



Background document Basque Country

Document prepared for the Basque Country's peer review

Table of contents

- Introduction and objective of the peer review exercise in the Basque Country 4
 - What is a peer-review and the role of a background document? 4
 - Objective of the Peer Review for the Basque Country and methodological steps 4
- Main concepts for understanding the scope of the peer review..... 5
 - Innovation policy-mix 5
 - Instruments interactions 6
 - Monitoring versus evaluation: 6
 - Timeframe for evaluation 7
 - Stages in an evaluation process 7
 - Methods and techniques 7
 - Indicators and type of indicators 8
 - The concept of additionality 8
 - External vs internal evaluator 9
 - Examples of evaluating an innovation policy mix 9
 - The link between innovation policy mix evaluation and RIS3 evaluation..... 9
- Innovation Policy Mix for Advanced manufacturing in the Basque Country 11
 - Innovation policy-mix for Advanced Manufacturing specific for the Manumix project 12
- Monitoring and evaluation..... 18
 - Monitoring and evaluation of Manumix policy-mix instruments 18
 - Monitoring and evaluation in the framework of Advance Manufacturing Strategy 25
- Conclusions and previous recommendations 27
- References..... 28

Figures

Figure 1: Types of interactions for policy-mixes	6
Figure 2: Timeline for evaluation	7
Figure 3: Relationship among the different elements of a strategy and their implication for evaluation.....	10
Figure 4: R&D support instruments from the Basque Government to Advanced Manufacturing	11
Figure 5: Main characteristics of Hazitek, Basque Industry 4.0 and Gauzatu.....	13
Figure 6: Governance structure of the innovation policy-mix for Advanced Manufacturing (Gauzatu, Basque Industry 4.0. and Hazitek)	14
Figure 7: Main characteristics of the Hazitek programme.....	15
Figure 8: Main characteristics of the Basque Industry 4.0 programme.....	16
Figure 9: Main characteristics of the Gauzatu programme	17
Figure 10: Evaluation and monitoring system for Gauzatu.....	18
Figure 11: Illustration from evaluation results from Gauzatu in 2015-2016	19
Figure 12: Evaluation and monitoring system for Basque Industry 4.0.....	20
Figure 13: Preliminary evaluation results from Basque Industry 4.0.....	21
Figure 14. Evaluation and monitoring system for Hazitek	22
Figure 15: Hazitek ex-ante and ex-post evaluation results. 2015-2016.....	23
Figure 16: Illustration of the SIME	24
Figure 17: Measurement points addressed by SIME	24
Figure 18: Monitoring and evaluation system for Advanced Manufacturing strategy.....	26

Introduction and objective of the peer review exercise in the Basque Country

What is a peer-review and the role of a background document?

This document constitutes the first step of the Basque Country's peer review, which is a learning exercise part of the Manumix project.

Peer reviews can take different approaches, as explained by Nauwelaers (2015), from which OECD and EU peers reviews can be highlighted, mostly focused at the national level. In addition peer reviews at the regional level have been pushed in the last years by both the Interreg programme and the Joint Research Centre (S3 Platform), the latter focused on Smart Specialisation Strategies. Some peer reviews are very intense in time and are proposed to answer a narrow question, while others focus on more broad aspects. This is the case of this exercise within the Manumix project.

The objective of a peer review exercise is not transferring good practices from peers, but to enlighten a process of policy learning. It is important not to forget that in regional innovation policies there is not a single recipe or 'one size doesn't fit all' (Tödtling and Trippl, 2005) so the recommendations from peer reviews have to be contextualized in the region after the process has finished.

Generally, three phases can be distinguished in a peer review exercise:

1. Preparation: This phase includes the elaboration of previous material or documentation. This could include a background document, elaborated either by the peered region or by an external expert. The objective of this document is to inform the peers about the policy or issue which will be the focus of the peer review exercise, not to do an analysis or provide with solutions to the peered territory. In addition this phase includes the mobilization of the resources needed for the peer review, which are the persons that will take part in the implementation phase from both the peered and the peers.
2. Implementation: This is the phase in which the analysis of the background documentation from the peers and the interactions among the peered, the peers and the external expert (if any) take place. This phase varies depending of the format of the peer review exercise. It could take a year or a month and of course the result and in-depth analysis resulting from the exercise varies depending of this format. It normally includes meetings among the participants of the peer review, but also workshops are an option for the implementation.
3. Incorporation: This includes the dissemination of the results of the exercise as well as defining the next steps that the peer region will follow after a consequence of the exercise.

Objective of the Peer Review for the Basque Country and methodological steps

The Basque Country has set as a goal for the peer- review in the Basque Country to get recommendations that are useful for *the design and evaluation process of the three programmes included in the scope of the project.*

The Basque Country team that participates in the Manumix project considers this exercise important as the main goal for the team is *to design a new evaluation methodology for the combined evaluation of the three programmes. As a starting point, the review, the design and evaluation process of each of them is considered important.*

Given the scope of the topic proposed and the novelty that designing a policy-mix evaluation implies, the peer review process will constitute a starting point for that design, which will be developed further through the regional action plan.

Concretely, the following steps are proposed for the peer review exercise:

1. Preparation: This background document and the information prepared for the second Stakeholder Group meeting held in Bilbao in January 2018, constitute the main sources of information as well as the baseline document and other sources used in the project.
2. Implementation: From February until the face-to face meeting, which will be held in March 22-23 in Bilbao, the peer region (Lithuania, in this case) and the peered region (Basque Country) together with the Advisory partner (Orkestra) will review the documentation in order to get the knowledge needed for the face-to face meeting. This meeting will be composed of two different elements: face to faces interviews by the peers with relevant people in the peered region (responsible of the programmes in the Basque Government and/or SPRI, responsible of the monitoring or evaluation system of the programmes, other relevant stakeholders, etc.). In addition, an interactive workshop will be planned to develop recommendations for the topic. That is to say for the proposed topic, a workshop will be designed to give input to the design of the evaluation process of the innovation policy-mix.
3. Incorporation: During this phase, a report that incorporates the results of phase 2 will be produced and that will constitute an input for dissemination in the peer region as well as an input for the action plan that the peered region has to deliver for the Manumix project.

