

6th

Basque Vocational Education and Training Plan

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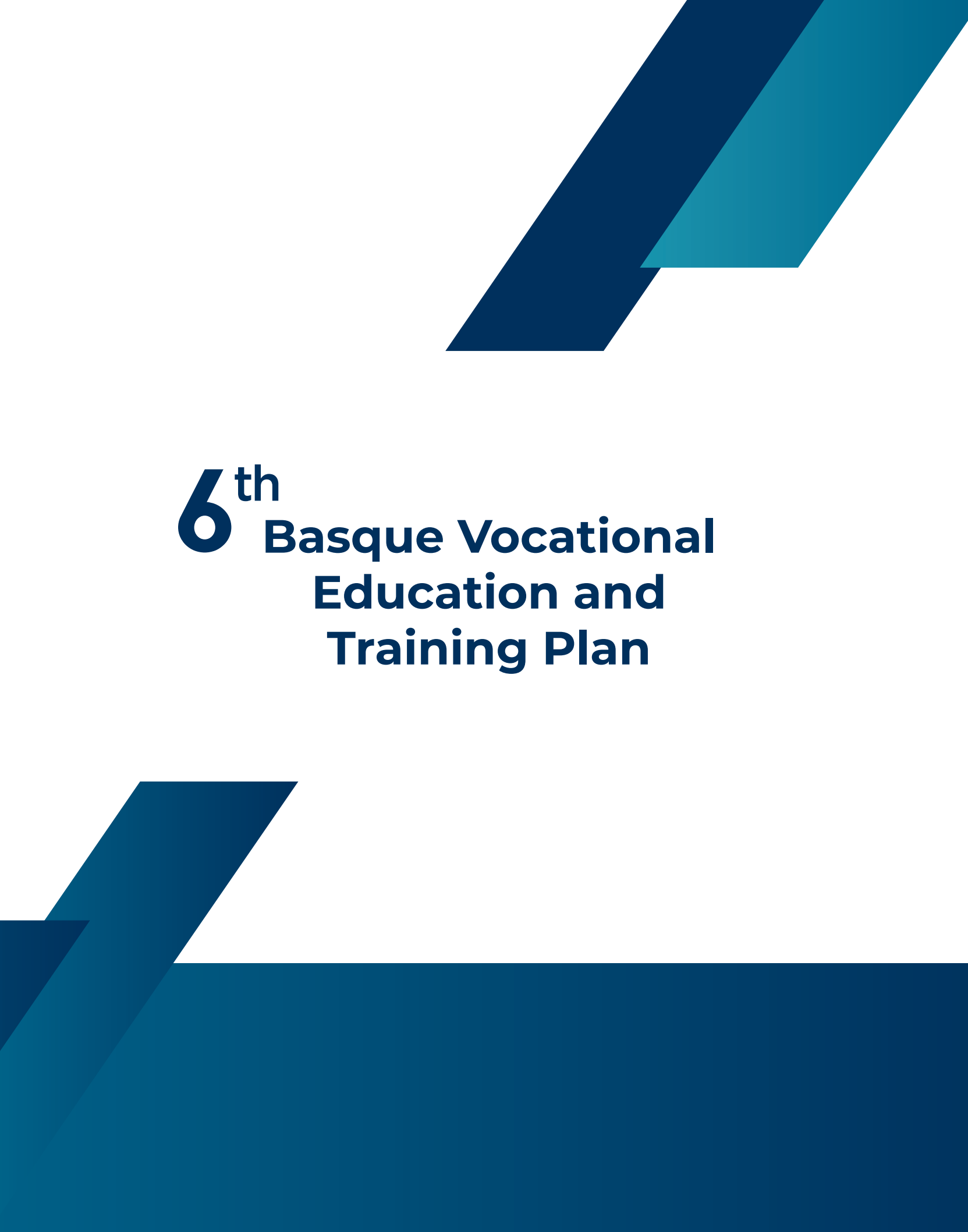
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01 Introduction

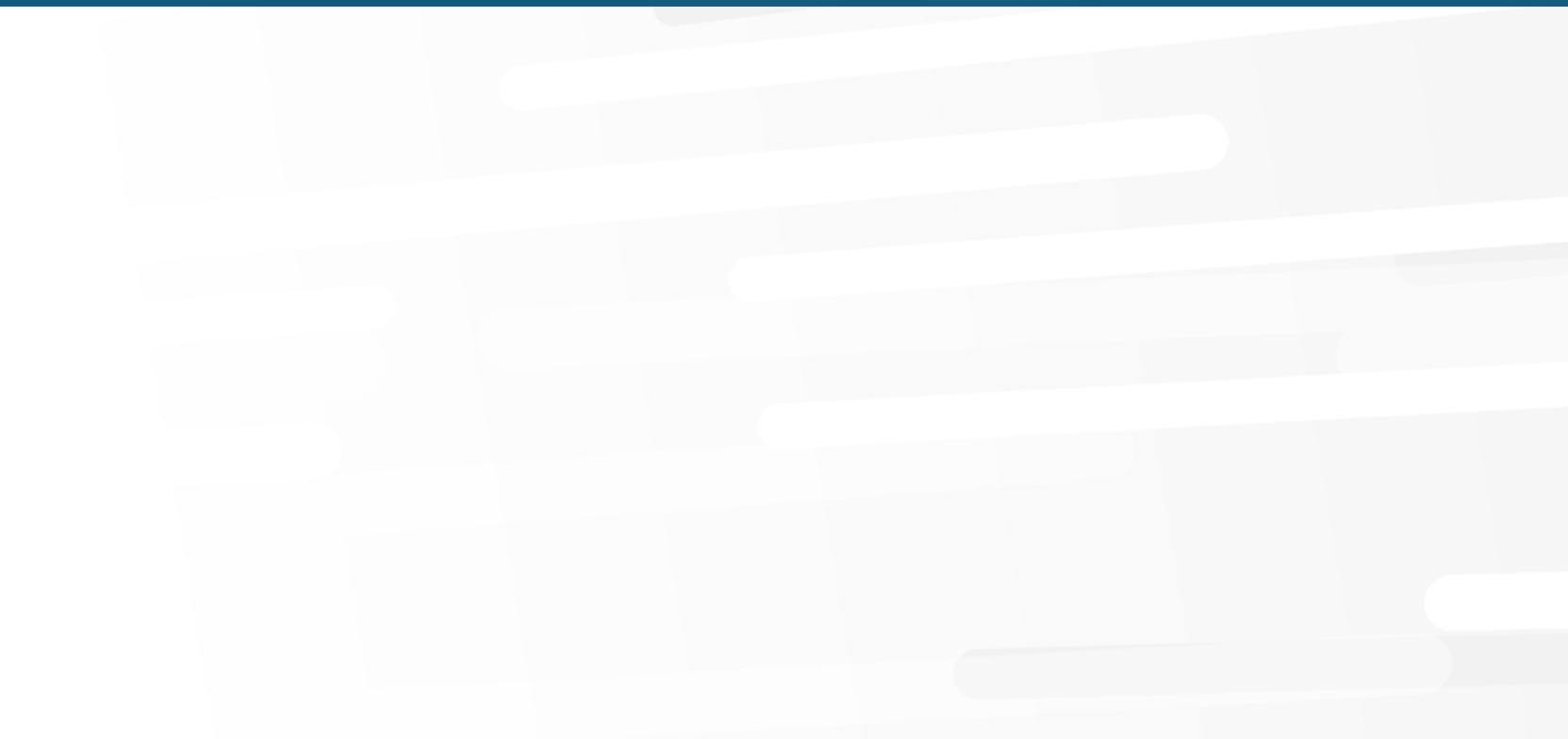
The Basque Country has a long tradition of changing and adapting Vocational Education and Training to the needs of businesses and people, and this has made the Basque Vocational Education and Training model an international benchmark.



The configuration of the Vocational Education and Training system in Euskadi has been built and reinforced over the years in each of the plans that have been drawn up and implemented in response to demands and changes in the job market, during each of the specific periods.

This new Basque Vocational Education and Training Plan represents one more milestone in the Basque Government's strategic planning task, and aims to act as a key tool to bolster the Basque Vocational Education and Training system even more in readiness for the wide-ranging changes that are being experienced by our society, from an intelligent, sustainable, humane perspective.

Thus the 6th Basque Vocational Education and Training Plan emerges as the instrument that must guide the following transformation of the Basque Vocational Education and Training system. A process which requires adaptation of the entire system, and the design, planning and implementation of an even more ambitious and transformational plan than the previous plans, focusing on the future, but based on and rooted in the essential components and strengths of the system, acquired through the implementation of the previous Vocational Education and Training Plans.





02

**A Vocational Education
and Training Plan to
address the future**

2.1. THE 6TH BASQUE VOCATIONAL EDUCATION AND TRAINING PLAN AS PART OF THE BASQUE GOVERNMENT'S COURSE OF ACTION

This 6th Basque Plan Vocational Education and Training Plan sets out to address a revamped vocational education and training model with the ability to adapt to a society immersed in an accelerated context of technological disruption, which poses new challenges and calls for a reinforcement not only of digital competences, but also critical and constructive thinking, creativity and humanist education.

Securing inclusive, equitable, top-quality training is an enormous nationwide challenge to secure sustainable integrating growth. To achieve this, the Plan responds to the challenge through various areas of activity and lines of action, geared towards:

_Improving the capacities of the Basque VET system through high-performance training, which in any case should adapt to the needs of students, for their personal and professional development.

_Focusing on a specific orientation towards industrial and scientific VET and also training in strategic sectors, encouraging and emphasising occupations in the industrial sector or other emerging sectors.

_Driving permanent learning processes through Vocational Education and Training, with a more flexible, integrated offer of training available to one and all.

_Encouraging inclusive Vocational Education and Training in line with sustainable development goals.

_Fostering talent, the incorporation of women in the most masculinised sectors, where fewer women work, and the will to create new businesses within the scope of Vocational Education and Training. Talent is understood as an aptitude for having good ideas, taking good decisions, and knowing how to analyse them.

_Moving towards smart Vocational Education and Training to keep ahead of the future and provide an effective response to the rapid progress of the fourth industrial revolution.

_Promoting the international image of the Basque Vocational Education and Training system.

