaction between academic institutions and socio-economic context.

So a broad definition of third mission activities has been adopted. Besides technology transfer activities traditionally considered (intellectual property management, academic entrepreneurship and third party funding), it has been included also the engagement in incubators and science parks, museums and cultural heritage sites, public health activities and facilities, lifelong learning and public engagement activities. The definition has been then articulated into:

- a) activities aimed at the valorization of research, i.e. by definition the transformation of goods supported by public funding (public research) into private goods;
- b) activities which have spillovers on society at large, through the production of public goods that are made accessible to society; these knowledge spillovers are less visible, more heterogeneous and have a different time scale compared to commercial valorization, but nevertheless they are very diffused and likewise important.

After the completion of the process of classification of the activities, the evaluation methodology has been defined in a specific document published by ANVUR and called Manual for the Evaluation of Third Mission. For each of the areas comprised in third mission definition, a set of criteria, indicators and evaluation questions has been identified. On this base, ANVUR has set up an information system together with the Italian Ministry of Education, University and Research, to collect standardized and comparable data on all the universities and PROs involved in the evaluation.

The collected information have been used in the Italian evaluation of research quality (VQR) 2011-2014, the research assessment exercise carried out by ANVUR. In fact, in that exercise third mission of Italian universities and research institutes has been evaluated alongside their research performance, but in a separate chapter and in an experimental way. In accordance with the Manual, the evaluation has been carried out by informed peer review, i.e. the analysis of quantitative indicators through expert judgement and a panel has been constituted for this purpose (Committee of Evaluation of Third Mission – CETM).

Continuing along this path, ANVUR's current objective is to refine the third mission definition and the related set of activities, and to evaluate not only the activities per se but also their effects on their socio-economic context. A brand new survey has been designed for this purpose (SUA-TM) and the data collection is going to start in next months. These data will be used along with the revised version of the Manual in the next research assessment exercise VQR 2015-2019. Up to now, ANVUR has clearly stated that the evaluation of the third mission activities should not to be directly used in the Ministry funding formula, as it happens for research performance. Nevertheless, evaluated institutions are asking for forms of incentives and support to better enhance their activities on this side.

## 1. Main features of the policy

### 1.1. Key objectives and main characteristics

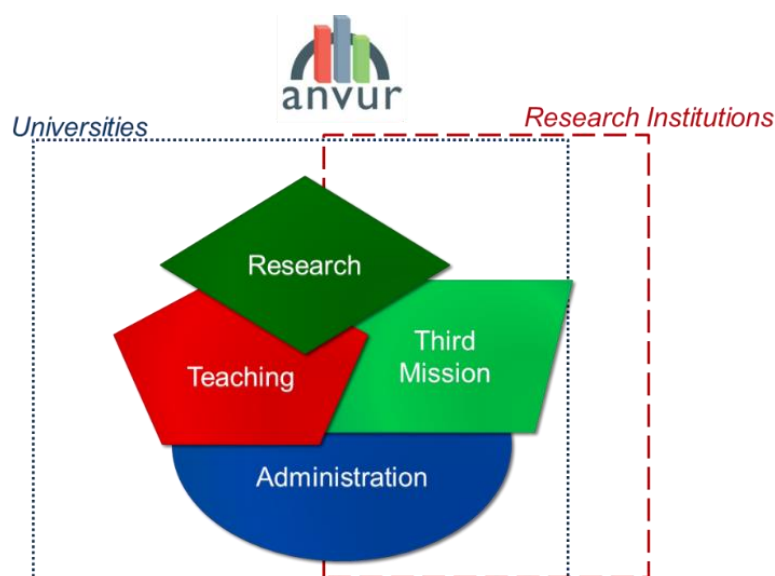
This case study describes the introduction of a new method of evaluation of third mission activities of Italian universities and research institutes. This method was developed in 2013 by ANVUR, the Italian Agency for the evaluation of universities and research, within the framework of VQR 2011-2014 carried out in 2015-16.

Since the inception of the Agency, in 2011, evaluation has been used by the government to inform decisions concerning the accreditation of universities, but the evaluation is also a valuable information for the evaluated institutions and for all the stakeholders (students, business sector, local entities...).