Main concepts for understanding the scope of the peer review

In this section some of the most important concepts that will be useful for the scope of the peer review are highlighted:

Innovation policy-mix

Innovation policy-mix could be defined as *“the combination of policy instruments, which interact to influence the quantity and quality of R&D investments in public and private sectors”* Nauwealers (2009). In this definition, two main elements could be highlighted: the concept of instrument and the concept of interactions or combination. Therefore, policy instruments can be defined as *(T)he actual means and or devices governments have at their disposal for implementing policies, and among which they must select in formulating a policy* (Howlett and Ramesh, 2003). Examples of instruments are subsidies, loans, cluster policy, etc. and can be articulated through programmes. In the case of innovation policy mixes for a concrete strategy, such as Advanced Manufacturing, two characteristics have to be taken into account: the verticality of policy-mixes (instruments and mixes from different administrative levels) and the directionality of policy-mixes (whether they are neutral instruments or directed towards a specific priority).

Summarising, innovation policy mix is much more than a set of a portfolio of instruments as it has to take into account instruments interactions.

Instruments interactions

Different instruments interactions can be highlighted in the context of policy-mixes. According to Figure 1, there are five types of interactions that need to take into account: precondition, facilitation, synergy, potential contradiction and contradiction. Capturing the types of combinations constitutes the goal for an effective evaluation of policy-mixes.

Figure 1: Types of interactions for policy-mixes

Table 1. Five types of relations among policy measures.	
Relation	Description
Precondition (P)	Defined as a relation that is strictly required for the successful implementation of another policy measure. For instance, if policy measure B is a precondition to policy measure A, the successful implementation of policy measure A can only be achieved if policy measure B is successfully implemented beforehand. The precondition relation is a direct relation.
Facilitation (F)	In a case where a policy measure 'will work better' if the outcome of another policy measure has been achieved, the relation is considered as a facilitation relation. For instance, policy measure B facilitates policy measure A when policy measure A works better after policy measure B has been implemented; however, policy measure A could still be implemented independently of policy measure B. The facilitation relation is also a direct relation.
Synergy (S)	A special case of facilitation relation in which the 'will work better' relation is bidirectional (undirected relation). It can be argued that such a relation can be treated as a two-way facilitation; however, we believe that treating this relation as a separate type is advantageous, as it suggests a higher effectiveness of both of the policy measures having the synergetic relation vis-à-vis the overall policy.
Potential contradiction (PC)	A potential contradiction exists between policy measures if the policy measures produce conflicting outcomes or incentives with respect to the policy target under certain circumstances, hence the contradiction is 'potential'. This relation is undirected.
Contradiction (C)	In contrast to the conditional nature of potential contradiction, the contradiction relation is defined when there are 'strictly' conflicting outcomes of incentives between policy measures. Similar to the potential contradiction relation, this relation is undirected.

Source: Taeihag et al. 2013

Monitoring versus evaluation:

Evaluation is the *process that seeks to determine as systematically and objectively as possible the relevance, efficiency and effect of an activity in terms of its objectives, including the analysis of the implementation and administrative management of such activities* (Papaconstantinou and Polt, 1997). It relies on *collecting and analysing evidence, and drawing conclusions and recommendations from this evidence* (Valovirta, 2002).

Monitoring and evaluation is not the same concept. Monitoring *usually encompasses all sorts of activities that have to do with the collection and processing of information about the achievement of expected results and the degree of implementation of policy measures* (Gianelle and Kleibrinck, 2015, p. 2). Indeed, these authors argue that evaluation only refers to the ex-post evaluation in which impacts and attribution are calculated. But in general evaluation literature monitoring is considered a type of evaluation, the one that is conducted for the purpose of analysing whether a goal has been accomplished and the degree of implementation of certain intervention (Kuznetsov and Sabel 2017). Usually monitoring is linked to indicators, and goals' achievement and it is the most common evaluation exercise taking place during the implementation of the interventions (interim). This leads to policy learning opportunities as it moves from a summative to a formative evaluation (Magro and Wilson, 2013).

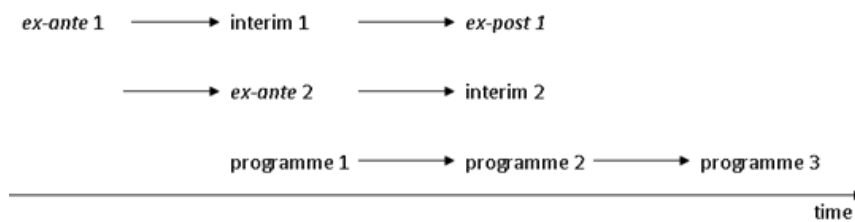
Timeframe for evaluation

As it can be seen in the Figure 2, three types of evaluation can be distinguished according to their time frame (Gibbons and Georghiou, 1987; Papaconstantinou and Polt 1997; Magro, 2012):

1. *Ex-ante* evaluation, which is carried out in the policy design phase.
2. *Interim* evaluation: It is an on-going or monitoring evaluation, running during the policy implementation phase.
3. *Ex-post* evaluation: It is the evaluation that is carried out after the programme has been implemented. It aims at analysing the main results and effects that can be attributed to the programme's intervention. In the case of innovation, these effects could last in time as innovation results last to appear in practice.

As the Figure 2 shows there is a time gap between *ex-ante* and *ex-post* evaluations and consequently, they are understood as separate activities with no connections. That means that in the design phase the only results that could be incorporated are the ones from interim evaluations, which shows the high importance of these types of exercises for policy learning processes.

Figure 2: Timeline for evaluation



Source: Gibbons and Georghiou (1997)

Stages in an evaluation process

Although there are different frameworks that divide evaluation in different stages such as the ones provide by Williams (1999) or Polt and Rojo (2002) we could summarise that evaluation is a process that includes a) revision of policy rationales, b) design phase (including definition of the scope, methodology and data), c) collecting data stage, d) analysis of data collected and e) conclusions and recommendations (Magro, 2012).

Methods and techniques

It is important not to confuse evaluation design with evaluation methods and techniques. These are the means for conducting an evaluation and not the evaluation per se. There are different methods for evaluation, and here it is important to highlight that '*one size does not fit all*' and the use of one method or another will be dependent of the evaluation purpose and the type of instrument (or instruments) that are going to be evaluated, alongside with other issues such as data availability, the moment of the evaluation and the expertise of the people conducting the evaluation process.

