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# GENERAL INFORMATION

<b>TITLE OF THE CASE</b>	The TKgune Programme
<b>SALES PITCH</b>	An example of how to facilitate innovation for the SMEs from the Vocational Education and Training System.
<b>ORGANISATION</b>	Tknika, Centre for Research and Applied Innovation in Vocational Education and Training in the Basque Country.
<b>COUNTRY</b>	Autonomous Community of the Basque Country. Spain
<b>DATE</b>	April 2016
<b>AUTHOR</b>	Mikel Leunda
<b>NATURE OF INTERACTION</b>	<ul style="list-style-type: none"><li><input checked="" type="checkbox"/> Collaboration in R&amp;D</li><li><input type="checkbox"/> Academic mobility</li><li><input type="checkbox"/> Student mobility</li><li><input type="checkbox"/> Commercialisation of R&amp;D results in science</li><li><input type="checkbox"/> Lifelong learning</li><li><input type="checkbox"/> Curriculum development and delivery</li><li><input type="checkbox"/> Entrepreneurship</li><li><input type="checkbox"/> Governance</li></ul>
<b>SUPPORTING MECHANISM</b>	<ul style="list-style-type: none"><li><input checked="" type="checkbox"/> Strategic instrument</li><li><input type="checkbox"/> Structural instrument or approach</li><li><input type="checkbox"/> Operational activity</li><li><input type="checkbox"/> Framework condition</li></ul>



# CASE STUDY PROFILE

## 1. SUMMARY

To support the implementation of the smart specialization strategies fostered by the Basque Government, the Deputy Regional Ministry for VET, within the scope of its legal competences, has enacted laws and decrees, and in its IV Basque VET Plan has developed a strategic framework to encourage Tknika, the Centre for Research and Applied Innovation in VET, to promote applied innovation schemes aimed at the SMEs in the Autonomous Community of the Basque Country, in northern Spain.

Addressing this request, in 2014 Tknika launched TKgune, a programme which is structured in five different environments (Manufacturing, Automation, Automotive, Energy and Creative Industries) and coordinates the work of several VET providers, whose teaching departments have organized a number of working groups, the TKgune Network, to provide innovation services to the SMEs in the Basque Country in several areas: (a) Support to innovation, (b) advanced training and (c) technical innovation and improvement services.

In this way, they are contributing, along with other agents of innovation in the region, to promote the processes of innovation in the SMEs, sustaining their economic viability and stimulating their internationalization, which will eventually improve the employability and the economic conditions in the region.

## 2. BACKGROUND

The TKgune programme involves two main agents: The Basque SMEs and the Basque Vocational Education and Training System.

### **The Basque SMEs**

The Basque Country is an autonomous community of northern Spain. It includes the Basque provinces of Araba, Bizkaia and Gipuzkoa, also called Historical Territories.

The Basque Country was granted the status of nationality within Spain, attributed by the Spanish Constitution of 1978. The autonomous community is based on the Statute of the Basque Autonomous Community, a foundational legal document providing the framework for the development of the Basque region.

Almost half of the 2,165,100 inhabitants of the Basque Autonomous Community live in Greater Bilbao, Bilbao's metropolitan area.

### **Technology and technology-based products have made a huge impact on lifestyle.**

The GDP of the Basque Country is € 65,924 M. Euros, which places it as the 5th state's economy in terms of GDP. In terms of GDP per capita, which is a good indicator of the quality of life in the Basque Country, in 2015 it was € 30,459 Euros, compared with € 23,300 Euros of GDP per capita in Spain. This figure assumes that its inhabitants are among those who have better living standards of Spain, occupying the 2nd place in the ranking of GDP per capita of the Autonomous Communities.

If we check the EPA – Labour Force Survey - to check unemployment figures in the Basque Country, we see that unemployment has a percentage of 12.9% of the labour force, lower than the national rate, and is also the Autonomous Region with the lowest percentage of unemployment in Spain. (<http://www.datosmacro.com/ccaa/pais-vasco>)



Today, the strongest industrial sectors of the Basque Country's economy are machine tool, present in the valleys of Bizkaia and Gipuzkoa; aeronautics in Vitoria-Gasteiz; and energy, in Bilbao.

The main companies in the Basque Country are: BBVA Bank, Iberdrola, an Energy Company, Mondragón Cooperative Corporation—MCC, the largest cooperative in the world—Gamesa, Wind Turbine producer and CAF, Rolling Stock producer.

But the Basque business structure is mainly composed by SMEs, which are distributed as follows:

- ▶ 94% are microenterprises (1-9 employees),
- ▶ 5% are small enterprises (10-49 employees) and
- ▶ The rest 1% are medium sized companies (50-249 employees).

A significant aspect to take into account is the specific weight of the industrial companies into the whole SMEs sector. In that sense, it is very significant that 29,7% of the companies within the range of 10-250 employees are industrial ones.

### **The Basque Vocational Education and Training System.**

Vocational Training is a sphere of great importance in the educational system of the Basque Country, its mission being to relate formal and continuous training with the needs of regional industry. Accordingly, it fulfils a key function of furnishing the business fabric with skilled workers.