_Establishing various links and collaboration with the University

Vocational Education and Training also has a substantial impact on other areas of the Basque economy, because it affects both people's employability and the competitiveness of businesses. Employability in terms of the acquisition of transferable skills and qualifications, boosting the ability of people to make use of any training opportunities that come their way, with a view to finding and holding down quality employment.

It is for this reason that the Plan has emerged for the purposes of coordination with other Government programmes and plans which have an impact on these areas:

- Programme for economic reactivation and employment in the Basque Country 2020-2024 – Berpiztu.
- Science, Technology and Innovation Plan – PCTI Euskadi 2030.
- Basque Smart Specialisation Strategy RIS3 - Euskadi.
- Basque Employment Strategy 2030 and Strategic Employment Plan.
- Basque University System Plan.
- Strategic Industrial Development Plan.
- Interinstitutional Enterprise Plan 2024.
- Strategy for the Digital Transformation of Euskadi 2025
- Basque Education System Digital Transformation Plan.
- 5th Basque Inclusion Plan



2.2. AGENDA 2030 FOR SUSTAINABLE DEVELOPMENT

The process of drawing up the 6th Basque Vocational Education and Training Plan cannot avoid consideration of the Goals defined in the Sustainable Development Agenda 2030.

The United Nations' Sustainable Development Agenda 2030 is one of the most ambitious and singular agreements in recent history.

The agenda, the central feature of which is its 17 Sustainable Development Goals (SDGs), is a guide to address the most acute world challenges: to do away with poverty and boost economic prosperity, social inclusion, environmental sustainability, peace and good government for all peoples by 2030.

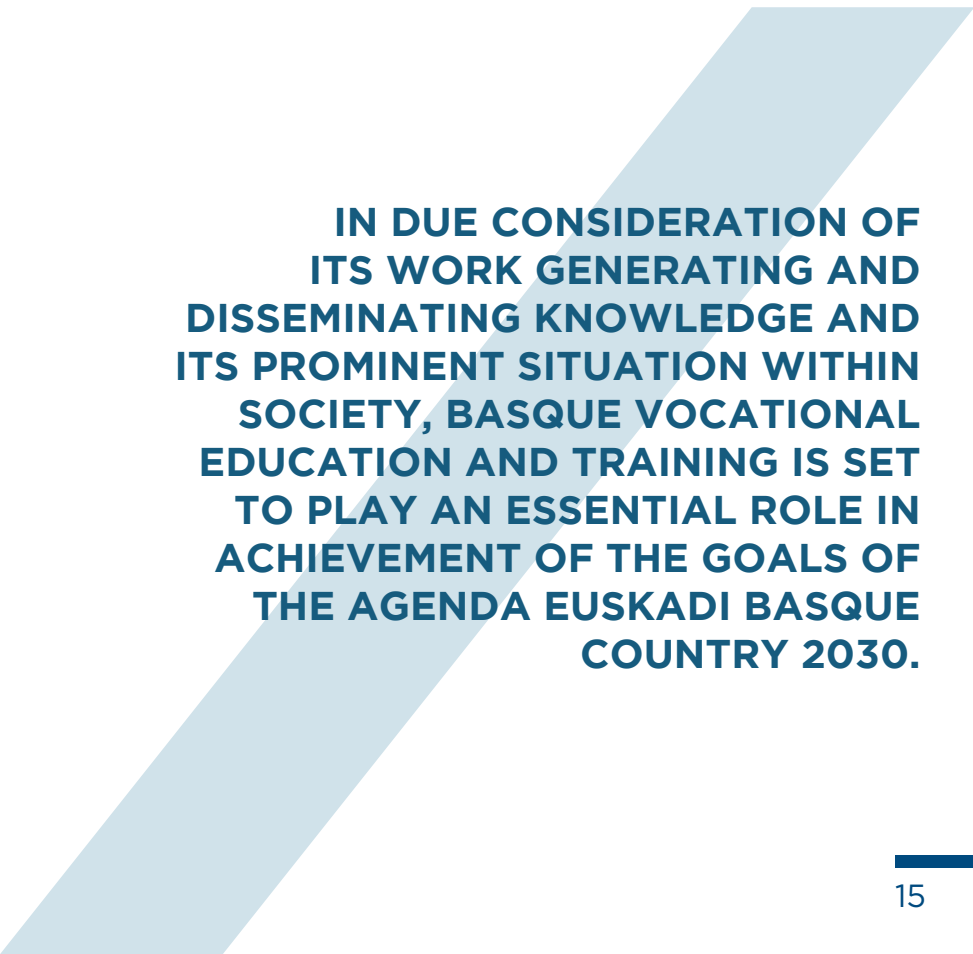
The UN's Sustainable Development Goals



In due consideration of its work generating and disseminating knowledge and its prominent situation within society, Basque Vocational Education and Training is set to play an essential role in achievement of the goals of the Agenda Euskadi Basque Country 2030. The Basque VET also shares the vision of moving towards a sustainable human development that will guarantee training for all, and sustainable growth to generate better quality job opportunities.

The Sustainable Development Goals in Vocational Education and Training contain a wide range of social, economic and environmental challenges, which will call for transformations in the functioning of societies and economies, and in how we relate to our planet. Training, orientation, research, innovation and leadership in Vocational Education and Training will be essential to help society face these challenges.

Commitment to the SDGs will also greatly benefit VET centres, because this will help demonstrate impact capacity, it will attract the interest of training in relation to the SDGs, encourage training in social values and sustainable development in economies, create new alliances, channel access to new collaboration between countries, and define the Basque VET as a committed institution.



**IN DUE CONSIDERATION OF
ITS WORK GENERATING AND
DISSEMINATING KNOWLEDGE AND
ITS PROMINENT SITUATION WITHIN
SOCIETY, BASQUE VOCATIONAL
EDUCATION AND TRAINING IS SET
TO PLAY AN ESSENTIAL ROLE IN
ACHIEVEMENT OF THE GOALS OF
THE AGENDA EUSKADI BASQUE
COUNTRY 2030.**

2.3. THE EUROPEAN VET CONTEXT

The European Commission has defined a number of strategic plans and projects geared towards boosting the contribution of education and training to the European Union's recovery from the crisis caused by Covid-19, and these are expected to assist with the construction of an environment-friendly, digital, social Europe.

Some of these are, inter alia:

The European Commission Agenda of Capacities for sustainable competitiveness, social justice and resilience establishes some ambitious quantitative objectives to improve the existing skills and recapacitation (training in new skills), which must be achieved within the next 5 years.

This agenda makes specific reference to VET, and remarks that training must be adapted to enable students to secure the skills to enable them to adapt to the green transition.

The objective is to ensure that the right to training and permanent learning, consecrated in Europe's pillar of social rights, becomes a reality across Europe, from cities to the most remote and rural areas, to the benefit of all. The Commission places capacities at the centre of the EU's political agenda, gearing investment in people and their capacities towards a sustainable recovery in the wake of the pandemic brought about by the coronavirus. The digital, ecological and social transition processes call for people who can address the challenges of these transitions. That is why it is necessary for people to secure the proper training to enable them to address the challenges, to avoid being left behind, and also to prosper.

Design and drafting of the new 2021-2027 Digital Education Action Plan, which reflects the lessons learned from the coronavirus crisis, and seeks to bring about a high-performing digital educational ecosystem with stronger digital competences for the digital transformation.

The Plan sets out a number of initiatives focusing on a European digital education system that is inclusive, accessible and of high quality. It is a call for closer cooperation among EU Member States and with the parties concerned, to make education and training systems genuinely compatible with the digital age. The coronavirus crisis has brought remote learning centre stage in educational practices, demonstrating the urgent need

to improve digital education as a key strategic objective for high-quality teaching and learning in the digital era.

With a transversal perspective, Europe has defined other plans focusing on driving the digital and environmental transition, and bolstering R+D+i within the Territory. These plans also have an impact on Vocational Education and Training, and must therefore be taken into consideration in this Plan:

■ **The Digital Europe Programme 2021-2027** was defined in order to boost EU investments, Member States and industry to drive the digital transformation of the economy, industry and European society, thereby improving competitiveness by narrowing the digital gap and boosting the EU's strategic autonomy. The programme is divided into two main types of activity: development and reinforcement of essential capacities and the deployment and better use of digital technologies throughout the economy and society.

■ **Establishment of the European Green Deal**, the roadmap to provide the EU with a sustainable economy, which seeks to make Europe the first climatically neutral continent by the year 2050.

The Green Deal contains a package of measures to boost the efficient use of resources in all sectors of the economy, with particular emphasis on those causing most emissions, such as transport, energy or industries. These schemes intend to commence a transition towards a clean circular economy, reduce pollution and emissions, and protect biodiversity. The Plan also lists the investment and tools that will be necessary to implement this process.

■ **The new Framework Programme for Research and Innovation 2021-2027** (2021-2027 Horizon Europe programme), the most ambitious to date, seeks to maintain the European Union's leadership of worldwide R+D+i. Its objectives include reinforcing the technological base of the European Union and the European Research Area, stimulating capacity in terms of innovation, competitiveness and jobs in Europe, meeting citizens' priorities, and supporting the EU's social and economic model and values.

A CONTEXT OF ACCELERATED TRANSFORMATION

We are immersed in what may be the greatest technological revolution in history, a revolution that is rapidly transforming the way we think, act and relate to life, the planet and work.

There can be no doubt we are moving towards a different economic and social model, largely based on technology, digitalisation and smart systems. Over the next 20 years we will witness disruptive changes that will configure a world that will be totally unrelated to what we have known to date. Disruption, complexity and uncertainty will be our constant companions on this journey.

In this context of wide-ranging rapid change, Euskadi is undertaking a three-fold technological-digital, energy-climate and social/health transition, with the capacity to transform the future of businesses, people and society.

DIGITAL EUSKADI · Technological-digital transition



- Digitalisation
- Artificial Intelligence and Big Data
- Technology at the service of Citizens
- Automation
- Cybersecurity
- Driving towards a fair, competitive digital economy.

GREEN EUSKADI · Energy-climate transition



- Climate neutrality
- Decarbonisation of the energy system
- Efficient use of resources and energy - circular economy
- Sustainable, smart mobility
- Fair energy transition
- From farm to fork

INCLUSIVE EUSKADI · Social/health transition



- Demography and healthy ageing
- Migration
- Gender equality
- New models of caring for people
- Social and territorial cohesion

We are facing a huge opportunity, and simultaneously a huge challenge, since it compels us to change very quickly indeed in both the individual and the collective sense. The future will pose a major ethical debate, and we must be ready to address it because nothing will be like the way it used to be.