We can categorise the different methods and techniques according to different criteria, among which we can distinguish qualitative versus quantitative techniques. The former are more useful for evaluating softer policies (such as cluster policies) and the latter are more suitable for harder policies such as R&D policies. However, the best approach to follow within an evaluation exercise is to triangulate techniques (quantitative and qualitative) to obtain more accurate results (Magro, 2012).

Indicators and type of indicators

Indicators are useful for evaluation purposes and especially for monitoring but have to be understood as a mean for reaching a goal (the evaluation) and not an objective itself. In many cases indicators are chosen as a consequence of data availability and do not reflect the issue that wants to be measured. In addition, an analysis and interpretation of the indicators should be done according to the evaluation design and its rationale.

One of the most used frameworks for ordering the innovation indicators is the input-output framework (Navarro, 2011). This framework has been developed in different approaches and therefore we could distinguish between input indicators (those related to inputs of the innovation process), output indicators (those related to direct results from the innovation process) and outcome or impact¹ indicators (those referring to the economic result of the innovation process). In addition process indicators referring to the development of activities can be included in the framework.

Finally, it is worthy to mention that indicators can be simple or composed and quantitative or qualitative. Therefore they can take many forms depending on the object to be measured.

The concept of additionality

One of the most interesting concepts for evaluating interventions (policy programmes) is the concept of additionality. It is a concept linked to the additional role of public policy and something that every policy maker is seeking to measure. Would it have happened the same without the policy intervention? Then is a loss of public money or even a crowding out effect. Therefore, one of the issues to consider when designing an evaluation exercise is whether it is intended to capture additionality effects. Evaluation design and methods will be conditioned for that decision.

According to the existent literature different types of additionality could be measured:

-Input additionality: It refers to the measure of the intervention effects on the inputs of the innovation process.

-Output additionality: It refers to the measure of the intervention effects on the outputs of the innovation process. Here we could make a distinction between direct outputs of innovations (such as patents) or the outcomes of such a process (increase of sales due to a new product innovation, for example).

¹ It is important not to confuse impact indicators with impact assessment or measurement, which is linked to the attribution of the intervention's effects on the beneficiaries and the concept of additionality.

-Behavioural additionality: This is a concept that links with behavioural changes due to the policy intervention. Traditional changes are for example those links to promoting collaboration to innovate.

The additionality concept is behind of measuring impact, as it captures the additional effect or net effect of the intervention. There are some quantitative techniques more useful for capturing additionality (especially input or output additionality) non-parametric quasi-experiments, which are based on cause-consequence relationships and are able to attribute the effects of the interventions over the beneficiaries. In addition, qualitative techniques can also be applied, especially for measuring behavioural additionality.

External vs internal evaluator

One of the debates present both in the academic literature on evaluation and in practice is the question of who conducts the evaluation process, analysing the advantages and disadvantages of internal and external evaluators. However, the decision of carrying out an internal or external evaluation normally depends on the evaluation purpose itself. On the one hand, when the evaluation's purpose is to improve internal processes and management, evaluators tend to internal. Depending on the governance structure, these internal evaluators can belong to a centralized unit specialized in evaluation practices or to decentralized units, normally from the ministry or department in which the intervention is being managed. On the other hand, when the evaluation's purpose is to improve policy learning or knowledge in general evaluators tend to be external (Magro, 2012). However there is not a rule for thumb and the most important issue is to make sure that the evaluator (either internal or external) has all the necessary competences for such evaluation, including the techniques knowledge. In any case, establishing a process of dialogue between policy makers and evaluators is a key aspect for policy change.

Examples of evaluating an innovation policy mix

There are very few examples of evaluation of innovation policy-mixes, both in the literature and in the practice (Cunningham et al., 2016). In the literature, frameworks and articles of evaluation of innovation policy mixes are scarce (Magro, 2012; Magro and Wilson, 2013; Del Río, 2014; Mulligan et al., 2017, among others). In practice, two types of evaluation could be found according to Cunningham et al. (2016): those addressing the interplay of policy instruments and those aimed to assess policy-mixes at country and system levels. Among the former there are some studies analysing the interplays among direct measures, such as the one conducted by SQW Consulting (2009); those assessing the interplay between direct and indirect direct measures such as Falk (2009), Carboni (2011), and those aimed to analyse the combination between supply and demands instruments (i.e. Guerzoni and Raiteri, 2013). Among the latter, the OECD country reviews can be highlighted although they do not have an evaluative character as such.

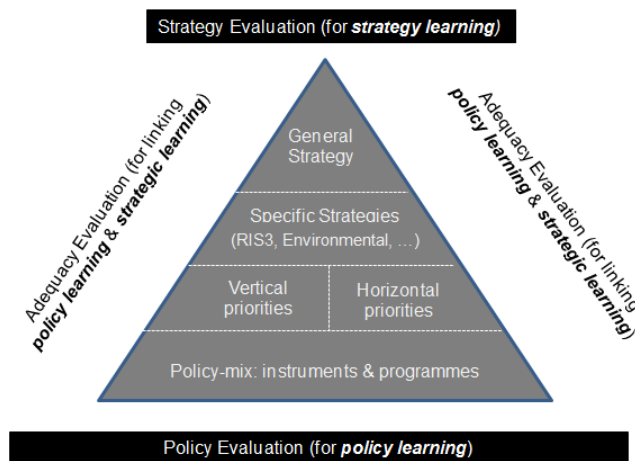
Summarising, the innovative character of evaluation of innovation policy-mixes requires further study.

The link between innovation policy mix evaluation and RIS3 evaluation

A last issue to keep in mind conceptually when designing an evaluation for innovation policy-mixes is the context in which this policy-mix belongs to. In the case of Manumix project and for the Basque Case, the innovation policy-mix selected is embedded in a RIS3 strategy and

concretely in an Advanced Manufacturing strategy. According to Magro and Wilson (2015) and as reflected in Figure 3, the innovation policy-mix should contribute with the strategic priorities and to the general strategy. Therefore, the design of the innovation policy-mix for advanced manufacturing should also focus on assessing the contribution, coherence and adequacy of the policy-mix for reaching the strategic goals.