The evaluation of technology transfer activities is one of the Agency's objectives, alongside the assessment of administrative, teaching and research activities<sup>1</sup> and it has been conducted within the framework of the two Italian research assessment exercises, VQR 2004-2010 and 2011-2014. In the initial government's intentions, third mission evaluation was foreseen to directly influence the allocation of funding. However, following the suggestion of the Agency and in view of the early stage of the data collection process, the Ministry of Education, University and Research decided not to use third mission indicators for this purpose.

ANVUR has also broadened the definition given in the Ministry's mandate of technology transfer to embrace other forms of knowledge transfer and exchange producing impact on the social, cultural and economic context. In this sense, third mission activities may be defined as those involving interactions between scientific institutions and society at large.

Figure 1 ANVUR lines of activity



<sup>1</sup> See the Agency's regulation: Presidential Decree 1 February 2010 no. 76, article 3, comma 1.

The main evaluation programs conducted by ANVUR in which third mission has been included are:

1. the first round of the research evaluation exercise (Evaluation of Research Quality, VQR 2004–2010)
2. the national system of quality assurance of the universities (Self-Assessment, Periodic Evaluation and Accreditation, AVA);
3. the second round of the research evaluation exercise (Evaluation of Research Quality, VQR 2011–2014).

Already in VQR third mission has been defined as the openness of the university towards the socio-economic context through the valorization and transfer of knowledge. A set of indicators has been identified related not only to technology transfer, but also to management of cultural goods.

With the introduction of the AVA system, the indicators and parameters for third mission assessment have been expanded and furtherly defined<sup>2</sup> and third mission officially included among the institutional activities of universities, considering it among quality standards for the accreditation of Institutions and Programmes<sup>3</sup>. The inception of this new evaluation system has produced the immediate need to rely on a robust information system, so a dedicated report template was set up<sup>4</sup> and the data collection process subsequently followed.

In the second round of the research evaluation exercise VQR 2011-2014, the Agency has kept the initial definition of third mission but new methodology and evaluation processes have been designed. The information system introduced with AVA has been extended to research institutes and used to build specific indicators analyzed by a panel of experts.

Although third mission evaluation has been part of both the VQR research assessment, it has not contributed to the final score of departments and universities on the basis of a specific recommendation addressed by the Agency to the Ministry not to enter it into the performance-based formula funding for universities (FFO), which allocates up to 30% of government block granting.

Even in AVA evaluation system there is an explicit system of reward and incentive to encourage specific behaviors on third mission. Nonetheless, as well as in VQR, good performance on third mission gives recognition and prestige to the evaluated institutions.

The VQR 2011-2014 run by ANVUR in 2015-16 has targeted all the Italian universities and research institutes under the supervision of the Italian Ministry of University and Research (MIUR) and other voluntary research organizations. The evaluation of third mission carried out in VQR 2011-2014 has led to important developments.

First of all, the evaluation has allowed the construction of a new central information system focused on the activities comprised in ANVUR's definition and of a new monitoring system at a local level in the evaluated institutions.

The main instrument has been the creation (in collaboration with MIUR) of a dedicated template with compiling instructions and an associated data infrastructure, i.e. the database

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<sup>2</sup> See Ministry of Education, University and Research, Decree 30 January 2013 no. 47.

<sup>3</sup> See Ministry of Education, University and Research, Decree 12 December 2016 no. 987.

<sup>4</sup> The Annual Third Mission Form SUA-TM was part of the Annual Departmental Research Form SUA-RD.

SUA-TM – Annual Third Mission Form<sup>5</sup>. This information system has been launched in 2014 and entered in its ordinary stage in 2015; today, it constitutes a source of comparable and highly standardized data from all the state and non-state universities and research centers in Italy.

With the aim of improving their quality and reducing the burden for the institutions, some of the data have been drawn directly from official databases, i.e. European Patent Office database for data on patents and Chamber of Commerce database for spin-off companies.

The development of this information system has constituted an important support to the academic institutions in mapping their activities, with remarkable consequences in terms of internal and external visibility.

In addition, ANVUR has described the whole evaluation model in a dedicated Manual published in 2015. The Manual has been issued and discussed in an international workshop organized by ANVUR with academics, highly professional technical-administrative personnel and other external stakeholders. Then, it has been object of a formal public consultation and its final version has kept most part of the suggestions received. This methodological guide has supported the entire VQR evaluation process defining phases, criteria, indicators and evaluative questions. This specific methodology and evaluation design has also represented a solid instrument for the institutions in order to enhance self-assessment processes.