Initial Vocational Education and Training: In the Basque Country, education depends on the Department of Education, Linguistic Policy and Culture. There are 5 Deputy-Ministries under this department. One of them is the Deputy-Ministry for Vocational Education and Training, which has a Directorate for Training and Learning

There are functions which are shared between the Ministry of Education of Spain and the different autonomous education authorities: decisions on educational policies that affect the system as a whole and educational planning in general.

Continuous Vocational Education and Training: The system is regulated by the Royal Decree 395/2007 and managed as a tripartite body by the social partners and the competent administrative departments.

In the case of actions intended primarily for workers in the Basque Country there is the Fundación Tripartita, the Basque Foundation for Continuing Vocational Training.

Actors involved in employment: Employment depends on the Department of Employment and Social Affairs with 3 different Deputy-Ministries. One of them is the Deputy-Ministry for Employment

The IV Basque VET Plan has recently been approved in parliament and it is the most relevant framework of policies and strategies in VET matters.

The Basque VET System involves up to 183 centres which are providing VET programmes to more than 34.612 students. Nowadays, the academic offer includes 27 professional families and their activity is mainly educational, involving formal training and specialized training for both workers and unemployed. However, due to the close relationship between SMEs and VET centres, they are offering some other types of activities, as the service provision, which are not confined to the field of education.

Since Tknika was created in 2005 one of the key ideas has been to improve the technological knowledge at the VET centres in order to later transfer the applied innovations to respective their industrial environment.



For that reason, technological programmes for both students and workers are provided, and the collaboration between VET centres and SMEs in real innovative projects is also promoted.

Until now, there have been several attempts to carry out such activities in a coordinate manner, by means of the network of VET centres, instead of doing it each centre on its own.

The most recent precedent, aiming at the same goal, was the Asmaola+ programme on which 5 VET centres offering industrial manufacturing courses were involved. But there have been

some others attempts previously. Let's mention, for instance, the Giga programme, Zerbehar programme.

These precedents have been very valuable, as they have enabled us to analyze existing strengths and weaknesses and, consequently, to launch a programme that meets the real needs of companies and VET centres. Based on these previous experiences, the TKgune programme was launched during the 2014/2015 academic year.

### 3. OBJECTIVES

The main objective and consequent lines of action in the area of Applied Innovation, from which the TKgune programme is coordinated, are described by the IV Basque VET Plan.

In order to display these strategies and reach the main goals, the general and specific objectives of TKgune programme are:

#### A. General Objectives

- ▶ To develop the governmental strategies for VET
- ▶ To attend to the real needs of the companies.
- ▶ To help them to be more innovative and to internationalize themselves.
- ▶ To improve the quality of the VET offer of training and provision of service to become a reference for the industry.

#### B. Specific Objectives

- ▶ To get VET centres involved in the implementation of Basque Government policies (RIS3)
- ▶ To persuade VET centres of the interest of this new type of activities, up to now not considered in previous legislation.
- ▶ To update the role of the VET teachers. Not only acting as teachers or monitors but as innovation project managers, commercial, researcher, entrepreneurs, advisers on coming technologies, equipments providers and so on.
- ▶ To contact SMEs, based on the existing relationships set, long ago, for the development of the continuous training programmes, for the implementation of the VET module of training at the workplace and dual training system.
- ▶ To communicate our offer of services to the SMEs by means of visits, brochures, talks, etc. Participating at local level in initiatives on support of the SMEs organized by other innovation agents like the provincial councils, the local development agencies, business incubators, ...
- ▶ To make SMEs aware of the value of innovation and the existing initiatives for supporting it. European Programmes - Horizon 2020 - Basque programmes –Hazitek, Elkartek, Emaitek, Ekintzaile, ...
- ▶ To detect their needs and, based on these needs, offer suitable training programmes updating the curricula, provide services and develop projects jointly in different strategic sectors and areas.

A list of indicators has been set by TKgune coordinators to latter do the monitoring of these objectives.

#### 4. RESPONSIBILITY

There are four levels of governance in TKgune programme:

- A. Strategic level: The Deputy Regional Ministry of VET, from the Department of Education, Linguistic Policy and Culture of the Basque Government, together with together with Tknika define the Annual Plans at beginning of the academic years, and decide on which specific strategic environments to focus on, considering:
  - ▶ The Smart Specialisation Strategy approved for the region: PCTI EUSKADI 2020 - Research & Innovation Smart Specialization Strategy - RIS3.
  - ▶ Existing programmes at local, regional and European level. Horizon 2020.
  - ▶ VET system capabilities.
- B. Programme Management level: The programme management body is formed by the Applied Innovation Area of Tknika and the VET centres which are responsible for each one of the five strategic environments. They are in charge for communications management, for monitoring and evaluation, for assistance and for dissemination.
- C. Strategic Area Management level: Each strategic area is managed by the VET centre which is head of it and the Didactic Departments of the VET centres involved in the area. His/her responsibilities are coordination of the area and monitoring of the projects of his/her area.
- D. Executive level: It refers to the working groups of teachers from the Didactic Departments of the VET centres involved in each strategic area. It is coordinated by the responsible for the programme at each VET school together with the head of the strategic area. His/her responsibilities are to contact companies, to detect needs, to find and develop projects and to deliver services.