Figure 3: Relationship among the different elements of a strategy and their implication for evaluation



Source: Magro and Wilson (2015)

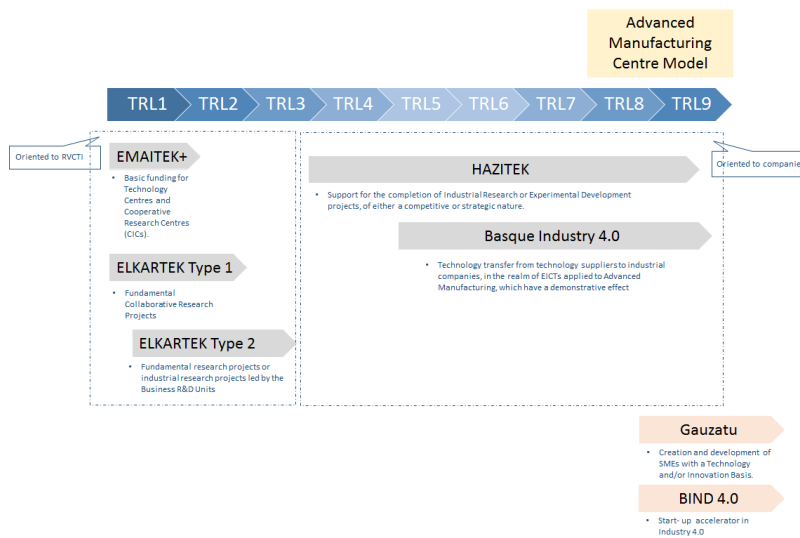
Innovation Policy Mix for Advanced manufacturing in the Basque Country

The general policy mix for advanced manufacturing in the Basque Country is composed of a large portfolio of instruments from a multi-level perspective to be implemented around six core themes:

- Knowledge generation on KETs.
- Technological development.
- Industrial scaling-up.
- Non-technological innovation.
- Education and training.
- Networking and coordination

It follows a transversal approach involving various government levels and public companies to undertake responsibility for the programmed actions. The governance system is a mirror of Basque Country administrative complexity, and improving the coordination mechanisms among instruments from different levels should be in the agenda. .

Figure 4: R&D support instruments from the Basque Government to Advanced Manufacturing



Source: Own elaboration

With regards R&D support instruments, Emaitek+ and Elkartek programmes are focused on the support of knowledge generation within the Basque Science and Technology network (RVCTI). In addition, the Basque Government also supports R&D activity within firms through Hazitek programme. These programmes are not only focused on advanced manufacturing, but due to

the Basque economic profile a large percentage of the projects funded by these programmes are focused on advanced manufacturing (around 80% of the annual budget).

Basque Industry 4.0 is a new instrument that support technology projects from technology suppliers (normally within the RVCTI) to manufacturing industrial companies in the field of advanced manufacturing.

The Advanced Manufacturing Centre Model was created as a new model of relationship between different research fields and current industry applications. This Centre is built as a mixed research centre within the University of the Basque Country (UPV/EHU) and a consortium of companies, the aim is to work towards final applications and to generate new know-how in advanced manufacturing technologies and is open to many users.

In addition, Gauzatu's final aim is the creation and development of SMEs with a Technology and/or Innovation Basis. By its part, BIND 4.0 is a public-private acceleration programme that lasts 24 weeks and takes place in the Basque Country. It focuses on Industry 4.0 early-stage startups involved in big data, additive manufacturing, artificial vision, cloud computing, augmented reality, cybersecurity, cyber-physical systems and/or collaborative robotics and is open to startups from anywhere in the world.

These formal instruments are complemented with a number of actions related to training, participation in European and National R&D&I programmes and the Advanced Manufacturing Strategy coordination.

Innovation policy-mix for Advanced Manufacturing specific for the Manumix project

The Basque policy-mix addressed by MANUMIX includes three R&D&I programmes: Hazitek, Basque Country 4.0 and Gauzatu. The instruments selected for Manumix cover applied research transfer to commercial exploitation and collaborative R&D instruments oriented to firms, going from TRL 3 to TRL9. The three selected instruments have been chosen as instruments that help firms to elevate their TRL's, and although it is a mix that has not been intentionally designed as an intended- policy mix; beneficiaries (firms) combine the instruments intentionally, in addition to other instruments at Spanish and European level.

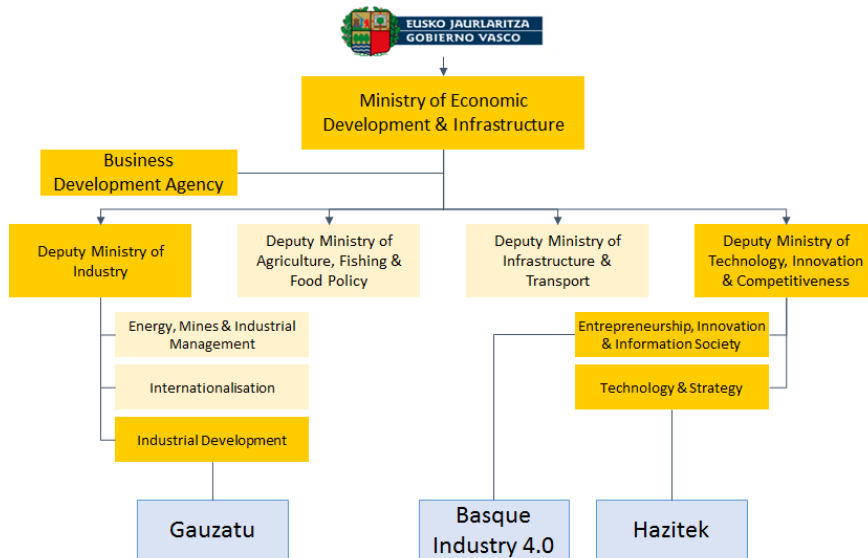
Figure 5: Main characteristics of Hazitek, Basque Industry 4.0 and Gauzatu

Name	Policy objective	Objective	Main target group	Sectoral scope	Year of launch	Annual budget
Hazitek <i>Collaboration & R&D investments</i> <i>Grants</i>	Technological training and promotion of business R&D	Support business industrial research or experimental development projects, both of competitive or strategic nature	Companies <i>Large, SMEs and micro-companies</i>	Horizontal <i>Nevertheless, the 80% of the budget is for RIS3 priorities, including Advanced Manufacturing</i>	2016	€82.8 millions 2017
Basque Industry 4.0 <i>Incorporation of ICTs</i> <i>Subsidies</i>	Technological training and promotion of business R&D	Support business industrial research and experimental development projects for technology transference of ICTs from RTOs to manufacturing companies	Manufacturing companies	Advanced Manufacturing	2015	€2.2 millions 2017
Gauzatu <i>Industrial investments</i> <i>Loans</i>	Creation and development of technology or innovation-based SMEs	Support of new investments in the following categories: IP, ICTs, land/natural assets, buildings, technical installations, machinery, tools	Industrial SMEs (including manufacturing) and SMEs of industry-related technical services	Industry <i>Advanced Manufacturing is the main domain</i>	2000	€28.0 millions 2017

Source: Basque Government (2017, November). "Action- oriented evaluation" presentation in, Manumix 2nd Learning Journey.