Faced with this challenge, we must be aware that more than ever before progress depends on people, because it is people who have knowledge, creativity and talent, and it is they who will lead the necessary changes on all levels. Rapid technological development in a sustainable world with smart systems will call for a large measure of humanity and people with other kinds of qualifications.

The Basque VET faces an enormous challenge: to assist and train people in such a way as to enable them to adapt to this transformation, and to develop the skills and attitudes demanded by the new reality.

To do this, the VET system itself must also be transformed. A new kind of forward-looking centre is required, organised and managed as a smart organisation, with other ways of doing and working, creating and sharing knowledge and taking part in collaborative networks, with the primary objective of moving towards sustainable human development.

We are immersed in what may be the greatest technological revolution in history, a revolution that is rapidly transforming the way we think, act and relate to life, the planet and work.

TECHNOLOGICAL-DIGITAL TRANSITION

We are contemplating a huge new revolution of humanity: technology disruption, so called because its effects are going to comprehensively change our way of life very rapidly and radically. And that is exactly what is happening right now. The coincidence in time of a number of technologies such as artificial intelligence, the Internet of Things or the Internet of Everything, the cloud, robotics and mobile connectivity, among others, means we are about to embark on the greatest social and economic change, not just in the last few decades, but in the last few centuries.

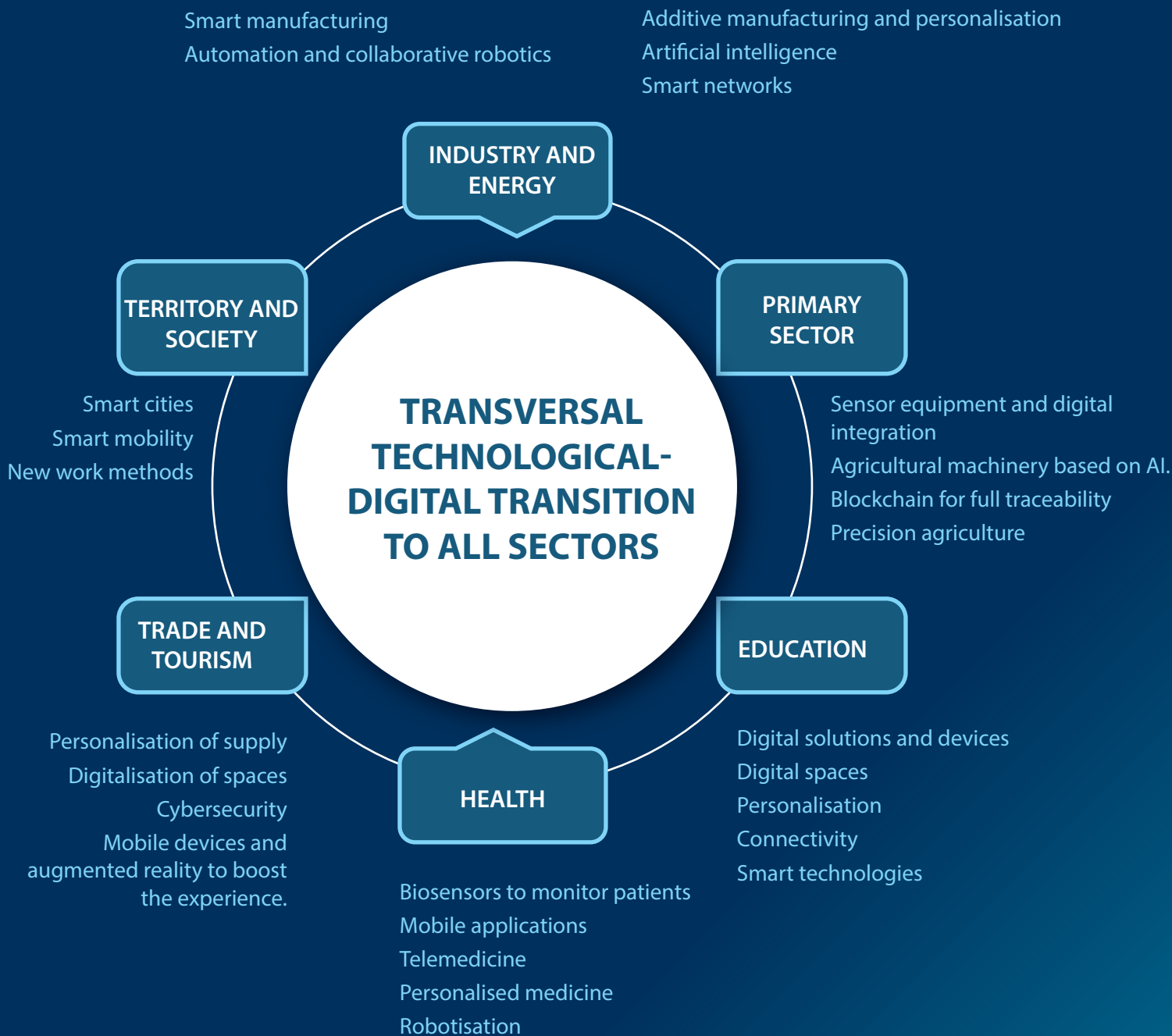
Sure enough, **technology is generating new ways in which we interact, behave, think and communication as persons and organisations.** We are moving towards a world that is automated (robotics) and cognitive (cognitive intelligence), with immediate access to data (5G), in which everything will be connected to everything. This is a process of change that is irreversible, rapid and global, and it will affect all economic sectors and society in general.

The COVID 19 pandemic stepped up the pace of technological-digital transformation even more. Disruptive technologies, which had already begun to gain ground in our society, have demonstrated their potential to assist us in adapting to this new situation, to enable us to move forward as a society and as human beings, without destroying our planet and ourselves.

The technological-digital transformation is also a transversal phenomenon for all sectors and all levels of society. Digital innovation is unleashing a process of “creative destruction”, in which new business models based on digitalisation are “replacing” traditional companies and business models, redefining markets and competition in many sectors, in industry, and also in the primary and services sectors.

Transversal technological-digital transformation in all sectors and at all levels of society.

**Examples*



The Basque VET has a wide range of professional families to respond to the needs of businesses and society. The technological-digital transition affects all of them.

The next few pages describe some of the main trends and changes emerging in a number of sectors (industry, the primary sector, health, education, tourism and trade, smart territories, and also in society in general), which will require the Basque VET to be developed and adapted on a permanent basis.

INDUSTRIAL SECTOR.

The 5th industrial revolution

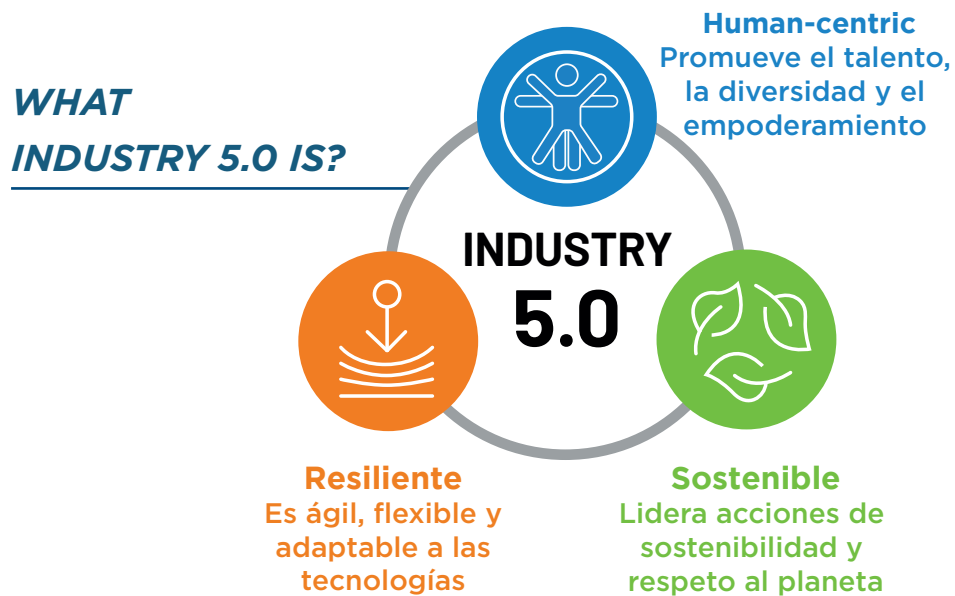
The industrial sector is witnessing the configuration of a new digital, interconnected industry that may be adapted to the needs of customers and uncertain constantly changing environments. **The digitalisation of industry entails a change in the way products are designed, manufactured, distributed and maintained.**

In the near future we will be seeing an era of smart factories integrating the physical with the virtual, in which manufacturers and machines will share information with the supply chain, and in which processes may be optimised automatically, and may also be self-configurable and use artificial intelligence to complete difficult tasks based on complex work flows. Technology is also enabling major opportunities to be generated from the creation of new business models based on the exploitation of data. Moreover, manufacturing on demand for customised prototypes and parts in short-series production formats is one of the areas that has experienced the fastest growth in industry, thanks to the progress made with additive manufacturing.

Combining technologies such as smart sensors based on the Internet of Things (IoT) or the Internet of Everything (IoE) which are interoperable with other systems, collecting and transferring data to the cloud through 5G networks to be analysed by artificial intelligence algorithms, forms the basis for new technology projects that will revolutionise the new industry. They can be used to design global production and logistics strategies, predict machinery failures, reduce energy consumption, boost the performances of increasingly more customised and smarter products, and improve the new customer relations and experiences.

But the technological-digital disruption and its impact on industry go further. There is already talk of the 5th industrial revolution, which complements and extends Industry 4.0, underscoring environmental and social aspects, and basic rights.

In January 2021 the European Commission published a report setting out the main aspects of the future European Industry 5.0. The introduction to the report singles out the power of industry to achieve social objectives beyond jobs and growth, to become a resilient purveyor of prosperity, making production respect the boundaries of our planet, and placing the well-being of the industry worker at the centre of the production process.



Source: European Commission.