Structure of TKgune Programme		
Levels of governance	Agent	Responsibility
<b>Strategic level</b>	Deputy Regional Ministry for VET &	General strategy and annual planning
<b>Programme Management level</b>	Area of Applied Innovation in Tknika + Responsible of TKgune programme &	Coordination, communication, monitoring, dissemination, evaluation of the programme
<b>Strategic Area Management level</b>	Heads of strategic areas + VET centres involved in it &	Coordination, communication, monitoring, dissemination, evaluation of each area projects
<b>Executive level</b>	Didactic Departments of VET centres & Working groups of teachers.	Development of project, delivery of services

**VET centres involved in the TKgune programme 2015-2016**

	IMH (Leader)	Bidasoa	Egibide	Elorrieta Errekamari	Goierni
		La Salle Berrozpe	Lea Artibai	Miguel Altuna	Oteitza
		Tolosaldea	Txorierni	Usurbil	Somorrostro
13 centres					

	Tknika (Leader)	Aretxabaleta	Don Bosco	Iurreta
		Meka	MGEP	San Viator
6 centres				

	Armeria (Leader)	Maristak	Mendizabala	
		Irungo La Salle	Salesiarrak Urnieta	Zabalburu
6 centres				

	Usurbil (Leader)	Eraiken	San Jorge
		3 centres	

	Tartanga (Leader)	Zubiri Manteo
		2 centres



# IMPLEMENTATION & FUNDING

## 5. STRATEGY & ACTIVITIES UNDERTAKEN

The main strategies which inspire the TKgune programme are described in the IV Basque VET Plan.

This IV Basque Vocational Training Plan is one of the fourteen strategic plans of the Basque Government for the current legislature. A plan which has been provided with a significant financial amount so that from vocational training centres, it will be possible to successfully tackle the challenges presented, challenges that will take us to different and complex scenarios.

One of the main reasons to elaborate the IV Basque VET Plan was the determination to strengthen the competitiveness of the Basque Industry in the global market and at the same time to favour the employability of the people and contribute to human development and social cohesion in the Basque region.

As far as TKgune programme is concerned, the approach of the IV VET Plan is as follows: We are at a time of increasingly rapid global change which requires a profound transformation of the competitiveness model of our companies. There are three dimensions to this change: geopolitical, social and economic and together they combine to transform the way companies compete and people are (or not) employable.

These dimensions are completely transforming the way companies compete and the training offered to workers which must be swiftly adaptable to the challenges of the future and complex and uncertain surroundings.

If they are to compete, companies need to improve the way they do things or do them differently by changing their value propositions, their international presence and their organisational and management model. This should go hand in hand with an adaptation of professional profiles to new business trends requiring highly specialised, highly skilled workers.

Knowledge has become the strategic resource of organisations and territories par excellence, both from the perspective of economic growth, competitiveness and innovation and from the perspective of employment, social cohesion and equal opportunities.

Learning has already become the most important skill in knowledge societies and vocational training has a key role to play in this field, especially in industry.

Vocational education and training in the Basque Country has developed a system that guarantees an effective response to the different needs of the productive fabric and society and has become a key mechanism in improving the employability of workers and the competitiveness of companies.

However, these times of change and their impact on the way companies compete make it necessary to evolve vocational education and training towards a new era in order to guarantee their competitiveness. We need to design a different kind of vocational education

and training, analysing new development possibilities, new responsibilities and new objectives that allow us to meet different needs. Through permanent innovation we should accept, anticipate and be flexible and effective in the face of rapidly changing situations.



The time has come to design, plan and implement a new, ambitious and bold model that places Basque vocational education and training at the forefront of world vocational education and training. And during this transformation process VET centres should take on a great role right at the heart of the system; because the centres will drive the change; internally, by transforming their structures and management models and externally by changing the way in which they transfer skills, innovation and entrepreneurship and in the way they open themselves to the outside world.

The competitive challenges faced by the business fabric, coupled with the role played by vocational training in helping business face them, are asking for a complete transformation of the current Basque model of vocational education and training; an inclusive model that incorporates all levels and types of vocational training in a flexible and efficient fashion.

A model that is company-friendly, and strengthened through the presence of students in production centres thanks to "dual" training. And a system that combines continuous improvement and applied innovation models with the curiosity necessary to innovate and to improve vocational education and training.

In Basque industry today 70% of jobs require some kind of qualification directly related to vocational training; a figure that by 2020 is expected to reach 76% in Europe. These figures reflect how important VET is today in industry but moreover prove the fundamental role that vocational education and training must play in the future socioeconomic development of the country.

Proximity to companies is one of the principles of the plan. It is necessary to create close ties with the production system, collaborating with business to create value together.

The main objective of the Vocational Education and Training Plan is to foster the employability of all Basque men and women and at the same time strengthen the competitiveness of Basque productive fabric on the world market and social cohesion by completely transforming Basque VET to offer a better adapted and more agile response to

company needs in the short and long term and to new requirements in people's employability.

To reach this objective, 5 strategic areas, 9 priority objectives and 20 lines of action have been drawn up in the IV VET Plan.

Five Strategic Areas	
1. Integrated Vocational Education and Training	
2. Applied Innovation	3. Active Entrepreneurship
4. Internationalisation	5. Vocational Education Centres

Applied Innovation is the strategic area from which the TKgune programme has emerged. The objective in this area is to support and encourage projects of applied innovation with companies in the Basque Country, particularly SMEs, through close collaboration between VET centres and these companies in areas defined as strategic for the competitiveness of the Basque Country.