Each programme is owned by a different unit of the Basque Economic Development & Infrastructure Ministry. Hazitek depends on the Technology and Strategy Unit and Basque Industry 4.0 depends on the Entrepreneurship, innovation and information society. Both units work under the aegis of the Deputy Ministry of Technology, Innovation and Competitiveness. Gauzatu depends on the Industrial development unit, led by the Deputy Ministry of Industry.

Figure 6: Governance structure of the innovation policy-mix for Advanced Manufacturing (Gauzatu, Basque Industry 4.0. and Hazitek)



Source: Basque Government (2017, November). "Action- oriented evaluation" presentation in Manumix 2nd Learning Journey.

The key points from each of the instruments are set out below:

Hazitek

Hazitek was born out in the umbrella of the new *Science, Technology and Innovation Plan: Euskadi 2020's* to address the need of a new tool aligned with the reordering process of the Basque Science and Technology Network (RVCTI), which is based on the axes of excellence, specialization and proximity to the market.

The objective of the programme is to strengthen Basque industry through business R&D in order to contribute in a decisive way to the competitiveness of the Basque industry and generating results with a significant economic impact in the Basque priority areas and in the R&D activities closest to the market.

Figure 7: Main characteristics of the Hazitek programme

HAZITEK			
Purpose	Support for the completion of Industrial Research (TRL3) or Experimental Development projects (TRL6) , of either a competitive or strategic nature.	Instrument	Subsidy
		Intended for	Firms <i>Big and SMEs</i> RVCTI (in NEBTs)
Sector	PCTI 2020 specialization fields <i>In strategic projects the 80% if for RIS3 priorities</i>	Year of launch	2016
		Annual budget	82,8M€ (2017)
Description			
<p>A.- For competitive projects (annual).</p> <ul style="list-style-type: none"> - Development of New Products or New Companies with a Science and Technology Basis. - The projects may be carried out on an individual basis or cooperatively. - Total minimum annual budget of €100,000; in the case of cooperation projects, €50,000 per company. - Funding: up to 25% of the eligible costs. - Maximum amount of non-refundable Subsidy: €250,000 per beneficiary each year. <p>B.- For strategic projects (multi-annual, up to a maximum of 3 years).</p> <ul style="list-style-type: none"> - R&D projects of a strategic nature and for fields of specialisation in the PCTI 2020. - Driving projects, developed under cooperation or one-off projects. Minimum investment of €4 million. - Funding: up to 40% of the eligible costs for industrial research projects. - Funding: up to 25% of the eligible costs for experimental development projects. 			

Source: Basque Government (2018, January). Basque Country Stakeholder Group meeting .

Basque Industry 4.0

This programme is focused on accelerating the transfer to the market of the results of R&D projects. It is aligned with the *Digital Agenda for Euskadi 2020* and Information Society Strategy Plan. In this way, Basque Industry 4.0 takes up the challenge of fostering the smart industry by adding EICTs (Electronic, Information and Communication Technology) into the production in addition to developing new advanced services.

Figure 8: Main characteristics of the Basque Industry 4.0 programme

BASQUE INDUSTRY 4.0			
Purpose	Support for Industrial Research and Experimental Development Projects that involve technology transfer from technology suppliers to industrial companies, in the realm of EICTs applied to Advanced Manufacturing, which have a demonstrative effect (TRL5-TRL9).	Instrument	Subsidies
		Intended for	Industrial manufacturing companies
Sector	Advanced Manufacturing	Year of launch	2015
		Annual budget	2,2M€ (2017)
Description			
<ul style="list-style-type: none"> The Projects must be related with one of the following areas: <ul style="list-style-type: none"> Cybersecurity and Industrial Communications Cloud Computing Big Data Advanced Analytics and Business Intelligence Collaborative Robotics Augmented Reality Artificial Vision Sensor Systems Design and Additive Manufacturing in metallic and advanced materials (ceramics, composites, etc.). Subsidy figures: 25% of the eligible expenses and investments approved + 15% when the project involves effective cooperation between a company and one or more research and knowledge dissemination entities, up to a limit of €200,000 per company. Minimum budget of the projects: €75,000 			

2

Source: Basque Government (2018, January). Basque Country Stakeholder Group meetings..

Gauzatu

In the context of the current economic recession, financing has become a critical factor of competitiveness as it has not been in the recent past. Basque companies, and specially SMEs, are facing major funding difficulties- regardless of their economic conditions-concerning their growth and investment plans. Gauzatu' aim is to provide to viable companies access to financing and enables them to survive and consolidate.

Figure 9: Main characteristics of the Gauzatu programme

GAUZATU			
Purpose	Subsidies for the creation and development of SMEs with a Technology and/or Innovation Basis.	Instrument	Loans
		Intended for	Industrial companies or related services
Sector	Extraction, transformation, production, technical services (linked to the product process) and related with the aforementioned.	Year of launch	2000
		Annual Budget	28,0M€ (2017)
Description			
<ul style="list-style-type: none"> • Support for new investments in the following categories: <ul style="list-style-type: none"> • Industrial Property and Patents, • Computer • Applications • Land and Natural Assets • Buildings • Technical Installations • Machinery and Tools • Equipment for information processing. • Minimum project investment of 120,000 euros. • Recoverable advances that may amount to 25%-35% of the investment subject to support, depending on firms size and its nature of innovative or technological. • The maximum advance is 1,5M€. • Maximum of €1,500,000 per job created and Maximum of €100,000 in the case of saving jobs <p>24 MONTHS + GRACE PERIOD + 5 REPAYMENT</p>			

Source: Basque Government (2018). Basque Country Stakeholder Group meeting.