But, what is Industry 5.0? **It is a new production model which lays the emphasis on interaction between humans and machines.** Industry 4.0 was developed gradually following the emergence of automation technologies, the Internet of Things, and smart factories. Industry 5.0 takes the next step, which means boosting intercollaboration with increasingly powerful and accurate machinery, robotics and the unique, creative and emotional potential of the human being.

As yet there is no computer with the same quantum capacity as the human brain but, according to the experts, by the end of this decade we will be seeing a scenario in which for the first time a human being will not be facing a stronger or faster machine, but a machine that is more intelligent than we are, with the capacity to improve itself.

This does not mean that machines are capable of thinking and feeling like humans. **The role of people is still essential, because only they can furnish creativity, critical criteria and emotions.**

This is why person-machine interaction is so important. There is already talk of “cobots” or collaborative robots, designed for simple, intuitive interaction with humans. The industrial production chain will be much faster thanks to collaboration between robots and humans.

The 5th Industrial Revolution also affects the whys and wherefores of technification. The objective must be to compatibilise benefits and progress with sustainability, protection of the environment and respect for human rights. In short, this means abandoning the idea of growth for the sake of growth, and placing technological progress at the service of human values and inclusion, i.e. moving towards a 5.0 society.



ENERGY AND THE ENVIRONMENT

The energy industry faces some major challenges propitiated by digitalisation and sustainability. These challenges are serving as facilitators for the sustainable energy transition.

The so-called smart grids are composed of increasingly intelligent devices and equipment such as substations, transformer centres, smart measurement and control equipment, storage banks or multiple microgeneration points throughout the network. In order to extract maximum advantage from these new networks, an essential role is played by digital processing, communications, the cloud, and increasingly artificial intelligence, which can instantly reconfigure the network to address any unexpected peaks in demand, or resolve any incidents that may arise.

Likewise, companies manufacturing all these items can benefit from the large amount of data generated by their products, which gives them enormous opportunities in terms of offering services in relation to predictive maintenance, performance enhancement or information management.

PRIMARY SECTOR

New digital technologies are set to bring about a revolution in agriculture and livestock breeding, just as classic mechanisation of the countryside did in the 20th century.

Digital technologies open up a wide field of opportunity for the primary sector, where the addition of sensors to facilities along with information from various sources (meteorological, statistical, phytosanitary etc.) can help monitor and predict plague or illness risk scenarios concerning production or livestock. Smart tags use the technology of the Internet of Things to track and monitor products throughout the supply chain. Using AI-assisted analysis, food industry businesses can analyse large amounts of data, which enables them to gauge market demand, thereby preventing food wastage.

Therefore, 4.0 agricultural machinery based on artificial intelligence can boost productivity and also improve working conditions in rural areas, through the use of biosensors and drones with multispectral devices, for example. Blockchain also has many applications for the foodstuffs and beverages industry, among others. A chain of non-alterable reliable registers enables blockchain to provide full traceability of products at all points along the food chain. Big data is also generating new opportunities, for example, in what are known as “precision agriculture” techniques, which call for analysis of large amounts of information in order to optimise decision-making.

HEALTH SECTOR

There can be no doubt that the healthcare sector will increasingly feature what we call technological intensity. A new innovation-based era, of which artificial intelligence will be a key component. Placing technology in the hands of experts will help step up the pace of creation of new solutions and improve access to healthcare all over the world.

The growth and unstoppable technification of medical procedures and diagnosis **techniques (including the robotisation of some genuinely complex procedures), advances in materials for clinical usage (some of which are generated by 3D printers),**

the use of smart medication or genetic therapy are configuring a health ecosystem which is nothing like the ecosystem as we now know it.

The use of analytics and big data is beginning to facilitate the processing and analysis of large amounts of information generated by patients. Their usage in the years ahead will transform the way in which diagnoses are carried out and will customise treatment, help identify risk factors, preventive treatment and possible side-effects of medication and treatment, and will also boost results and productivity in the healthcare sector.

Patients' habits are also changing. Easy access to Internet and its many sources of information and increasingly greater proactivity of each of us concerning our own health is turning us into people who are much better informed about treatment and, in many cases, greater health consumers. Technology also makes it easier to share health data to speed up medical research and make progress in the prevention, diagnosis and treatment of illnesses. This means that safe solutions must be in place, solutions that can generate greater interaction with patients, even in remote medical healthcare scenarios.



EDUCATION SECTOR

Digital transformation in education is being carried along by advances in connectivity, educational use of digital devices and solutions, the need for flexibility for a more customised offer, and easy access and relocation of knowledge.

The new role of teachers, the use of various digital technologies and development towards different systems, structures and spaces intends to generate better qualifications and better student experiences, by means of a more creative and differential model. Improvements to the digitalised management of centres, participation by the parties concerned, interaction with teachers, the generation of less theoretical contents in new interactive personalised formats and many other facets are incipient aspects where the VET system will take great strides in terms of genuine development towards 5.0 training.

TOURISM AND TRADE SECTOR

Technologies have changed the way in which we travel, and new features promise to make the experience even more exciting and interactive. We are observing improvements in processes, the service, relations with users, and the creation of new business models. The utilisation of technologies such as the IoT, services based on location or virtual and augmented reality can enhance the tourism offer and make it more attractive, efficient, inclusive, economic and sustainable. Mobile devices are the central feature of transformation of tourism to improve user experience, such as planning all the stages of a trip, through bookings, early hotel check-ins, chatbots to request information, or enjoying a virtual experience ahead of a visit to a museum or a cultural point of interest. Data also furnish more knowledge of users and can draw their attention through personalised marketing campaigns, and packages and destinations tailored to their preferences.

Another revolution is ongoing in trade. If the use of e-mail is one of the sector's huge challenges, this is now being joined by the digitalisation of physical space in order to create a hybrid format alongside digital space. Proximity outlets are increasingly emerging with minimal interaction with people, where technology identifies customers when they arrive, recognises their shopping habits, anticipates or facilitates them, and charges them with no interaction at all. The increasing popularity of this kind of process, including electronic means of payment, increases the quantity of data generated, pointing to the need for cybersecurity, in order to protect both consumers and businesses.

SMART TERRITORIES AND CITIES

Technology will also transform the way in which we live with each other and relate to each other, configuring smart cities in the format of urban structures that use the technologies available to guarantee the welfare of people with maximum respect for their surroundings, attaining a point of equilibrium based on sustainability. In this sense, sensorisation will also help connect our city's physical world to the digital world. The possibilities are endless - cities that are more sustainable in terms of energy, safer and more comfortable cities.

Smart cities create a fine opportunity for the implementation of solutions for urban services enhanced by intensive use of technology and innovation. These coordinated technologies can design solutions related, for example, to forecasts of road conditions, people capacity and their expected behaviour in transport systems, buildings and public spaces, tax fraud, waste management, public lighting or tourism management.

SOCIETY

The deployment of information and communication technologies and their adoption by society have had an radical impact on the human condition in that they have changed our relationships with ourselves, with others, and also with the world. Technologies such as the Internet of Things or the Internet of Everything will radically change the way we live and relate to our surroundings, because we will be interacting on a smart basis with anything.

The digital transition is transforming the reference frameworks established in a range of areas, creating new work formats and criteria. Global security and stability are increasingly reliant on digital security and stability, and hacking, fraud and massive data threats were among the five main global risks listed by the World Economic Forum.

It is obvious that digital technologies are rapidly transforming society, and also creating some unprecedented in-depth challenges. In this regard, for example, the COVID-19 pandemic demonstrated the major digital gap and the value of digitalisation and connectivity to maintain the personal, social and professional lives of all people and of economic life, ushering in a debate on the need for a renewal of the social contract which considers digitalisation as a common, public or collective asset which helps reduce territorial, social, gender, entrepreneurial gaps, among others.

There can be no doubt that one of the mainstays of this scenario of transition towards a digitalised society will be training. The role of VET in the preparation of people and the development of society is indisputable, to guarantee not only the availability of an offer of capacitated human capital, but also to reduce the risk of unemployment within the population, in view of forecasts which estimate that 65% of students, currently in primary education, will end up working in sectors and activities that have not yet been identified. These sectors and activities will undoubtedly be associated with the implementation of disruptive technologies, helping to increase demand and competence for digital talent.

It is most important to take account of the potential human risk involved in implementation of the transitions, in view of the possible disappearance of and changes to occupations, even though new opportunities will arise with the emergence of new sectors and new jobs.

History has taught us that when a change of “era” occurs, this leads to a rupture calling for a number of in-depth transformations as a departure from all that has been experienced and known up to that point. Transformations that must activate our ability to react and adapt to unknown situations. Development of the fourth industrial revolution and the rapid evolution of technology and digitalisation are changing the world, society, and also people’s lives.

Large new opportunities are emerging for the world to function much better. We are at the outset of something very different, and we must be ready to take advantage of everything the future has in store for us. The confluence of a number of disruptive technologies and their interrelation must make us ready to work with the deepest sense of the unimaginable.

We must reflect, establish strategies, draw up plans and apply schemes that will help us comprehend the challenges we will be facing as human beings. We need to develop the capacity to anticipate while looking to the future, defining, for example, which lifestyles will be propitiated by the advance of technology, what the cities of the future will be like, or how work will be transformed.

We must understand the changes that will take place, seeking to stay ahead of them and understand what is going to happen and how it is going to happen, to help us make preparations for the transformations that will be essential, in such a way as to find the necessary balance between people and technology, and reducing the impact of the transformations as far as possible.

We do not know the limits we may reach, and there are no historical references to give us an idea of the reality we may eventually experience with the progress and support of technology. However, it may be perceived that we will be able to turn anything we can think of with our imagination into reality.

We are already living in a networked society, and thanks to the development of technology we can develop the necessary capacity for resilience to enable us to address any potential adverse scenarios in the future.

TECHNOLOGIES WITH A GREATER IMPACT

*Artificial Intelligence
and Cognitive
Intelligence*

*Augmented reality,
virtual reality and
mixed reality*

*5G
networks*

*Digital
Twin*

*The Internet of Things,
the Internet of
Everything and the
Internet of Senses*



5G NETWORKS

The digital transformation requires high-performing connectivity infrastructures, with large bandwidths and very short response latencies.

5G technology can connect millions of different devices using ultra-rapid connectivity, which will enable us to connect to everything around us by means of the Internet of Everything (IoE). Its high speed, its capacity for simultaneity in the numbers of people and devices connected, its large bandwidth and low latency guarantee almost instantaneous response times.