On the basis of the information collected in SUA-TM and the indications contained in the Manual, nearly 90 indicators have been produced and used in the VQR 2011-2014.

The final outcome of VQR 2011-2014 is represented by the ANVUR Report, a powerful instrument of knowledge on the third mission performance of the Italian academic system.

## 2. Development of the initiative

### 2.1. Factors that led to the introduction of this initiative

The evaluation of third mission of universities and research institutes as well as the introduction of VQR 2011-2014 are part of the agency's objectives and included in a broader policy framework. In fact, in the 1990's the Italian research system has been interested by a significant wave of reforms. First of all, a significant autonomy has been allowed to research institutions, previously strictly controlled at the central level<sup>6</sup>; however, greater independence was not matched by an appropriate system of evaluation and control<sup>7</sup>.

A more recent key step towards the definition of a new policy framework was the approval of Law 240/2010, which has introduced new regulations designed to make research institutions more accountable. The institution of ANVUR as an independent evaluation

<sup>5</sup> SUA-TM constitutes the third section of SUA-RD, the Annual Departmental Research Form.

<sup>6</sup> See Law 9 May 1989 no. 168.

<sup>7</sup> See also Luzzato G., Moscati R., (2005) University Reform in Italy: Fears, Expectations and Contradictions. In: Gornitzka Å., Kogan M., Amaral A. (Eds) *Reform and Change in Higher Education. Higher Education Dynamics*, vol 8. Springer, Dordrecht, 153-168.



agency was a direct consequence of the new approach, aimed at balancing autonomy of university institutions with a set of accountability principles.

Already with the start of first round of VQR (VQR 2004-2010), the Ministerial Decree<sup>8</sup> requested ANVUR to assess technology transfer activities, with specific reference to patents and spin-off companies, owned or co-owned by the institutions, their revenues and, in the case of spin-offs, their duration and performance, and any other socio-economic impact. With the release of its Call for Participation<sup>9</sup>, ANVUR decided to broaden the definition of technology transfer, and to analyse the manifold activities through which the original knowledge produced by universities and research institutes is transformed and made available to society and the economic system. According to the Call, the evaluation of these activities should be based on the set of indicators detailed below:

- the indicator for *third-party funding* measured by summing the amounts of research/consultancy contracts with external partners;
- the indicator for *patenting activity* measured by the number of patents granted and owned/co-owned by the institution;
- the indicator for *spin-off companies* measured by the number of spin-offs accredited by the institution according to the internal regulations;
- the indicator for *incubators* measured by the presence of incubators co-owned by the institution;
- the indicator for *consortia* measured by the number of technology transfer consortia and associations co-owned by the institution;
- the indicator for *archaeological excavations* measured by the number of archaeological sites managed by the institution;
- the indicator for *museums* measured by the presence of museum centers managed by the institution;
- the indicator for *other third mission activities* measured by the list of other activities conducted by the institution and not included in the previous indicators.

In VQR Final Report, each of these indicators has contributed with a specific weight to the construction of the unique indicator measuring *third mission* activities. Each institution has been evaluated assigning a value expressed as a percentage of the national total value.

This first assessment exercise has been the first comprehensive census of third mission activities carried out by Italian universities and research institutes, a powerful instrument of knowledge. However, the Agency's position towards third mission evaluation was to implement a gradual process to ensure shared definitions, certified data and reliable indicators. With this aim, after the conclusion of VQR 2004-2010 a consultation phase was launched in which definitions, available sources of data, methods of construction of indicators and models of evaluation were discussed with universities and research institutes representatives.

<sup>8</sup> See Ministry of Education, University and Research, Decree 15 July 2011 no. 17.

<sup>9</sup> See ANVUR, VQR 2004-2010 Call for Participation 7 November 2011, [http://www.anvur.it/wp-content/uploads/2011/11/bando\\_vqr\\_def\\_07\\_11.pdf](http://www.anvur.it/wp-content/uploads/2011/11/bando_vqr_def_07_11.pdf)



The main conclusion of this phase was to discourage the production of synthetic scores, in order to avoid a risk of major methodological and substantive mistakes and distortion in behaviors of universities and research institutes. On the contrary, in preparation of the second round of the research assessment exercise VQR 2011-2014, a “maturity model” was elaborated and described in a dedicated methodological guide (the Manual) relying on a solid instrument for data collection (SUA-TM).