Despite being the oldest programme of the innovation policy -mix, and the only with a loan scheme; Gauzatu is the less known and used instrument among the Basque firms (Orkestra, 2017). Furthermore, Hazitek is the most popular programme, the best known and used. Finally, and having into consideration that Basque Industry 4.0 is a recent instrument, it is well known by the Basque industry, but it has not been used as much as Hazitek.

With regards the use of Manumix Policy Mix, beneficiaries combine intentionally on the one hand Hazitek and Basque Industry 4.0 and on the other hand Hazitek and Gauzatu, and the final aim of combination is to fulfil their investments plans. During the period of 2015-2016, 20 Basque firms combined Hazitek programme with Gauzatu, 22 firms combined Hazitek with Basque Industry 4.0 programme, and only one firm combined the three programs: Hazitek, Gauzatu and Basque Industry 4.0.

Additionally, these three programmes are used by Basque firms in combination with other programmes from the Spanish Government and the European Union.

Monitoring and evaluation

This section presents the main characteristics of the evaluation system and procedure of each of the three instruments of the Manumix policy-mix, including: evaluation frequency, the content of the evaluation, timing and indicators, methods and sources for data gathering, the evaluation procedure and the impact of previous evaluation exercises on the instruments analysed. Besides, it briefly overviews a proposal that is being built to evaluate the effectiveness of the implementation of the Advance Manufacturing Strategy in the Basque Country through the monitoring of main multi-level policies that contribute to the Basque AM strategy.

Monitoring and evaluation of Manumix policy-mix instruments

Gauzatu

Evaluation frequency: The programme is evaluated every year

Content of evaluation, timing and indicators: Ex ante evaluation includes the analysis of the quality and quantity of the projects and their fit with the programme budget; interim evaluation analyses the expenditure and repayments received; and ex-post evaluation focuses on both results –through investments- and impacts – through employment generated and saved.

Moreover, the results of each of the indicators are compared to the expected objectives of the project and to results of previous years.

Figure 10: Evaluation and monitoring system for Gauzatu

Ex-ante	Interim	Ex-post	
Efforts	Activities	Results	Outcomes/Impacts
<ul style="list-style-type: none"> •Number and quality of the projects •Amount of repayable advances 	<ul style="list-style-type: none"> •Executed expenditure •Received repayments 	<ul style="list-style-type: none"> •Induced investment 	<ul style="list-style-type: none"> •# of jobs created/saved

Source: Basque Government (2018, January). Basque Country Stakeholder Group meeting.

Figures on ex-ante evaluation of previous years are shown in the following figure*:

Figure 11: Illustration from evaluation results from Gauzatu in 2015-2016

		Ex-ante			
		EXPECTED		REAL	
	Indicators	Figures	Indicators	Figures	
2016	Applications to approve	50	Approved budget	48	
	Induced investment	100M€	Induced investment	102,608M€	
	Jobs to be created	500	Repayable advances granted	25,93M€	
	Budget	26M€	Jobs created	566	
			Jobs saved	1.667	
2015	Applications to approve	50	Approved budget	43	
	Induced investment	100M€	Induced investment	100,38M€	
	Jobs to be created	500	Repayable advances granted	25,96M€	
	Budget	26M€	Jobs created	555	
			Jobs saved	1.662	

Source: Basque Government (2018, January). Basque Country Stakeholder Group meeting

* The projects that started in 2015 and 2016 will finish in 2018. Hence, there is no ex-post data yet.

Data gathering. All data is gathered through ex-ante, interim and final reporting from beneficiaries, which are mandatory as part of the procedure of the programme.

Evaluation procedure and actors involved. Two different types of procedures can be distinguished:

- a) Ex-ante analysis. This analysis is focused on the assessment of proposals. However, it also provides information on the characteristics of the projects and informs decisions on potential changes to be included in the programme. The steps of the procedure include:
 1. An evaluation commission, which assesses the innovative and technological nature of each of the proposals after a previous analysis of the quality and quantity of the applications. The Strategy and Technology and Innovation Unit of SPRI (managing agency) supports this process
 2. Conclusions of the assessment are analysed by a working group from the Industrial Development Directorate (responsible of the programme).
 3. The working group send change proposals (if any) to the Deputy Ministry of Industry, which is the responsible of making final decision on changes.
- b) Interim and ex-post evaluation. The monitoring of projects is carried out through their life cycle, by officials responsible of the programme.

Impact of evaluation. Changes in the both the content and the procedures of the instruments due to previous evaluation exercises can be highlighted. More specifically:

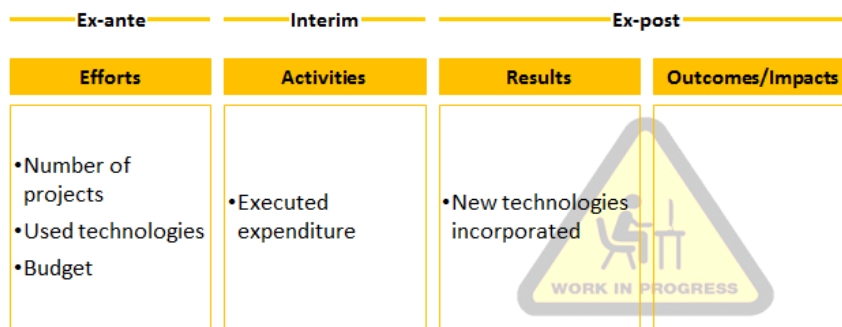
- Characteristics of the supported projects:
 - Less emphasis on employment intensity
 - Reduction of temporal horizon of the projects: 2 years
- Programme budget: increase
- Typology of beneficiaries: bigger emphasis on industrial companies
- Procedures: digitalization of all procedures

Basque Industry 4.0

Frequency: The programme is evaluated every year

Content of evaluation, timing and indicators. This is a new instrument and evaluation indicators (outcomes/impacts) are still being defined. However, the current evaluation includes an analysis of projects (quantity, used technologies and budget), the profile of applicant companies, expenditure, technologies incorporated and the feedback of the beneficiaries of the programme.

Figure 12: Evaluation and monitoring system for Basque Industry 4.0



Source: Basque Government (2018, January). Basque Country Stakeholder Group meeting

Figures on ex-ante evaluation are shown in the following figure*:

Figure 13: Preliminary evaluation results from Basque Industry 4.0.