This speed in terms of response and data transfer will allow Industry 5.0 to move forward, bring about rapid development of medicine and health 4.0, development towards smart cities and a new kind of access to education, training, culture and leisure, inter alia.

ARTIFICIAL INTELLIGENCE AND COGNITIVE INTELLIGENCE

Artificial Intelligence will help us manage a huge amount of information in a very short space of time. Therefore, by availing ourselves of this Artificial Intelligence and Big Data, which will store large volumes of information, we can do some very different things, much better and much faster, across an extensive range of fields.

This intelligence will be one of the main technologies used in various areas of our production sectors. The European Commission has classified the various technologies using artificial intelligence.

They are as follows:

- Recommendation and personalisation engines
- Autonomous machines
- Automation of processes and optimisation of processes
- Prediction
- Visual diagnosis
- Analysis of emotions and behaviour
- Natural language processing
- Creative and experimental activities
- Fraud detection and risk analysis

The progress made in the development and utilisation of artificial intelligence creates the need for us to address the future automation of tasks carried out by people. But also to study how human capacities can be enhanced. In other words, to promote collaboration between technologies and people, in such a way that they complement each other and can undertake the task in a different way. It is a matter of combining the knowledge and capacities of human beings, with a particular focus on their personal and transversal skills such as intuition, emotion, the collaborative spirit, perseverance, curiosity, initiative, commitment, imagination, creativity, empathy, or the capacity to improvise, among others, with the advantages of artificial intelligence, such as speed and the processing of enormous volumes of data, among others.

Cognitive Intelligence will drive a fifth phase which will be implicit in development of the Fourth Industrial Revolution and will eventually move us to a new context, which will form the basis for development of the Fifth Industrial Revolution. Artificial Intelligence is in place to answer any question, and Cognitive Intelligence will not only answer any questions that may be put to it, but will also be able to ask itself questions and answer them. This intelligence conducts analyses in a similar manner to human beings of the various interactions and portions of information which in turn assist Artificial Intelligence. By means of the knowledge it will acquire, the solutions and the information to which it may gain access through the network, it will take autonomous decisions to resolve any needs that may arise.

Artificial Intelligence and Cognitive Intelligence, by way of support for human intelligence, will require extremely well qualified people, and constitute a high-level bolster for the development of humanity. Professional profiles will be transformed, and the capacities, skills and dexterity of people will be transformed along with them.

But these kinds of intelligence also entail some major risks. It is therefore vital to prioritise ethics as a basis for the exponential advance of the technology we will be able to use in our lives.

Ethics based on the values of human beings as a guarantee of a sustainable future, with a regulatory basis that clearly establishes the limits that must be attained by the virtual development of these kinds of technologies and smartnesses applied to life, with respect for people's rights in all cases.

AUGMENTED REALITY, VIRTUAL REALITY AND MIXED REALITY

These technologies are fusing real and digital, and in only a few years they will transform our way of life, our work, and our access to learning and leisure. The connection between the real world (what we see) and the digital world (what we superimpose) will bring about a complete fusion, to create an extraordinary universe of possibilities in the human environment. These technologies, however, will also be used in the production network.

The 4.0 and 5.0 environments will avail themselves of these technologies to simulate and train different production processes and different services.

THE INTERNET OF THINGS, THE INTERNET OF EVERYTHING AND THE INTERNET OF SENSES

We are experiencing a digital transformation in all key aspects of life. We are moving into a search for more efficient, sustainable and environment-friendly networks, operating at higher speeds and shorter latencies. Large numbers of sensors inserted in our lives can capture data, such as smart watches, activity measurement devices and mobile phones, among others.

The Internet of Things means all physical-device systems which receive and transmit data through wireless networks with minimum intervention by people, thanks to the integration of computerised devices in all sorts of objects. It connects everyday physical objects to Internet. For example, common household items such as lighting systems, electrical appliances, music systems and smart clothing and personal accessories, medical devices, and also the systems used in smart cities.

This technology will therefore cater for all manufacturing sectors and society in general.

Moreover, in the case of the industrial sector, utilisation of the Internet of Things applied to industry is moving forward very quickly indeed. It is used in a number of processes which entail a complete transformation of production activities, far beyond automation of production and assembly plants.

The same is true of the Internet of Robotic Things. This is a concept contemplating smart devices that control objects in the physical world, move through it, use intelligence and gather multiple data from various sensors. In other words, the Internet of Things and robotics communicate with each other by receiving information from their own environment through a context of smartness, which in turn carries out different physical actions.

The Internet of Everything is a technology that combines physical devices and data flows through Internet. It takes us into a new world in which everything will be connected to everything, through various networks and sensors, with a permanent connection to Internet and the cloud.

Another incipient disruptive technology would be the Internet of Senses. This technology will make the line between thinking and doing gradually disappear. It will be increasingly difficult to distinguish between reality and fiction. We are moving towards a cognitive world, in which the union of humanity, the physical and the digital will be a fact. Our sensorial organs will control our entire environment. The Internet of Senses will be able to answer our thoughts and even share them with others. Keyboards, mice and remote controls will disappear. People will think the orders they wish to transmit and these will be carried out, as the technology will control what they hear and what others hear from them - they may, for example, make calls to any location in the world and have a simultaneous conversation in another language in the same tone of voice as the people having the conversation.

People will also be able to have immersive experiences with digital aromas, or they will be able to digitally feel anything they wish to touch.

DIGITAL TWIN

There are many interpretations of what a digital twin is, but obviously one of the most plausible is that which considers it a virtual representation which simulates both the mechanical and physical operating conditions of an industrial process. From this perspective, a digital twin can programme the operations of the components of the process and rapidly adjust the behaviour of the machinery, thereby making the final

physical facility more efficient. The application of artificial intelligence techniques to digital twins such as reinforced learning facilitates the programming of system components and secures a high level of optimisation.

A digital twin is a digital representation of an object, process or physical service: from a jet engine or wind farms to buildings or entire cities. These virtual replicas are used to carry out simulations before changes are made and implemented in the real objects, in order to compile data to predict how they will function.

They will also be used in training processes to instruct people through virtual reality in the usage of various technologies applied in different sectors.

These simulations are generated in due consideration of issues such as engineering, physics, chemistry, statistics, automatic learning, artificial intelligence, business logic or objectives. These models may be displayed as 3D representations and modelling of augmented reality, virtual reality and mixed or fused reality.

In this way VET students may acquire the capacities necessary to use various components before they actually use them in the real world.

A digital twin creates a simulation model which may be updated along with the physical real model, or instead of it. This enables businesses to assess a fully computerised development cycle, from design to implementation and even dismantling.

The table below provides a summary of other technologies which are expected to generate a greater impact:

CYBERSECURITY

Cybersecurity is composed of measures and schemes associated with the protection of digital systems, devices, programmes and data on attacks, damage or unauthorised access. The propagation and development of the digitalisation of production activity, particularly the exponential increase in devices connected to the web, make it necessary to focus on digital security, by improving protective tools and instruments. We are now observing a proliferation of different kinds of attacks: from the sequestration of data affecting all kinds of organisations, to attacks on supply chains for sensitive goods, and attacks targeting critical infrastructures. The situation is increasingly complicated in relation to cybersecurity, and the deployment of trends such as the “Internet of Things” (IoT) or the “Internet of

Everything” (IoE) merely exacerbates the urgent strict need to develop and work in the field of cybersecurity, from both the industrial and informatic perspectives. For these reasons it is essential to study the techniques of attacks and learn about necessary defence systems, in order to activate countermeasures to deploy work environments that are as secure as possible.

NEXT-GENERATION COMPUTING

Next-generation computing includes trends such as high-performance computing (HPC), quantum computing, bioinspired computing or neuromorphic computing. Thanks to these technologies, the limits of what can be done with a computer are increasingly being pushed back. The direct consequence of these new capacities is that it will now be possible to address a number of solutions to problems which previously could not be addressed.

Talking about the next generation of computing means talking about hypercomputing. A huge computing revolution is in the offing, in which quantum computing will be the main feature, as the next revolution in terms of large-scale high-speed data processing, thanks to its ability to carry out a multitude of operations simultaneously across an extensive range of areas.

Next-generation computing is going to take computing to levels never before imagined, and also bring in a new generation of machines. A substantial transformational impact is also expected in many organisations, which will even lead them to question the basis aspects of their activity.

CLOUD AND EDGE COMPUTING AND COMMUNICATIONS

Although we are now observing the deployment of 5G technology, there are already signs of some initial movements in relation to the development of 6G connectivity. These communications standards are key factors in the implementations of the “Internet of Things” (IoT) or the “Internet of Everything” (IoE). Moreover, Edge Computing and Cloud Computing act as complements to each other to boost performance, speed and secure data storage and analysis, depending on the specific needs of each application.

Cloud computing is a technology providing remote access, from any location in the world at any time, to software, storage of files and/or data processing via Internet, with no need to connect to a personal computer or a local server. It uses connectivity and Internet to store and permit access to all kinds of resources, programmes and information, and allows users to gain access to them from any computer, tablet or mobile phone.

Edge computing is the processing, analysis and storage of data in closer proximity to the source, for faster analyses and responses, almost in real time.

The increased use of edge devices, ranging between Internet of Things (IoT) devices, such as smart cameras, medical sensors, industrial computers, advanced warehouse management, manufacturing chains, robotics enhanced with artificial vision and traffic control systems in smart cities, among others, and IT infrastructures and gateways, seeking faster information that can be run almost in real time at the data source, is leading to an almost exponential increase in the volume of data generated and gathered, which it must be possible to manage efficiently, rapidly and securely.

ROBOTISATION

Robotisation is developing on a continuous basis, providing a response across a range of sectors. Industrial robotics in large-scale manufacturing, assistential robotics to help people, and collaborative robotics, specially designed to physically interact with human beings in collaborative tasks, are taking rapid strides.

Industry 4.0 combines new production and operating techniques with smart technologies, and this has a direct impact on a company's daily activities. Two key features of Industry 4.0 are industrial robotics and automation. These chiefly deal with repetitive or hazardous tasks, carrying out their movements on an industrial production or manufacturing line.

Assistential robotics helps carers at hospitals, rehab centres and residences, and people with reduced mobility in their homes, to enable them to carry out their day-to-day tasks independently.