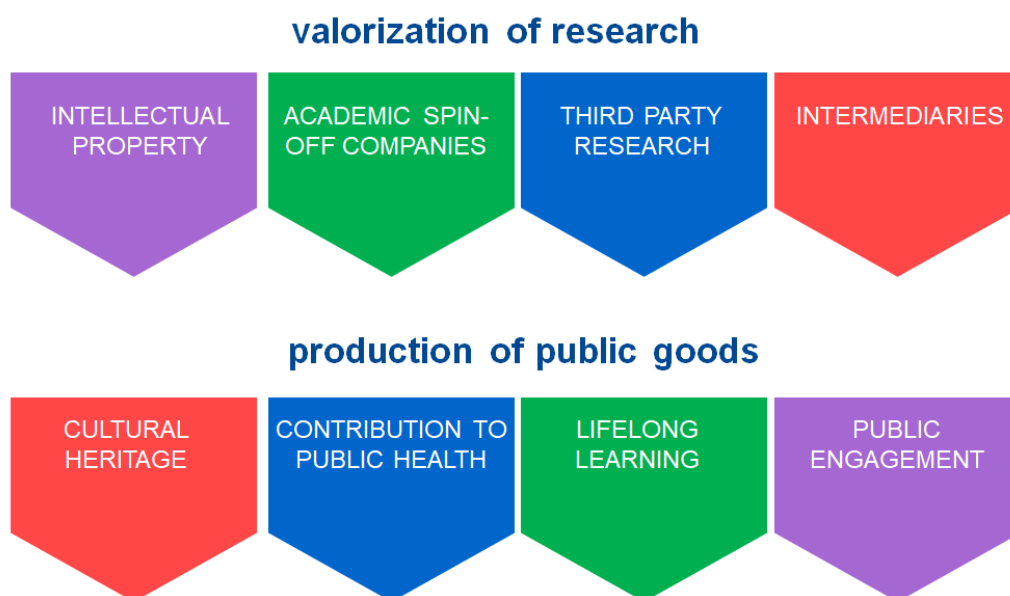
The assessment method chosen in the subsequent assessment exercise VQR 2011-2014 was the informed peer review approach, in which indicators should be used to inform the evaluation of the reviewers. The panel of reviewers were recruited by ANVUR after a public call on the basis of their competences and experiences as scholars, managers, stakeholders and partners of academic institutions’ third mission activities. According to this model, experts in each of the areas of third mission should adopt the metrics considered most appropriate given the advancement of the international methodological debate and the quality of indicators.

Besides the technology transfer activities traditionally considered (intellectual property management, academic entrepreneurship and third party funding), the other activities considered in the evaluation have been the investment of universities in incubators and science parks, cultural heritage management, public health, lifelong learning and public engagement activities. Hence, the definition of third mission has been articulated into eight evaluation areas:

1. Activities aimed at the valorization of research, that is by definition the transformation of goods supported by public funding (public research) into private goods; in particular, knowledge is:
  - circulated and networked within relatively permanent organizations based on public-private collaboration, often at regional/local level (intermediaries);
  - developed, applied and tested within contractual relations, particularly between industry and academia (third party research);
  - encapsulated into set of Intellectual Property Rights (patents, plant varieties);
  - embedded into scientists-entrepreneurs (spin-off companies);
2. Activities which have spillovers on society at large, through the production of public goods that are made accessible to society:
  - creation and management of cultural heritage (cultural goods);
  - design and delivery of education for adult population within a broader concept of Life Long Learning (permanent education);
  - clinical research and training (registered clinical experimentation, biobanks);
  - production of advice, expertise, informed opinion, contributions to controversies, communication of science (public engagement).

These knowledge spillovers are less visible, more heterogeneous and have a different time scale compared to commercial valorization, but nevertheless they are more diffused and likewise important.