Industries need to innovate and change to produce different, better and more competitive products, processes and services. Given their proximity to business, there is a need to consolidate the position of VET centres as key agents, capable of supporting and galvanising applied innovation in SMEs.

To achieve this goal, they need to offer their collaboration proactively, acting as the need arises as technology intermediaries between the existing Basque Network of Science and Technology and the companies.

We therefore foster "strategic environments" in which we will work jointly with the companies on projects of innovation oriented towards creating value. Additionally, it is necessary to investigate new opportunities, generating knowledge that can improve the employability of the people and the competitiveness of the companies. We will therefore also develop "areas of specialisation" linked to emerging industries, in which we shall investigate and experiment to identify new opportunities.

To accomplish this, it is necessary to define a new coherent and reasonable model of technological surveillance, training, qualifications and employment, tailored to the development of the industries. It should enable us to further develop our knowledge of emerging industries and business areas with a long-term perspective.

Any advance must be in line with the government's strategic priorities; we need to concentrate efforts on industries identified as being strategic for Basque employability and competitiveness. We will therefore work with the Department of Employment and Social Policies and Lanbide (Basque Employment Service), and also with the Department of Economic Development and Competitiveness, aligning ourselves with the strategy of intelligent specialisation currently being developed.

The four lines of action for this Applied Innovation area are:

- A. To develop strategic environments in the productive fabric in which companies and VET centres co-operate. These environments must be oriented towards jointly identifying and

developing opportunities that reinforce business competitiveness and value creation in companies.

- ▶ To establish specialist strategic environments in which VET centres and companies, especially SMEs, can collaborate, advancing the creation of value as a basic process in the area of competitiveness, through innovation applied to production processes and products.
- ▶ To develop innovation projects in emerging areas of specialization and industries, with the ultimate aim of generating and transferring knowledge and achieving the development of new opportunities for companies.
- ▶ To analyse the impact of emerging industries on employability and take actions to further increase the number of women employed in the most advanced and technology-intensive industries.

- B. To establish areas of specialization in emerging industries.
- C. To support the development of projects of applied innovation emerging proactively in the VET centres.
- D. To develop projects on creative thinking and routines for generating ideas in different environments.

Therefore, this is the strategic approach which supports the TKgune programme and allows the design and implementation of activities aimed at developing that strategy.

**Activities in the TKgune programme**

Coordination	The common service offer Funding Managements Creativity Innovation Plans	Advanced training
Technical innovation and improvement services in five years Manufacturing- Automotive- Automation – Energy – Creative Industries		
Dissemination Activities	Complementary actions	Monitoring and Assessment



The first step, at the beginning of the academic year, is to focus on the setting up of the network of VET centres, up to 29 currently, with 78 teachers committed to provide technological services to more than 300 companies.

The activities developed by TKgune programme can be classified at different stages:

- A. Coordination: The coordination of the TKgune programme implies several types of actions:
- ▶ To plan and organize, from Tknika, the activities for the TKgune network along the academic year.
  - ▶ To provide the hours agreed at the Directorate of VET to the public VET centres and, later, organize the working calendar for the responsible of the programme at each centre.
  - ▶ To fix the dates for the meetings between the responsible of the programme and the heads of every strategic environment.
  - ▶ Periodically to gather and update information on names of teachers involved, companies participating, services being offered, products on elaboration and achieved results, so that the state of art is clear at every time of the year.
- B. The common service offer: There is a set of common services provided by the five areas of the TKgune and, then, a number of services which are specific of each area:

**Support to Innovation:**

- ▶ Funding management  
There are different calls for funding aimed at companies. From TKgune we help companies to analyse the possibility of submitting improvement or innovation projects to calls for funding, also carrying out the necessary procedures, formalities and follow-up.
  - ▶ Creativity  
We stimulate the creative process in the companies by means of proven tools and methodologies focussed on generating ideas, creating alternatives and adding value to the processes and products.
  - ▶ Innovation plans  
Linked to its corporate strategy, we help companies to integrate innovation as yet another systematic process in the company. As a result, the companies can have an innovation plan, tools and dynamics to help it evolve.
  - ▶ We also implement technology forecasting in order to be able to offer the latest in technical and technological solutions.
- C. Advanced training.  
TKgune offers advanced or customised training to suit the company's needs in those technologies and contents not offered in the usual catalogues about continuous training. We manage training funds such as the Fundación Tripartita. And so there are courses on implementation of ICTs, on technical processes and production management, and on emerging technologies and equipments.

D. Technical innovation and improvement services

In addition to the common services of support to innovation and advanced training, every strategic environment offers specific technological services in its area:

- ▶ Manufacturing: Technological services for innovation and improvement of the product and manufacturing processes.

Example of Services:

- Turning with hard metal (process determination, parameters and tools).
- Reduction in machining process times and costs. Optimization (CAM).
- Machining of new materials: graphite, ceramics, composites, titanium, Inconel, zirconium oxide (process determination, parameters and tools, prototypes, first series).
- Process parameterization.
- Design and validation of machining tools.
- Definition of a friction welding process for the aeronautics industry.
- Simulation by means of finite elements, for component improvements. Forging simulations.
- Manufacture of prototypes and first series.
- Definition of innovative solutions: re-design of products and manufacture of prototypes.
- Design and installation, turn-key, of automated cells.
- Process optimization: machining, forging, handling, etc.