Cobots, created to work alongside human beings on a production line, are a good example of collaborative robots. The enhanced characteristics of these collaborative robots are extending their scope. Not only have their reach capacity and their general ability to handle heavier loads been increased, but they are now also faster, which makes them very useful in a large number of applications. They can also interact with each other, thereby optimising production and taking people away from repetitive and hazardous tasks.

Autonomous robots are an increasingly common industrial feature, and the number of applications for robot swarms in the environmental and agricultural sectors is rising. Concepts such as RaaS (Robot-as-a-Service) or robot compilers set out to democratise the implementation and usage of these kinds of device.

DATA MANAGEMENT AND PROCESSING. BIG DATA

Big Data is a concept which refers to the storage of large volumes of data, the great variety of which makes it very difficult to gain access to them and process them using traditional methods. Data must be compliant with the 5Vs: Volume, velocity, variety, veracity and value.

Big Data are extremely useful, both for businesses and also for improving people's standards of living. In fact, they help understand problems, find solutions for them and even predict what might happen in the future, in several alternative scenarios, in the knowledge that what is important is not the quantity of data that can be accessed, but knowing what can be done with them.

This is all therefore summarised in a number of benefits such as making better decisions based on real-time data, shortening timelines, providing personalised services and finding areas of opportunity, among other aspects.

BLOCKCHAIN TECHNOLOGY

Blockchain is composed of a number of technologies for keeping a secure, decentralised, synchronised and distributed registry of digital operations, with no need for any third-party intermediaries. Blockchain technology therefore registers, stores and protects information from any kind of digital operation, and acts as a shared database that is updated on a continuous basis.

Countless innovative applications are supported by blockchain technology. One example is applications to track the origins of materials, products and even contents on line, boosting the capacity of users and businesses to authenticate assets and information.

One extension of this application in the learning sector is digital accreditations of training, making them non-expiring and impossible to forge.

3D PRINTING OR ADDITIVE MANUFACTURING

3D printing is additive manufacturing technology, whereby a three-dimensional object is created by building up successive layers of material. This technology makes it possible to manufacture custom-made products adapted to the needs of each user, with an increasingly larger variety of materials.

3D printing or additive manufacturing is evolving on a continuous basis. It has now gone beyond the creation of parts using simple polymers, and has extended the range of materials that can be used with metals and ceramics, among others. This technology is also used in 3D Bioprinting, which combines biotechnology, the creation of biomaterials and 3D printing. These printers create biological structures from materials known as bioinks, which are produced from stem cells. Using a layer-addition system, bioprinting can produce biological materials such as skin and tissue, and it can even construct organs.

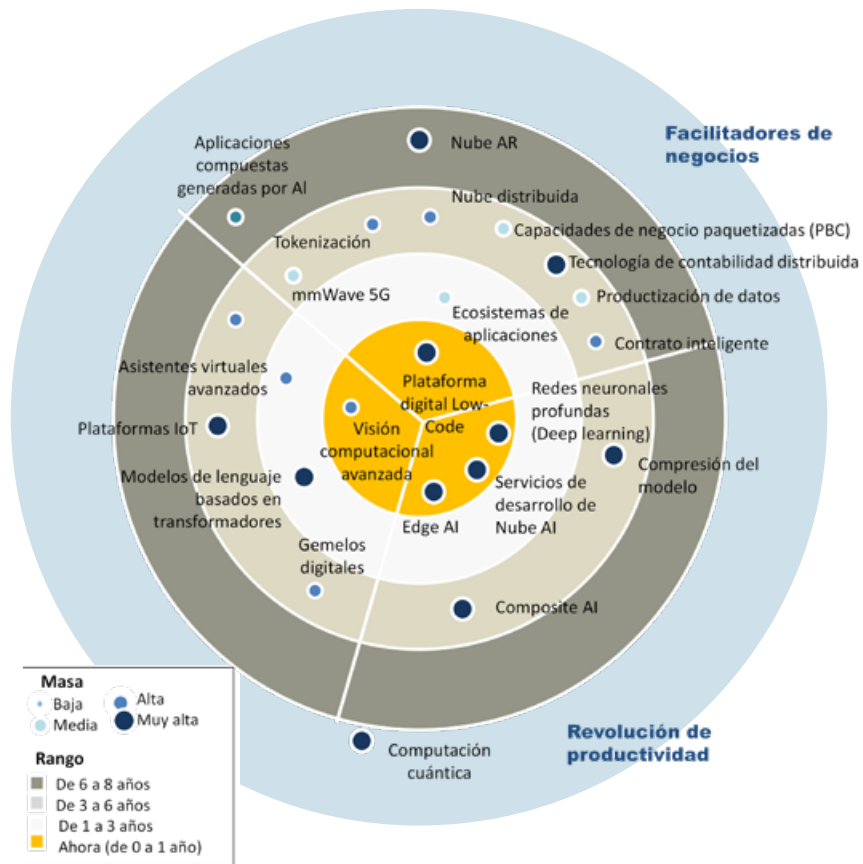
Other new technologies are emerging which can circumvent traditional geometric limitations, finish quality and manufacturing speeds, with the consequent impact not only on prototyping processes, but also on production processes. This technology is used across a wide range of sectors such as industrial design, the automotive sector, the aerospace sector, jewellery, construction, medicine, the textile industry, education and engineering, among others.

WEB 3.0

With version 1.0 of the web, we could only read information on web pages. It was followed by the current version, web 2.0, which is an interactive social version, in which users interact and use a number of services to share contents, where all data will be connected and will be understood in both the contextual and conceptual sense.

Web 3.0 is a network in which machines will process information and contents in a similar way to humans, and all data will be connected. It is presented as an online ecosystem based on blockchain technology, in which decentralised versions of the services used nowadays will redefine the use and meaning of Internet. The final objective of Web 3.0 is to create webs that are more smart, connected and open.

EMERGING TECHNOLOGIES AND TRENDS IMPACT RADAR, GARTNER 2021



Source: Gartner 2021.

In short,

the **technological-digital transition is an unstoppable transversal phenomenon** which affects all sectors and areas of society. **VET will play an essential role as an agent of change and adaptation**, assisting and training people to adapt to the transformation.

Training must be provided in new skills in order to respond to the needs of businesses and society, and this must be done quickly on a flexible basis. To this end, the Basque VET must remain at the forefront of technology and consolidate its immersion in smart environments, using 5.0 solutions to enable students to experiment in cutting-edge technology environments.

Likewise, VET must develop its systems, spaces and structures, moving in on the opportunities furnished by technology and focusing on a smart centre model that will deploy collaborative projects and integrate polyvalent teams, boosting innovation and the know-how of people as their chief value, in a fully digital environment.

ENERGY-CLIMATE TRANSITION

The energy-climate transition revolves around current concerns with climate change and the environmental and social problems caused by the generalisation of a production and transport model based on fossil fuels. The drawbacks to this model, such as air pollution, excessive use of energy, effects on health or saturation of communication routes, have led to the collective desire to find alternatives to help mitigate these effects and bring about a future carbon-neutral economy.

There is increasing awareness of the need for a systemic change to enable us to move towards other production and consumption models based on efficient, sustainable use of resources, technology and biological processes, in keeping with the guidelines laid down by the UN's Sustainable Development Goals or the Paris Agreement on climate change.

Once more we are talking about an in-depth transformation which must be the driver of sustainable economic growth, and which will definitely have a significant impact on businesses and on people, and will generate new opportunities and jobs. Some estimates point out that up to 120,000 jobs in relation to the energy-environment transition will be created in the State by the year 2030. A new reality that will demand other capacities and skills for which Vocational Education and Training must make preparations.

The common environmental goals can only be achieved by adding new technologies and rethinking production processes with respect to environmental impacts.

In Euskadi the energy-climate transition is a top transversal priority, addressed from the perspective of opportunity. An opportunity by means of a just transition, so that no one will be left behind. Euskadi is undertaking the challenge of becoming an industrial and technological model for the generation of clean energies, and wishes to encourage clean, sustainable transport, energy efficiency policies, the circular economy, the bioeconomy and also a more sustainable agriculture and fishing model, as part of the fight against climate change.

This means placing the strengths of the Basque Science, Technology and Innovation Network and, of course, of VET at the disposal of the green transition. In particular, action taken on the food system, the mobility system and the energy system will have a significant impact on the environment and greenhouse gas emissions.

The Basque VET will also play an essential role in the energy-climate transition. Work must be stepped up in new sectors or areas of opportunity related to sustainability, such as the bioeconomy, sustainable construction, the circular economy, the agriculture and food industry, the natural or marine environment, or biomaterials.

The green transition must begin with a design that takes account of the life cycle of the materials used, the addition of sustainable materials, greater energy efficiency and comprehensive accessible smart refurbishment, and if this is to happen proper professional profiles must be deployed, and strategic environments generated in these areas.

**ONCE MORE WE ARE TALKING ABOUT
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WHICH MUST BE THE DRIVER OF
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SOCIAL-HEALTHCARE TRANSITION

The social/healthcare transition seeks to bolster a human, inclusive development model to focus on people and guarantee equal opportunities. It is related to the achievement of a cohesive society involved in developing the previous transitions. It is a transition towards a society with a culture and values, which has addressed intergenerational challenges, and has encouraged and made use of diversity in all its aspects.

Technology will also be an essential lever to assist with the demographic and social transition. The concept of “society 5.0”, which emerged in Japan in 2018, is based on the idea of using technology to build a better country and a better world, and ensure that no one is left behind. It means putting people and society at the centre of ongoing technological transformations, in such a way that technology also helps furnish a response to the main problems and challenges facing society and its welfare.

Population ageing, especially in the western world, is an issue that has a global effect on an almost immediate future. Falling birth rates, clashing with the ageing of populations, are transforming the worldwide demography.

According to the European Commission’s “Report of the impact of demographic change”, the ageing of Europe’s population will generate a significant impact on people’s daily lives and on our societies, in areas such as economic growth, fiscal sustainability, health and long-term care, or welfare and social cohesion. Moreover, the impact of the pandemic on the elderly has revealed some of the challenges to healthcare and social assistance posed by ageing populations. Ageing, however, also ushers in new opportunities to create jobs, boost social equality and drive prosperity, in senior economies and care economies, for instance.