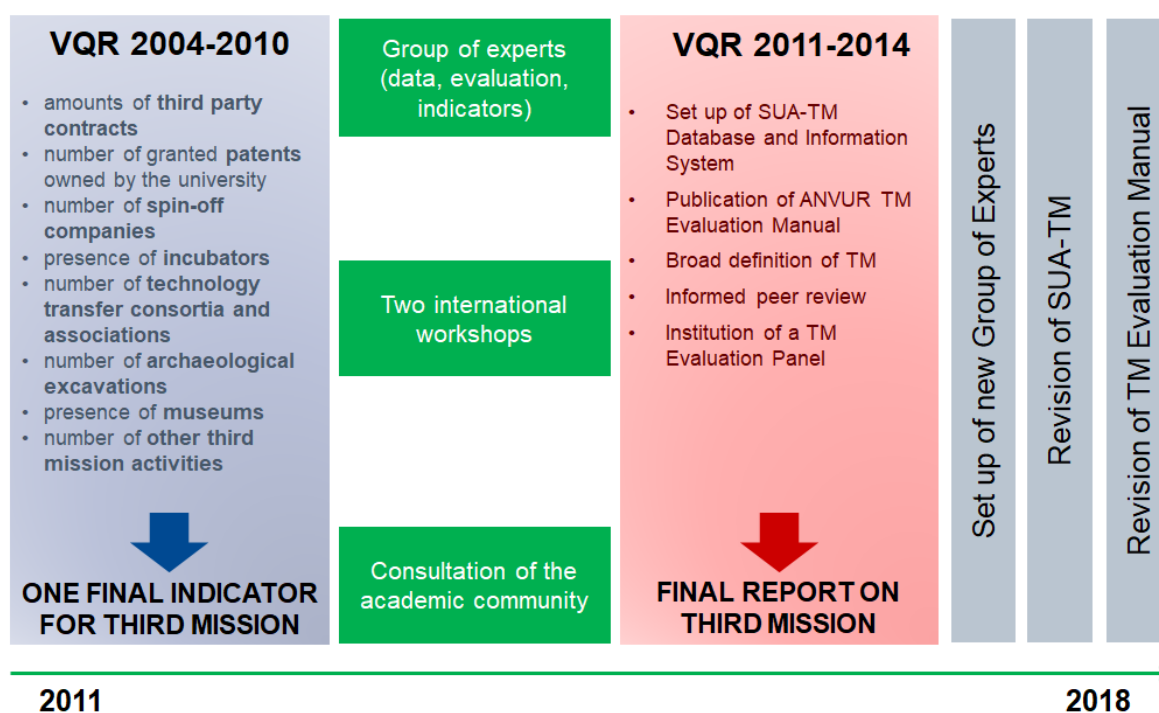
Figure 2 Third Mission evaluation areas



For each of these eight areas, the Manual proposes different methodologies and identifies a set of criteria, indicators and evaluation questions. In the areas where the maturity of indicators is high, cardinal scales and rankings might be used, while in areas with a low level of standardization, qualitatively-assigned ordinal values will be most likely used. This means that a national ranking of research institutions based on third mission activities is not in the agenda; rather, ANVUR is committed to provide a collection of evaluations reflecting the heterogeneity of institutions' strategical choices.

After the conclusion of VQR 2011-2014, ANVUR has started a new work on the refinement of third mission definition and the set of activities comprised in its perimeter. The agency's new objective is also to evaluate not only the activities *per se* but also their effects on their socio-economic context. For this reason, a brand new SUA-TM survey has been designed and the data collection campaign is going to start in next months. The new sheet for data collection will strengthen the aspects of the institutional strategy, management, valorization, access and use of the third mission activities; these elements will be emphasized also in a new version of the Manual that is going to be published in 2019. The data collected in this new campaign will be used along with the revised version of the Manual in the next research assessment exercise VQR 2015-2019.

Figure 3 The agency's path on the evaluation of third mission



ANVUR methodology emphasizes the relevance of the context in the analysis of the third mission and recommends the evaluation to provide appropriate solutions to this issue, also taking into consideration contextual factors and using the main economic and social indicators as a way to normalize third mission indicators.

Scientific literature on third mission stresses the relevance of the relationship with the territorial context.

The university, in fact, produces knowledge spillovers, i.e. positive externalities from which the territorial system may benefit in various ways. On the other hand, the geographical context in which the university operates may have a relevant impact on its strategies and outcomes. The geographical location in an area where the economic activity is intense (capital and labor concentration) supports producers to easily access suppliers and customers in a vital labor market, with higher quality in selection procedures. In these contexts, academic research benefits from better conditions for the production of patents, the creation of start-up companies and other processes related to employment and innovation. On the contrary, universities located in regions with lower per capita income, lower private investment in research and development, a more fragile and less internationalized industrial structure, a scarce entrepreneurial intensity, may cope with greater difficulties in obtaining results, despite the same effort. Similar considerations can be made for social, cultural and educational aspects. On the other hand, the university can enhance opportunities of international networking and innovation for the territories.