Ex-ante				
Year	Indicators		Figures	
	Indicators	Figures	Indicators	Figures
2017	# Applications	30	Approved budget	3.074.904€
	Approved applications	28	Grant	1.844.942€
2016	# Applications	14	Approved budget	1.418.443€
	Approved applications	11	Grant	851.060€
2015	# Applications	18	Approved budget	3.767.858M€
	Approved applications	14	Grant	1.883.929€

Source: Basque Government (2018, January). Basque Country Stakeholder Group meeting

Data gathering. Data for evaluation comes from two different types of sources:

- a) Evaluation indicators (number of projects, used technologies, executed expenditure, new technologies incorporated). Data is gathered through the reporting made by beneficiaries as part of the mandatory reporting system of the programme.
- b) Qualitative assessment. Based on the continuous contact with companies and RTOs and the tacit knowledge of programme managers with long-term experience.

Evaluation procedure and actors involved. The evaluation procedure is as follows:

1. Officials from SPRI (managing agency) carry out evaluation and make improvement proposals.
2. Improvement proposals are studied in a committee composed of SPRI (managing agency) and Entrepreneurship, Innovation and Information Society Directorate of the Basque Government.
3. The final change proposals are analysed with technology centers.
4. The Directorate of Entrepreneurship, Innovation and the Information Society makes changes in the regulations of the programme.
5. This new regulation is sent to the general management of SPRI, which implements the modifications through its Board of Directors.

Impact of evaluation. The regulation of the instrument has been changed every year due to changes proposed through its evaluation. Concretely, the following changes have been introduced:

- Characteristics of the supported projects:
 - Change in supported technologies
 - Changes in eligible costs
 - Reduction on the minimum budget
- Programme budget: increase

Hazitek

Frequency: The programme is evaluated every year

Content of evaluation, timing and indicators. Evaluation includes analysis of degree of resources of the programme, the induced activity, the results on R&D, and the impact on incomes, employment, degree of internationalisation and competitiveness. Evaluation includes an analysis of evolution with respect to previous years. Specifically, the following indicators are included in the evaluation of Hazitek:

Figure 14. Evaluation and monitoring system for Hazitek

Ex-ante	Interim	Ex-post	
Efforts	Activities	Results	Outcomes/Impacts
<ul style="list-style-type: none"> •Number and quality of projects •Budget •Projects related to RIS3 priorities 	<ul style="list-style-type: none"> •Executed expenditure 	<ul style="list-style-type: none"> •Scientific publications •EPO/PCT patent applications •New/improved processes •New/improved products 	<ul style="list-style-type: none"> •Incomes •Jobs created/saved •Internationalisation degree •Competitiveness degree

Source: Basque Government (2018, January). Basque Country Stakeholder Group meeting

Results of evaluations from previous years are included in the following figure:

Figure 15: Hazitek ex-ante and ex-post evaluation results. 2015-2016

	Ex-ante		Ex-post	
	Indicators	Figures	Indicators	Figures*
2016	Applications	1.047	Additional turnover	466M€
	Approved applications	757	Employment created	1.211
	Approved budget	272M€	Improvement in internationalisation	33% of companies with higher degree of internationalisation
	Grant	68M€	Improvement in competitiveness	45% of companies with significant improvement in competitiveness
2015	Applications	1.188	Additional turnover	488M€
	Approved applications	766	Employment created	1.097
	Approved budget	268M€	Improvement in internationalisation	49% of companies with higher degree of internationalisation
	Grant	62,5M€	Improvement in competitiveness	52% of companies with significant improvement in competitiveness

(*) Figures of the previous two programmes that merged in Hazitek

Source: Basque Government (2018, January). Basque Country Stakeholder Group meeting

Data gathering and sources:

Data is gathered through the mandatory reporting system of the programme and through a questionnaire that is filled by beneficiaries. Ex-post indicators are gathered through a questionnaire of perceptions. That is, the indicators of new/improved processes and products, and the effect of the instrument in incomes, job creation, internationalisation and competitiveness of the beneficiaries is assessed through the perception that beneficiaries declare on such results and outcomes.

The evaluation of this instrument is included in the SIME, a monitoring and evaluation system of R&D programmes managed by SPRI. The SIME brings together all the R&D programmes managed by SPRI. These programmes can be divided in two blocks that cover different phases of knowledge generation and its transfer.

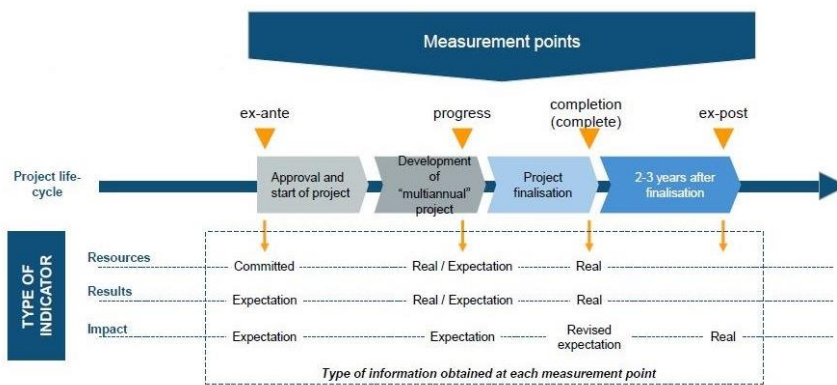
Figure 16: Illustration of the SIME

Type of indicators	RESOURCES (mobilised resources)	RESULTS (achieved by the end of the projects)	IMPACT (achieved when results are put to use)
Programmes supporting the RVCTI	<ul style="list-style-type: none"> Subsidy granted Mobilised R&D expenditure No. of supported projects No. of researchers No. of supported companies 	<ul style="list-style-type: none"> New knowledge Patents Publications Employment in R&D Etc. 	<ul style="list-style-type: none"> Knowledge transfer to companies
Programmes supporting companies	<ul style="list-style-type: none"> Establishing partnerships Etc. 	<ul style="list-style-type: none"> Scientific-technological results (new or improved products/processes) Improvements to the R&D capacity 	<ul style="list-style-type: none"> Employment Turnover Internationalisation

Source: SPRI (2016)

Only the projects which belong to the Technology and Strategy Directorate are the ones included in the SIME. That's the reason why the programme Hazitek is included in this system whereas the other two instruments of the policy-mix (Gauzatu and Basque Industry) are not. The SIME collects indicators for each of the projects funded and all the information is provided by the beneficiaries, at four moments of their life cycle: ex-ante (when presenting proposals), during the project (second year reporting), at the end of the project with the final reporting, and ex-post, through a contact with beneficiaries 3 years after completion of the project.