- ▶ Automotive: Technological services for maintenance, design and integration of components for the automotive industry.

Example of Services:

- Development and construction of Zeus electric vehicles.
- Adaptation to bimodal of a dustbin lorry.
- Adaptation to electric for vans.
- Electric innovation in new alternative propulsion engines for vehicles.
- Test bed for electric car power-trains.
- Integration of electronic suspension prototype in vehicles.
- Support in integrating the new power-train.
- Development and construction of automotive didactic equipment.
- Collection of data to analyse the mechanical effect of chemical products.
- Advice and accompaniment in the introduction of 5S.

- ▶ Automation: Technological innovation services aimed at improving various industrial processes, through automation.

Example of Services:

- Introduction of automation, management and production systems.

- Machining of elements, assemblies in automation systems.
- Design of elements and mechanical assemblies for automation processes.
- Additive manufacturing with different plastic materials for automation processes.
- Electronic circuit prototyping.
- Industrial robotization of production lines.
- Process verification by means of artificial vision, laser, etc.
- Predictive maintenance studies by means of vibrations analysis.
- Materials testing.
- Assembly of industrial machine elements.
- Diagnosis of breakdowns in industrial machine elements.
- Repair of industrial machine elements.
- Mechanical, pneumatic and hydraulic systems on automated lines.
- Operations to maintain systems in automated lines.
- Programming and control of automated line operation.
- Prevention of occupational and environmental hazards in automated line maintenance.

- ▶ Energy: Technological services for the energy efficiency of products, processes, installations and buildings.

Example of Services:

- Analyse installations from the point of view of the energy consumption, energy consumption monitoring and forecasting, saving measurements and verifications.
- Energy efficiency: Detect critical points proposing improvements and optimizations.
- Conventional and renewable energy installations.
- Advice on new equipment and materials applicable to processes and installations.
- Improved processes by means of new technologies.

- ▶ Creative Industries: Technological services for emerging 3D animation technologies, modelling, virtualization and information systems in enterprises.

Example of Services:

- Solutions based on 3D printing animation techniques, modelling on-screen object virtualisation and the making of prototypes using 3D printing.
- Technical support for the introduction of storage and communication management systems.
- Development of websites with dynamic content.

- Personalised tutoring on systems, components and elements making up a current computer service.
- Use of the centre network as a testbed.
- Counselling on new technologies and communications and on new markets trends.
- Functional and performance tests on existing applications and developments in relation to 3D animation and modelling.

E. Dissemination activities

TKgune activities are regularly disseminated at Tknika, as a large number of visitors come to know about our innovative experiences in the quality and improvement area, in the learning processes, in applied innovation, entrepreneurship and internationalization in the VET sector. Presentation, talks, visits, conferences are organized to disseminate the TKgune's proposals.

F. Complementary actions

Further to the usual activities, some complementary actions are also implemented by TKgune members, for instance the TKgune Ideas Competition, aimed at young entrepreneurs with the intention of promoting creativity, entrepreneurship and innovation.

G. Monitoring and assessment practices

Based on the information and data gathered from the working groups, the monitoring of the programme is developed at the scheduled meetings, taking into account the fixed objectives and the selected indicators.

## 6. MONITORING AND EVALUATION

To do the monitoring and evaluation of TKgune and considering its structure which we have previously explained, the process can be described like this:

- A. The VET centres collect information regarding several aspects. Then, each centre handles the collected information to the head of the strategic area.

The collected information consists of:

- ▶ The Project sheet (contact information, participants, service information, facturation...)
- ▶ Number of services provided by each VET centre
- ▶ Number of companies involved
- ▶ The Satisfaction Questionnaires answered by the companies and covering the following topics:
  - The project in general,
  - The commercial work,
  - The flexibility to adapt the technology work to the needs of the company,
  - Timelines and needs.
- ▶ The Final Report of the Project containing evidences (photos, documents...)

- B. Then, the head of each strategic area submits the information to the responsible of the programme.
- C. The data delivered by the responsible of the programme is analysed at the Applied Innovation Area of Tknika, so that they can get to conclusions regarding the effectiveness of the programme and, later on, prepare the Final Report on developed activities, degree of compliance of the initial objectives, with some suggestions and proposals for the Deputy Regional Ministry of VET.
- D. Finally, the Deputy Regional Ministry gets the Final Report and, based on it, takes decisions for the following academic year.

## 7. SUSTAINABILITY MEASURES

As long as the smart specialization strategies endure, and provided that the goals are met too, the sustainability of the programme can be taken for granted. The current Plan of Science, Technology and Innovation of the Basque Government (PCTI 2020) embraces the period 2015 – 2020.



The Deputy Regional Ministry has recently passed the Decree which regulates the Integrated VET Centres in the Basque Autonomous Community. This regulation provides to VET centres with the necessary autonomy and competences to offer technological services to the SMEs.

The IV Basque VET Plan embraces the period 2015 – 2020 too, and Tknika has 5 areas to promote creativity, innovation and entrepreneurship, as it is described in the new Decree of 2015. The Area of Applied Innovation is the one in charge of coordinating this type of projects, linked with applied technological innovation.