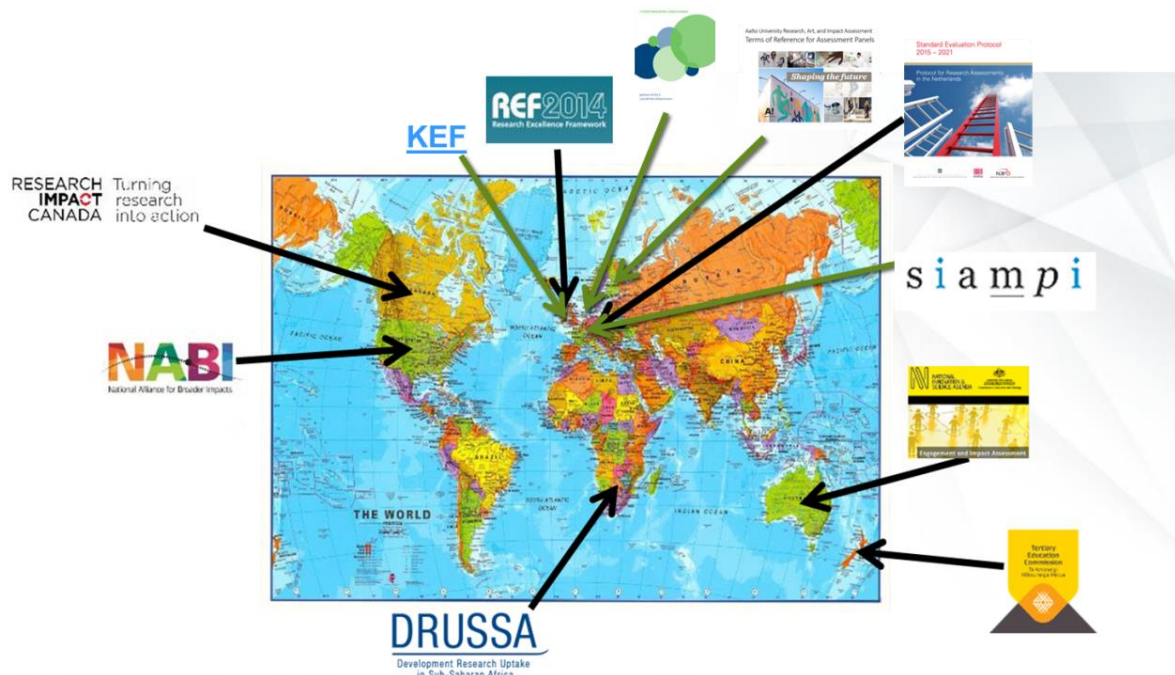
Moreover, there is another issue to be considered, that is the specificity of the individual institutional context. In fact, universities and research institutes are not required to report

activities in all the areas defined as third mission. While research and education are duties of all members of the organization, third mission is an institutional responsibility whose development paths depend on the strategy of institutions. The institutions define in autonomy the mix of activities to conduct, in relation to their own history, competencies, interpretation of the needs of society, and strengths. For this reason, the information on the strategic positioning of institutions towards third mission (objectives, resources, processes and results) represents a key aspect to guide the evaluation.

## 2.2. International influence on the initiative

The assessment exercise of third mission activities of universities and research institutes run by ANVUR has been influenced by different international experiences of evaluation regarding what has been alternatively defined as third stream, technology transfer, service/outreach, engagement, knowledge mobilization/exchange, societal relevance and impact. The best-known examples are the evaluation of Impact in the British Research Excellence Framework, the Dutch Standard Evaluation Protocol, the Australian Engagement and Impact Assessment<sup>10</sup>.

Figure 4 Some foreign impact evaluation exercises



(Adapted from D. Phipps, Research Impact Canada, “Policy Frameworks that Enable Research Impacts”, 2018)

<sup>10</sup> See Bornmann, L. (2013) What is Societal Impact of Research and How Can it be Assessed? A Literature Survey’. *Journal of the American Society for Information Science and Technology*, 64: 217–33.