The social-healthcare transition will also require a strengthening of the so-called foundational economy, i.e. the essential activities of human beings, such as health, food, education or care for people. The COVID-19 pandemic revealed the importance of these sectors for people’s standards of living, and also their potential in generating economic activity.

The social-healthcare transition also represents a challenge and an opportunity for the Basque VET. In addition to stepping up the research applied in personalised healthcare and precision medicine, VET must be prioritised and used to develop Basque industry, offering skills adapted to the needs of the entire industrial fabric, of people and of society. This reality also affects the perspective of replenishment of labour for the job

market. Over the next three decades, the active population must increase by almost 400,000 people. In this context, immigration will help to partially mitigate the need for labour.

Bearing in mind global employment trends, immigration in the majority of developed countries will not be so much an option as a necessity, to solve the possible shortage of workers, and prevent the shortage from interfering with opportunities for development in those countries.

As set out in the Agreement drawn up concerning the Basque demographic strategy at a Plenary Session of the Basque Parliament on 18 May 2022, Vocational Education and Training will play a major role in this aspect of drawing in people from other regions, to this end identifying the needs of our job market and the most urgent gaps in relation to the professional profiles required.

Another challenge is also posed in positioning VET centres with professional families related to the social-healthcare sector and with innovation capacities and technology in the personalised healthcare ecosystem.

**POPULATION AGEING,
ESPECIALLY IN THE WESTERN
WORLD, IS AN ISSUE THAT HAS A
GLOBAL EFFECT ON AN ALMOST
IMMEDIATE FUTURE.**

2.4. THE JOBS OF THE FUTURE AND THEIR IMPACT ON VOCATIONAL EDUCATION AND TRAINING

One of the most salient consequences of the technological revolution we are experiencing is its impact on work and employment. Advances in artificial intelligence and robotics will lead to the disappearance and transformation of many jobs, especially repetitive jobs and jobs with a lower added value. Simultaneously, new tasks, new professional profiles and new jobs will emerge which we are not even capable of imagining today.

According to the World Economic Forum's "The Future of Jobs Report 2020^{*1}", by 2025, 85 million jobs may be displaced by a shift in the division of labour between humans and machines', but at the same time the future economy carried along by technology could create 97 million new jobs. The report also states that 30% of all tasks are now being carried out by machines, and the other 70% by people. This equilibrium, however, will change drastically between 2025 and 2030 to a combination of 50% for human beings and technological devices.

It is true that robotics will generate a disruptive transformation of the job market and the person-machine relationship model. The division of work among human beings, machines and algorithms is rapidly changing. Even the tasks still carried out en masse by human beings at the present time (communication, interaction, coordination, management and advisory) will eventually be taken over by artificial intelligence.

We know that artificial intelligence has tremendous potential to make us more productive, but a human-centred approach must be adopted for that to happen. Every time a robot, an expert artificial intelligence system or an automatic device replaces a person in a certain process, a new scenario of relations between technology and human beings arises, in which people's talent will become even more important.

The successful people will be those with the ability to ask questions or those with non-digitalisable skills, because machines are very good at answering questions, but not so good at asking them. It follows that, if we are increasingly more capable of questioning the machines more, they will answer us in a more useful manner.

Businesses wishing to take the plunge into digitalisation have no option but to train their employees in new skills, in combination with technology. The idea is that people will be able to collaborate with the machines to do better things.

^{*1} The Future of Jobs Report. World Economic Forum 2020

Because in the future practically all businesses will hire similar technologies, and the difference will lie in the people working with them.

Companies with a clear understanding of this vision will increasingly seek people who master transversal skills. They will single out the capacity for communication, ethics and creativity, the capacity to work as part of a team or empathy, among others, as the key skills of the jobs of the future.

The aforementioned World Economic Forum report also refers to the skills and competences that will be necessary in the future. It says that 40% of workers will require reskilling to satisfy the demands of future job markets. The report also predicts that the skills most in demand in 2025 will chiefly be classified into four types: problem-solving, self-management, working with people, and development and use of technology.

TOP 10 SKILLS 2025

Tipos de skills

- RP** *Resolución de problemas*
- AG** *Autogestión*
- HS** *Habilidades sociales*
- T** *Uso y desarrollo de la tecnología*

- RP** Pensamiento analítico e innovación
- AG** Aprendizaje activo
- RP** Resolución de problemas complejos
- RP** Pensamiento crítico
- RP** Creatividad, originalidad e iniciativa
- HS** Liderazgo e influencia social
- T** Utilización, monitorización y control de la tecnología
- T** Diseño y programación tecnológica
- AG** Resiliencia, tolerancia al estrés y flexibilidad
- RP** Razonamiento, resolución de problemas e ideación

The Basque VET has been working for many years on the development of transversal skills among students. The future means stepping up this perspective even more, and to this end work is already under way on the concept of the talented professional, adding in new skills such as flexible planning, the ability to integrate in robotised environments, resilience, planning in uncertain scenarios, stress management or cognitive flexibility, among others.

It has been calculated that half the professions in which children now at school will work have not yet been created. Properly managed, this could be an enormous opportunity. Creative and intuitive thought, for example, will create value in what has been called the “imagination economy”: fashion designers for 3D printing, organ designers, designers of virtual experiences, augmented-reality architects etc. Some major opportunities will also emerge in the field of genic therapy and neuroengineering, among others.

Vocational Education and Training faces an enormous challenge: making people ready so that they will be able to adapt in an agile manner to the new needs emerging in businesses and in society. **Demand for new basic, personal, technical and transversal skills is rising on the disruptive scenario we are heading towards**, and VET must meet the needs of the people in the education system and also those who are working or are unemployed.

The emphasis on equality between men and women must not be forsaken. **We face an uncertain future, which is nevertheless a future brimming over with possibilities, in which everyone must develop their full potential.** This new VET, which is now beginning to appear at our centres, must encourage equality and concentrate on the inclusion of vulnerable people, in all sectors addressed by VET, irrespective of their gender.

We face an uncertain future, which is nevertheless a future brimming over with possibilities, in which everyone must develop their full potential.

A FUTURE BASED ON THE HUMAN BEING. TOWARDS A HUMANIST LEADERSHIP IN VOCATIONAL EDUCATION AND TRAINING

In 2016 we began work on the Basque VET's Values 4.0 training project in order to train VET students in Euskadi in Values, with a view to supplying the professional employees sought by businesses and Basque society. The training is based on a reflection of personal responsibility in realising the importance of values as qualities that make us human beings and help us build a better society.

Values 4.0 make it possible for VET students to look and think in a different way, and work in 3 different dimensions to this end: the environmental dimension, the dimension of values and the social dimension. They also help understand the importance of responsible, sustainable performance by professional employees and businesses.

In high-performance training, students learn to contemplate, identify and acquire values 4.0, but we must now go one step further. To continue to move forward it is necessary to acquire capacities for leadership, a humanist integrating leadership to continue towards the transformational goal we have set out since the beginning of the project. The issue here is training to take action and to put values into practice in such a way that they may become daily habits, training for what ought to be, and training to anticipate and build the future we want.

The training is based on a reflection of personal responsibility in realising the importance of values as qualities that make us human beings and help us build a better society for one and all. Training must be boosted with an in-depth humanist vision in order to address the future.

This chiefly concerns two aspects: Firstly, to make the person and comprehensive development of the person a primary goal of training. Secondly, in order to achieve this, to provide training which also concerns itself with fostering human values alongside the development of technology, balancing and complementing technology and humanity.

We can present humanist training as an essential component, not based solely on professional, transversal and strategic skills, but also as a balanced aspect alongside the existential skills geared towards genuine human development.

Humanist leadership calls for training in deep respect for human dignity, acknowledging others as equals, moulding not only professionals, but also citizens who are able to participate in society and help create a better future for everyone.

In order to achieve this objective, a start must be made along the path through Vocational Education and Training, with a constant focus on the best possible preparation of professional people.

Our Basque VET seeks to be the first system to create and lead this change to contribute value to our students, to future professional employees, to our businesses and to society. Our goal is to bring about a balance of training in technical skills, along with, and on the same level as, training in human skills, and thus moving towards a humanist VET, as a model for Vocational Education and Training in the 21st century.

It is important to point out that this is a vision of training focusing on the future, albeit based on and rooted in essential aspects we might consider invariable, in order to avoid any conceptions that may have to be frequently revised, or even improvised to help us adapt to the incessant technological and social revolution.

Training in humanist leadership is an effective tool to lead true progress which, quite apart from technological advance, must seek justice, equality and respect for the dignity of human beings in all corners of the world.

It is necessary to train in order to anticipate the future in a changing world. Training for change means training people who are aware that change also depends on them, and that they have the right and the responsibility to make an active contribution to generating positive impacts on society, in due consideration of the interests and benefits of one and all. Only if people gradually acquire a mindset in keeping with the enactment of daily values will they be ready to undertake that which we cannot calculate, predict, or perhaps even imagine.

The main goal is to train humanist leaders across the Basque VET community, starting with management teams and teachers. Leaders who in turn will train other leaders, VET students, so that they are able to direct and lead their own development, realise themselves by means of their vocation, help transform reality and play a role in society as citizens and aware, responsible professionals. All this should be done towards the objective of making human beings the protagonists of a different and better society, with a strong sense of ethics and inclusion.

**TRAINING IN HUMANIST LEADERSHIP
IS AN EFFECTIVE TOOL TO LEAD TRUE
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TRAINING OF HIGHLY QUALIFIED TALENT

WE ARE DEFINING WHICH TASKS ARE GOING TO BE TRANSFORMED, WHICH TASKS ARE GOING TO DISAPPEAR, AND WHICH NEW TASKS ARE GOING TO EMERGE.

One of the consequences that will have greater repercussions with respect to development of the Fourth Industrial Revolution is the direct impact on employment. Automation, robotics, artificial intelligence and smart systems will revolutionise work methods in all sectors forming part of our production network. **We are defining which tasks are going to be transformed, which tasks are going to disappear, and which new tasks are going to emerge.** We must therefore discuss the tasks replaced, the tasks complemented, occupations modified, and new jobs.

This evolution of employment will eventually affect all our production sectors. Moreover, along with the digital transformation, technological development of artificial intelligence and smart systems, hitherto unknown sectors will emerge. They will all need qualified people. We are glimpsing a future with multiple job opportunities in environments unlike today's, either because of transformation or because they have been newly created. That is why it is vital for us to know how we ought to train people to cope with these changes and move into jobs with the right qualifications.