In this area the responsible of the TKgune programme develops his work. Having launched it previously, now he is in charge of coordinating its activities and keeping it going. For that purpose, he has promoted several initiatives:

- ▶ The TKgune webpage has been created, and in order to ensure the continuity of the programme, a special emphasis is being put on making it known among companies, presenting the portfolio of services, good practices, late results and so on
- ▶ At the beginning of each academic year teachers who join the programme are trained on their future functions and they also have access to documentation designed to facilitate their task. To this end, documentation has been prepared for teachers who will be visiting companies. Due to the novelty of this task, they are trained to know how to detect possible needs of companies, how to deal with them and how to identify possible projects.

- ▶ Based on the information gathered from the different projects developed a database is being generated and constantly updated.

A mention must be made as well to the relevance of this programme for the VET centres, which not only have an incredible opportunity to diversify their activities, renew their curricula, improve the quality of their training offer, but even they have the chance to increase their funds in order to launch new initiatives and position themselves as referents in their respective locations.

## 8. COSTS

With respect to the expenses for implementing the TKgune programme, three main aspects must be taken into account.

- ▶ Firstly, the teachers' work, which implies the commercial work needed to visit the SMEs, know how they work, detect their needs, identify possible projects and develop them.
- ▶ In addition, the economic cost of the equipment and the installations needed to develop the projects is another significant factor to consider.
- ▶ Finally, the commitment of the people who is dedicate to coordination tasks and to disseminate the programme (e.g. website, catalogues...) as well as to seek funding for the programme is also an aspect to take into consideration.



### Cost of the programme during the 2014 – 2015 academic year

#### A. Staff

Time reductions .....	* 962.500 €
Commercial activities .....	10.500 €
Training courses .....	7.400 €

#### B. Equipment and Installations:

Maintenance .....	** 210.000 €
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#### C. Coordination and other expenses:

Coordination from Tknika .....	50.000 €
Meetings / Conferences .....	8.000 €
Launch of the website .....	7.500 €

Cards / Brochure / Catalogues .....	5.000 €
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<b>Total .....</b>	<b>1.260.900 €</b>
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\*During the 2014-2015 academic year there were 55 teachers with a total or partial time reduction to engage in TKgune programme. Each total dedication of a VET teacher implies an investment of approximately 50.000 € per year.

\*\*The acquisition of new equipment is not reflected here, because despite being available for TKgune project members, it is an investment borne by the VET centres.

## 9. FUNDING

The funds for the TKgune programme come both from public and private sources. On one hand, there is a relevant investment on staff provided by the Basque Government which means an amount close to one million Euros per year. These funds are intended to cover the replacement of the VET teachers whose working time at the classroom is shortened to enable them to visit companies, detect needs and identify projects.

Nevertheless, the labour of developing the projects is not supposed to be supported by that financing. As, for that aim, the projects are being billed to clients in order to obtain the needed budget to pay the teachers' job, the equipment and the installations.

On the other hand, there is a number of European, State, Region and Local-level funding projects which can partially balance the economic effort of executing the projects.

### A. Public Funding:

Staff .....	1.125.650 €
Time reductions .....	1.075.650 €
Coordination from Tknika .....	50.000 €
Resources .....	18.000 €
<i>Meetings / Conferences</i> .....	8.000 €
<i>Website maintenance</i> .....	5.000 €
<i>Cards / Brochure / Catalogues</i> .....	5.000 €
Training courses .....	9.700 €
Commercial activities.....	16.500 €
<b>Total .....</b>	<b>1.169.850 €</b>

### B. Private Funding:

Development of project and provision of services .....	1.100.000 €
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### C. Other sources:

Provincial and town councils, etc., .....	*** 22.000 €
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\*\*\*Funding of 5 technological projects by the Provincial Council of Bizkaia.



# OUTCOMES & IMPACT

## 10. OUTCOMES

List of deliverables, products and services provided by the VET centres members of the TKgune network:

Coordination of the TKgune programme - Deliverables	
<ul style="list-style-type: none"> <li>• IV Basque VET Plan</li> <li>• TKgune Annual Plan</li> <li>• Project Description Template</li> <li>• Template for monitoring projects and areas.</li> <li>• List of Indicators</li> <li>• Table of Results</li> </ul>	<ul style="list-style-type: none"> <li>• Meetings minutes</li> <li>• Space on Google Drive for TKgune files</li> <li>• Satisfaction Questionnaires for the companies</li> <li>• Database of SMEs participating in TKgune</li> </ul>
Manufacturing – Services and courses	Automotive – Services and courses
<ul style="list-style-type: none"> <li>• Deep drilling machining of methacrylate PMMA material for use as optical fibre.</li> <li>• Structural analysis and design improvement of chains based on FEM.</li> <li>• Accomplishment of an initial prototype for a cells filter.</li> <li>• Three-dimensional measurement and obtaining a 3D Model.</li> <li>• Design and development of the new multitask machine.</li> <li>• Advice on welding consumables.</li> <li>• Accompaniment in the initiation of 5-axis machines.</li> </ul>	<ul style="list-style-type: none"> <li>• Transformation of an electric vehicle into a hybrid one, by integrating a combustion engine.</li> <li>• The entire process for the launch of a line of painting.</li> <li>• Diagnosis through endoscopic camera and subsequent repairing of a combustion engine.</li> <li>• Advice and training related to the repair of light and lampshades.</li> <li>• Training and demonstration on the alignment of the steering system using 3D techniques</li> </ul>
Automation – Services and courses	Energy – Services and courses
<ul style="list-style-type: none"> <li>• Automation of a production line for sorting beans.</li> <li>• Automation of a process for controlling the amount of powder in a lab.</li> <li>• Design of an automated machine for threading nuts.</li> <li>• Advice on an automaton program and PLC communication.</li> </ul>	<ul style="list-style-type: none"> <li>• Development of an urban photovoltaic tree prototype.</li> <li>• Combination of solar energy and aerothermia in an installation.</li> <li>• A comparative study between commercial coolant gases.</li> <li>• Audit and consulting services to optimize energy consumption.</li> </ul>
Creative Industries – Services and courses	Others
<ul style="list-style-type: none"> <li>• Create a virtual tool which displays the components manufactured by the company and explains their role.</li> <li>• Programming for the automatic operation of an operator.</li> <li>• Counseling for certification of structured cabling</li> </ul>	<ul style="list-style-type: none"> <li>• TKgune Brochure</li> <li>• TKgune web site</li> <li>• PowerPoint presentations</li> <li>• YouTube videos</li> <li>• TV programmes -Teknopolis</li> </ul>