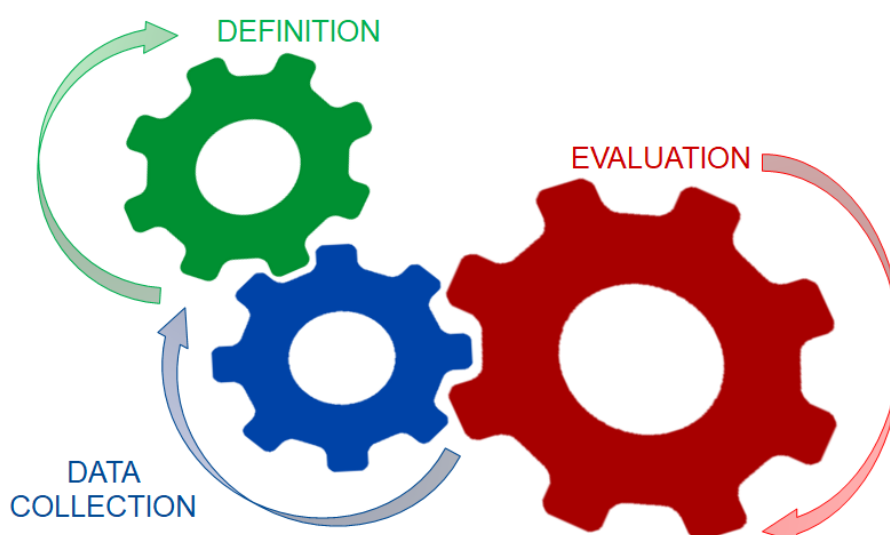
### 3. Impacts

#### 3.1. Impact evaluation

After each VQR exercise there has been a self-assessment phase in which weaknesses and strengths of the evaluation model and process have been analyzed. After the conclusion of the two rounds of VQR, the evaluation design, third mission definitions and the data system have been reviewed. The outcome has been the release of new templates for data collection based on improved definitions and operationalization.

The reviews have been discussed and elaborated with main actors (Conference of Italian Rectors of Universities, networks of knowledge transfer, representatives of institutions...), groups of experts and through the instrument of public consultation.

**Figure 5 Cycle of review of third mission evaluation methodology**



The introduction of an incentive system linked to third mission activities would be important to support universities and research institutes. However, the incentive devoted to third mission should not be in competition with research and teaching incentives, such as in REF where impact evaluation counterbalances output and research environment evaluation, but rather the funding systems should be complementary and strategic.

## 4. Implications

### 4.1. Interactions with other policy instruments

The evaluation run by ANVUR is only targeted to universities and research institutions, even though third mission activities are often developed in collaboration with other external subjects that are not comprised in the monitoring system. Third mission activities go far beyond the boundaries of the subjects evaluated by ANVUR, involving different stakeholder with economic, social, cultural impact on territory and society.

ANVUR perimeter of evaluation limits the potential of third mission evaluation and a synergy with other policy instruments in other areas would be necessary (e.g. Ministry of Health, Ministry of Economic Development...). To better gauge this aspect, in the future it could be useful to plan and implement an integrated policy instrument and system of incentives together with other Ministries (Health, Economic Development, Cultural Activities and Heritage areas).

Another issue is represented by the integration of new existing databases held by other agencies and institutions, such as the Italian Agency for Medicine or the National Institute of Statistics. As already experimented with the integration of EPO database on patents and Chamber of Commerce database on spin-off companies, this will give ANVUR the opportunity to improve data quality and share evaluation practices and, again, to integrate policy instruments.

### 4.2. Broader implications useful for other countries

There are two main innovative aspects of ANVUR model of evaluation that can be useful also for other countries.

The first is represented by the broad definition adopted, i.e. not only limited to technology transfer activities, on which universities have a long tradition, but also comprising new topics such as health, cultural activities and heritage and lifelong learning. These latter require much engagement by universities in terms of resources and present a high grade of heterogeneity (occasional initiatives, ongoing programs...) and different level of institutional investment (individual initiatives of the researchers, research teams activities, department or university actions). For example, the valorization of health research is characterized by a set of very broad activities including commercial (patents, spin-off companies, third party funding..), clinical (screening campaigns...), social (objective and subjective quality of life), and educational (lifelong learning in Medicine) aspects.

Another innovative aspect is represented by the systematic character of the information collection and evaluation. All the activities comprised in the definition, in fact, have been reported by universities and research institutions and this has allowed ANVUR to create a vast information system and a robust set of indicators. In addition, the evaluation model implemented by ANVUR represents also a novelty since it implies the use of quantitative data alongside with the judgement of the experts on the base of the informed peer review methodology.