Figure 17: Measurement points addressed by SIME



Source: SPRI (2014)

The data of all projects is aggregated for the SIME. Besides, it produces a synthetic index (SIME12), which yearly determines the behavior of the system with respect to its objective. The

SIME12 index represents the % deviation of the system as a whole in the year considered, with respect to the target set for that year.

Evaluation procedure and actors involved. As part of the SIME, the procedure for the evaluation of the instrument is as follows:

1. SPRI (managing agency) carries out the evaluation and writes a report with the analysis and recommendations.
2. The report is discussed in a working group composed of: SPRI (managing agency), Innobasque (external advisor) and the Technology and Strategy Directorate of the Basque Government. The group makes change proposals
3. The proposal of changes is sent to the heads of the Minister of Economic Development of the Basque Government.

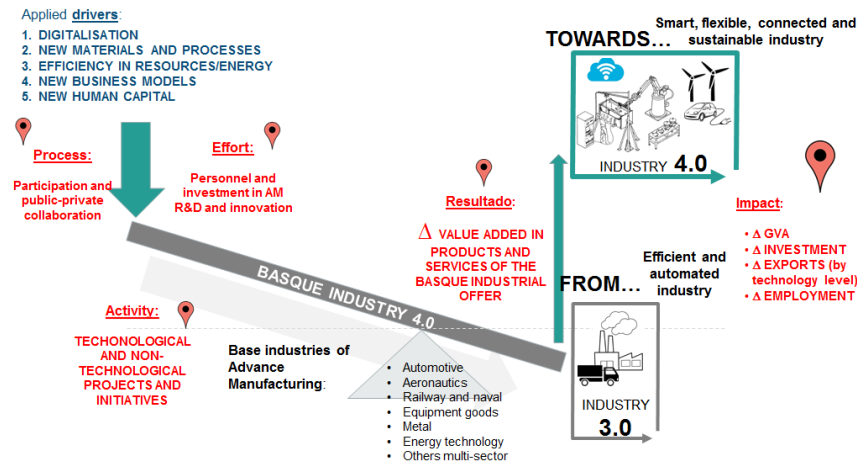
Impact of evaluation. Several changes have been introduced as the result of previous evaluation exercises. Specifically:

- Characteristics of the supported projects:
 - Bigger orientation to the market/results
 - Bigger focus in RIS3 priorities
 - Change in the minimum budget of competitive projects
- Programme budget: increase
- Typology of beneficiaries: eliminate the bonus for the size of companies
- Management and procedures: introduction of two-phased evaluation

Monitoring and evaluation in the framework of Advance Manufacturing Strategy

The Advance Manufacturing steering group – composed of the Basque Government, cluster associations, universities and technology centers- is currently working on building an evaluation system to assess the deployment of the AM strategy. Although it is still at an early stage the following evaluation framework is being designed:

Figure 18: Monitoring and evaluation system for Advanced Manufacturing strategy



Source: Basque Government (2017, January)

The system includes: process indicators (e.g., number of active groups in the Steering group, number of strategic initiatives and number of inter-priority initiatives identified), input indicators (R&D expenditure in AM projects, expenditure in technological and non-technological innovation, staff in R&D) and activity/intermediate indicators. The activity indicators are divided into: KETS integration (e.g. number of projects, number of involved companies), integration in value chains (e.g. number of R&D and innovation projects, size of the project), scaling-up (number and % of projects in high TRL, number of tested services) and talent (e.g. training nodes promoted, number of students in continuous training). The framework, as shown in the figure, also includes result indicators (e.g. patents of new products or processes, new companies created) and impact indicators (e.g. GVA, employment in industry).

The AM evaluation framework foresees to include information related not only to main policies from the Economic Development & Infrastructures department of the Basque government (such as the three instruments of the Manumix policy mix), which accounts of the 13,4% of the financing of AM (of a total of 18,5 of public finance), but also from policies and initiatives from other government levels – provincial level (sub-regional, 1,3%), national level (3,8%) and European level (8,7%). – e.g. Manunet Thus, it is an interesting proposal since it includes information from a broad portfolio of multi-level instruments.

Conclusions and previous recommendations

In this section, we focus on general conclusions from the background document and provide previous recommendations. This is only to inform the peer review and conclusions and recommendations made here constitute only a starting point of the review process.

The Basque Government has developed in the last years has overcome one of the main weaknesses of the Basque Innovation system and policies, which is to settle a sound monitoring system. This system has been developed for monitoring and evaluating the RIS3 strategy, the innovation system, as well as the policy-mix of the Basque Government.

Among the strengths of this system it is worthy to mention its holistic view, despite the complex governance of the different strategies and instruments of the Basque Government. In addition, the SIME system is a very complete tool for monitoring the mayor R&D programmes of the region and provide systematic data and analysis.

However, some improvement areas have to be mentioned and therefore some preliminary recommendations can be highlighted:

- First of all, the evaluation system established it is a monitoring system and it does not allow attributing impacts from the instruments on the beneficiaries. Therefore it could be a step to advance towards an evaluation system (including ex-port impact assessment) and including policy-mix interactions.
- Secondly, with regards data collection, apart from the sources, which are already being employed for evaluation, incorporating other primary sources when it is possible (i.e. Gauzatu) such as qualitative ones, focus groups, interview, observation and secondary data (from EUSTAT and other sources), could be a step ahead.
- Third, with regards data analysis it could be interesting to triangulate quantitative and qualitative methods and techniques in order to have a more accurate evaluation result.
- Four, with regards, data visualisation and reporting it could be worthy to work on visual mechanisms and reports as well as other communication mechanisms to disseminate the results to the relevant stakeholders.
- Finally, governance mechanisms could be needed (new or existing ones) to design and implement an effective evaluation of innovation policy mixes. The steering group for advanced manufacturing could be a good platform for that purpose.

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