## 11. IMPACTS

**Table of Outputs**

	Asmaola+	TKgune	
	2013-2014	2014-2015	2015-2016
Strategic environments	1	4	5
Centres involved	5	21	29
Teachers involved	22	55	78
Investment in staff	€412,500	€962,500	€1,075,650
Revenues	96	€1,018,471	€1,200,000
Projects	70	257	300
Companies involved	1	203	250

*\*The above indicated numbers are the goals fixed for the academic year 2015-2016.*

The main impacts of the TKgune programme are beneficial for both the SMEs and the VET system, though some disadvantages can also be mentioned.

### **Regarding to the short-term impacts the disadvantages are:**

- ▶ Difficulties to achieve projects at the beginning
- ▶ Not billing in the services
- ▶ Economic crisis
- ▶ Lack of innovative mindset

### **Regarding to the short-term impacts the benefits are:**

- ▶ A new source of funding for the VET centres (Garaituz Programme, for instance. 88 projects have been developed with the support of the Garaituz programme by the Provincial Council of Gipuzkoa)
- ▶ It provides SMEs with the option to innovate on their processes and keep on being competitive. The companies can take benefit of well trained professionals (VET teachers) and top level installations and equipment without the need of doing large inversions. The TKgune programme makes it accessible for them.
- ▶ Responds to the lack of support to encourage SMEs innovation. Most of the SMEs participating in TKgune Programme haven't had any relationship with technological agents of the Basque Country before. (This is the case for %70 of the beneficiaries of TKgune programme during the 2014/2015 academic year).
- ▶ It enables teachers to know the real needs of the companies and the latest trends in the market. These activities provide the opportunity to introduce new technological and methodological contents and renew the curricula.
- ▶ It allows the interaction among VET centres. Each centre has its strengths and weaknesses and by working together and collaborating they complement each other.

### **In relation to the long-term impacts of the programme the disadvantages are:**

- ▶ Need to find new funding sources
- ▶ Need for improving coordination among VET centres and SMEs
- ▶ Difficulties to replace and renew equipments at VET centres

**In relation to the long-term impacts of the programme the benefits are:**

- ▶ The new role of VET centres as knowledge node.
- ▶ Updated training offer and curricula
- ▶ Basque Country know as a land of innovation
- ▶ Increase teachers' professional competences
- ▶ Better collaboration and co responsibility in education and Training by SMEs
- ▶ Increase competitiveness of companies
- ▶ Increase on employment rates
- ▶ It allows deepening the understanding of the needs of companies and enables them to articulate a training offer according to those requirements.
- ▶ It means companies contacting with the culture of innovation which allows them to continue making it in the future, either on their own or collaborating with other agents, including the VET centres.
- ▶ The reinforcement of the VET centres networking; the support given to each other and the information shared make it easier for the VET centres to start working with new technologies.
- ▶ The TKgune programme could become a funding source for VET centres, and an opportunity to improve their equipments and installations. The companies involved in the TKgune programme pay for the services they receive. The number of companies involved in TKgune programme increases every year, and so do the benefits that VET centres get from it.
- ▶ The VET centres gain expertise by collaborating with local companies and agents, which makes them referents in their communities; so that, they are taken into account at the time of participating in new projects (European, innovation...)

## **12. INVOLVED STAKEHOLDERS AND BENEFICIARIES**

The TKgune programme involves several kinds of stakeholders. We can mention the following ones:

### **Companies**

The SMEs participating in the programme have the opportunity to innovate and improve their processes and products. They have access to resources that otherwise they wouldn't in any other way, and they can benefit from the expertise of the VET teachers as well.

They'll be more innovative and entrepreneurs on the management, production and commercialization processes, implementing ICTs faster than they do, for instance. Undoubtedly they will learn to collaborate and even become more competitive in the global market.

### **VET centres**

TKgune represents for public and private VET centres to adopt an additional type of service. It brings a new role for them in society. They will focus not only on training but on innovative and entrepreneurial processes and services too. It can also represent a new source of funding for their services, enabling them to live not only upon public funds but on

the private ones as well. It requires, though, good trained professionals with the adequate competences for the new era and a commitment on updating the curricula, the equipment and the installations.

### **VET Teachers**

TKgune programme represents a change of the role played by teachers up to now, as it is no more limited to teaching. They have to approach companies, identify projects, agreeing arrangements with companies, develop the work and manage the entire process. A new mindset and a greater involvement of teachers are imperative. On doing so, to be abreast of the latest technologies used in industry will be also possible.

### **VET Students**

The knowledge acquired by teachers must be taken to the classroom, renewing and updating the curricula, creating new learning environments and implementing competence-based learning and assessment processes. In addition, students will have the opportunity to meet what has been done in real cases which results in a more meaningful learning for them.

### **Institutions**

In this way they can better focus on the real needs for improvement and innovation at the SMEs. Until now, politicians have not paid an adequate attention to them, because they have mainly responded to the needs of large companies. So the existing gap regarding lack of innovation in SMEs can be arranged.

### **Society**

Although the impact of TKgune programme in society is not so obvious, it must be taken into account that up to a %70 of the employees in the Basque Country works in an SME. So that any action promoted to guarantee the sustainability and improvement of these companies has a direct effect on improving employment rates and increasing the standards of living of Basque society.



## **LESSONS LEARNED**

### **13. PRIMARY CHALLENGES**

- ▶ To consolidate the current strategic environments
- ▶ To make the programme economically sustainable
- ▶ Teachers' involvement should increase in coming years-
- ▶ Change of mind set. New teachers' role has implication on their timetable.
- ▶ To disseminate TKgune more intensively

### **14. SUCCESS FACTORS**

- ▶ To adapt to the needs of the SMEs of the region

- ▶ The support of the academic authorities and the trust of other agents working on innovation.
- ▶ The gained expertise and accumulated knowledge: 27 professional families in the academic offer of our VET centres.
- ▶ The willingness of the involved teachers and VET managers
- ▶ Existing strategies
- ▶ The networks of VET centres
- ▶ A clear structure
- ▶ Existing relationships with SMEs

### 15. TRANSFERABILITY

TKgune programme can be transferred to other VET systems, considering that some elements are necessary to turn it into a successful experience:

- ▶ A close relationship between VET centres and local SMEs.
- ▶ The trust of SMEs on VET centres. To get that, VET centres have to gain a reputation for offering qualitative services and training, something that needs time, maybe years to gain.
- ▶ Good trained teacher, with professional competences and good knowledge of the new technologies, local industry, technology providers, etc.
- ▶ The willingness of the VET teachers no still used to these new roles of project management, adviser, communicator, etc.
- ▶ A culture of innovation at the VET centres as a result of being working on it for years.
- ▶ Qualitative training to match the detected needs at the SMEs.
- ▶ Need for the leadership of the academic authorities in form of policies, resources, structures and decisions to deploy approved policies and strategies.



## FURTHER INFORMATION

### 16. PUBLICATIONS / ARTICLES

- ▶ Ikaulan Gipuzkoa Magazine. Number 16, October 2015
- ▶ VET News, the Digital Magazine of the Deputy Regional Ministry for VET of the Basque Country.
- ▶ Report on Best Practices in the European VET sector. EFVET.
- ▶ Youtube video on TKgune Programme 2014 – 2015
- ▶ TKgune website

- ▶ A TV report about the TKgune programme on Teknopolis, the EITB series on innovation
- ▶ TKgune Brochure 2015 – 2016
- ▶ The latest edition of the Estrategia Empresarial magazine and their Energy Notebook.

## 17. LINKS

- ▶ <https://www.tkgune.eus/en/>
- ▶ [https://www.youtube.com/watch?v=JJHJmq\\_XUjo](https://www.youtube.com/watch?v=JJHJmq_XUjo)
- ▶ <https://www.youtube.com/watch?v=5FkOCOpPd8U>
- ▶ <https://www.youtube.com/watch?v=DLfHXyUEFA>
- ▶ <https://www.youtube.com/watch?v=sL4yfa100Ks>
- ▶ <http://www.estrategia.net/estrategia/Competitividad/tabid/663/ItemID/55285/View/Details/Default.aspx>
- ▶ <https://www.youtube.com/user/tnkanala/videos>
- ▶ <https://vimeo.com/157564337>
- ▶ <http://www.diariovasco.com/bajo-deba/201511/19/jovenes-navarros-alzan-premios-20151119001206-v.html>
- ▶ [http://www.ivoox.com/ikaslan-araba-entrevista-onda-cero-leire-lonbide-audios-mp3\\_rf\\_10669179\\_1.html](http://www.ivoox.com/ikaslan-araba-entrevista-onda-cero-leire-lonbide-audios-mp3_rf_10669179_1.html)
- ▶ <http://www.foroadr.es/noticias/5080-spri-el-concurso-tkgune-fabrikazioa-impulsa-el-emprendimiento-industrial>
- ▶ [http://www.descubrelafp.org/noticias/tkgunes-recursos-formacion-profesional-vasca\\_2016031700070.html](http://www.descubrelafp.org/noticias/tkgunes-recursos-formacion-profesional-vasca_2016031700070.html)

## 18. KEYWORDS

Smart specialization strategies, SMEs, VET, innovation, networking, applied innovation, Tknika,

## 19. PUBLIC CONTACT DETAILS

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