THE EMPLOYMENT OF THE FUTURE WILL REQUIRE A MUCH MORE COMPLEX PROFESSIONALISM.

The employment of the future will require a much more complex professionalism. This is why we are transforming our VET system, introducing high-performance training to enable VET students to adapt, and in many cases keep ahead of the new needs of our production network. But it is no longer sufficient to achieve a good level of skills. The professionalism that will be necessary calls for a transformation of professional competence in terms of personal and professional talent.

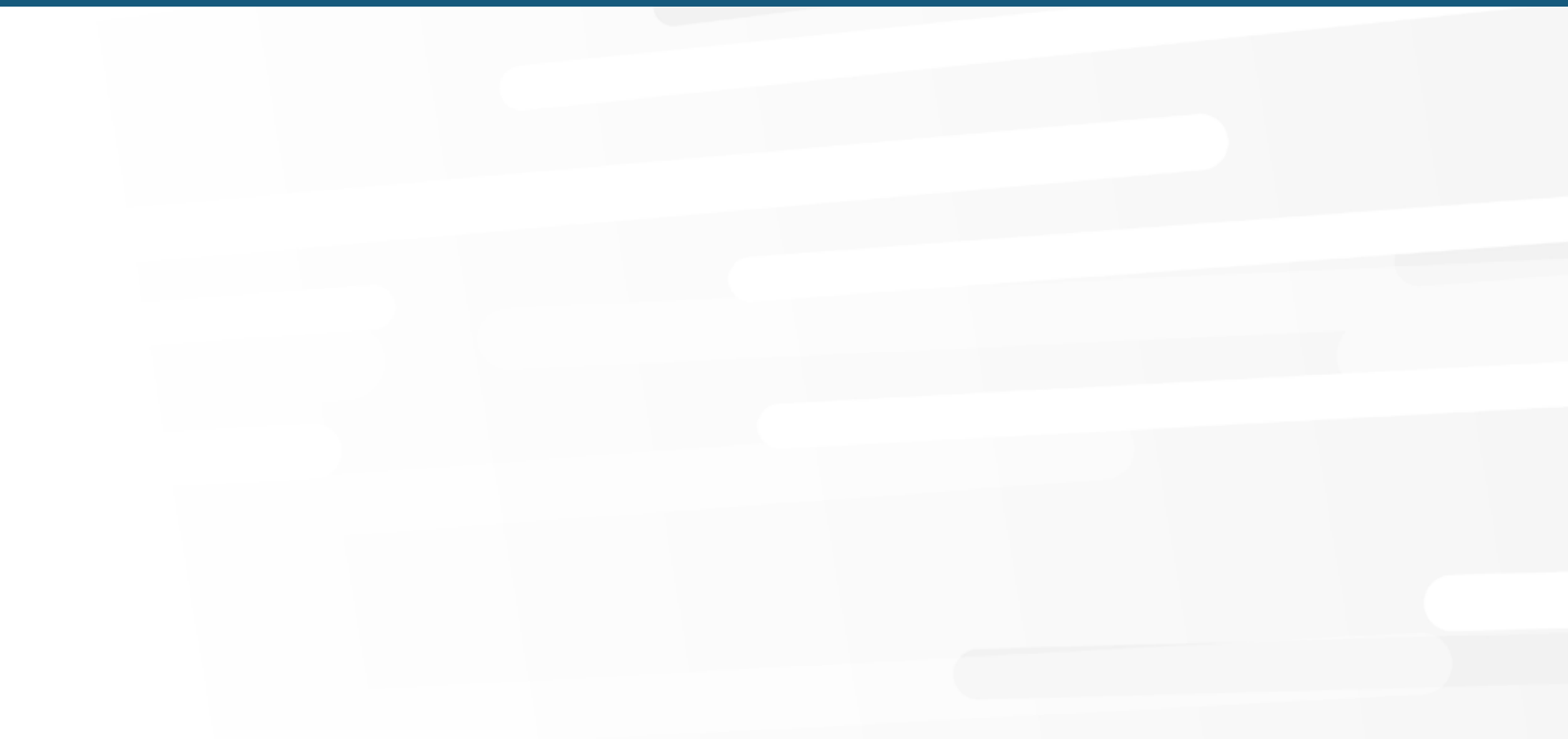
Well-qualified people who are also good professionals, acquiring five essential components in their learning process: a cultural component, a scientific component, a technological component, a professional component and a personal component. Culture, scientific knowledge, using different technologies, being good professionals and acquiring personal values that enable them to cope in new smart digital environments, underscoring the importance of human beings in this future, in a bid to bring about sustainable human development which, assisted by technology, will move towards a different world brimming with opportunities.

For that more complex professionalism and to acquire the necessary talent, we must therefore establish new learning itineraries to raise people's level of knowledge and capacities, their skills and dexterity, attitudes and aptitudes. Six factors which will increasingly be demanded by Basque businesses.

One of the most important itineraries to bring about these six factors is the connection between Higher VET and University Degree Courses. A relationship between two different levels of education which, if combined, can develop and obtain the training necessary to produce a guaranteed response to the new needs of people and businesses, defining new professional profiles with greater complexity and high qualifications.









03

**Mission, dimensions,
principles and objectives
of the Plan**

3.1. MISSION AND PRIORITY DIMENSIONS

VET is now one of the best instruments at our disposal to address present and future changes. However, as we have observed above, we have arrived at a time of disruption, complexity and uncertainty which compels us to rethink the entire system and design, plan and implement a new model, even more ambitious and transformational than the previous models. To carry through a VET process focusing on the future, but based on and rooted in the essential components and strengths of the system, already acquired in the present.

The Basque VET is aware of the need for transformation to provide a response for the challenges posed by a complex, uncertain future. It will require a future vision which differs from what we know now, with different goals and objectives, prioritising collaborative open work, smart systems, human vision and sustainability.

In this transformation process, centres must come centre stage as the kingpin of the system. Centres must drive the change inwards, transforming their internal management models and structures, and also outwards, transforming the way in which they carry out their activities. We need smart centres deploying technology, sustainability and change management, amid other natural factors, and we need them to do this rapidly.

It is also essential for teachers, advisers and administration and services staff to enhance their training in technological/digital skills and their ability to adapt to transformations in society and in the job market.



MISSION OF THE PLAN:

*Moving towards **sustainable inclusive human development**, boosting people's talent through the incorporation of **advanced learning models**, responding to the challenges arising from **a new production environment, more technological, digital and smart**, consolidating the Basque VET as an agent of transformation and innovation, helping people improve their employability, and helping Basque businesses to make themselves more competitive, never losing sight of the fact that no one can be left behind, **encouraging sustainable development and moving it forward**, in keeping with the Agenda Basque Country 2030.*



DIMENSIONS OF THE PLAN:

The Basque VET is moving through a stimulating but demanding period, which must heighten its capacity to adapt and anticipate. The challenges imposed by the digital era are real, and an effective understanding of them is important to ensure that all people can benefit from the opportunities furnished by the digital transformation and smart systems.

In this regard, this 6th Basque Vocational Education and Training Plan sets out to drive four essential dimensions:

1 _____
A DIMENSION FOCUSING ON PEOPLE, on their training needs, boosting the capacitation of professional people and the capacitation of people on VET programmes, moving forward towards a new concept of talent to this end.

2 _____
A TECHNOLOGICAL DIMENSION, providing state-of-the-art infrastructures and equipment to enhance training processes to cater for needs in terms of preparation, equality and equal opportunities in learning through technology.

3 _____
A DIMENSION GEARED TOWARDS SAVING THE PLANET, moving towards a green transition through sustainable development.

4 _____
A DIMENSION COVERING THE ENTIRE SYSTEM, transforming Vocational Education and Training in its entirety, making it ready to undertake the challenges posed by digital transformation and the rapid advance of the 4th Industrial Revolution.

3.2. PRINCIPLES INSPIRING THE PLAN

PRINCIPLE ONE

Towards a new ERA of humanity

We are moving towards a new scenario of a world that is automated (robotics) and cognitive (artificial intelligence), with immediate access to data (5G, 6G), in which everything will be connected to everything (IoE). This entails a new transformation, with a larger scope than the fourth industrial revolution, in which human beings must be the main protagonist and not simply watching whatever happens, moving towards what is being called society 5.0. Vocational Education and Training is preparing to join this society 5.0, shaping itself as a more human, innovative, technological, smart, futurist VET.

PRINCIPLE TWO

Bringing the future to the present

*We are moving towards a new society 5.0. A smart society arising from comprehensive development of the fourth industrial revolution, **in which cyberspace and the physical world will merge through technology.** A technology that must be used to create a social infrastructure that highlights society itself, and secures better social welfare that can be enjoyed by one and all.*

*To do this, **we must promote VET for life**, establishing various goals to respond to the needs of people, providing them with the necessary qualifications to enable them to undertake an active comfortable life, regardless of age and sex.*

**PRINCIPLE
THREE**

**The principle of
reality. Creating
possibilities**

*All people have different expectations of life. To implement these expectations, we need to **create environments that generate curiosity and transmit motivation.***

In a world in transformation that bows to new values and priorities, we must open up new possibilities through disruptive strategies. Undertaking disruption as an opportunity that will enable us to overcome the challenges of the future, capacitating people for an uncertain, complex transformation. Because it is important to move on from perception to facts, making us capable of building the difference and co-creating a single sustainable value to guarantee that no one is left behind

**PRINCIPLE
FOUR**

**Strategic
innovation as
a driver of the
future**

Any change or transformation to be carried out to take on the challenges of the future requires strategic innovation as an essential basis for its implementation.

*Technology, knowledge and collaboration are **three of the essential aspects to implement this innovation**, which will be the basis to move towards smart environments.*

PRINCIPLE FIVE

Disruptive transformation through applied smartness

A disruptive world calls for disruptive strategies, essential to imagine a different and better world. We are immersed in a transformation powered by smart systems, connected and capable of autonomous decision-making. Its immense technological content is accompanied by in-depth changes in economics, in people's jobs, in professions, in production processes and in services.

Working on the concept of competitive intelligence and innovation routines will enable us to adapt to changes and keep ahead of them, taking decisions based on facts, bolstering our capacity to react, anticipate and disrupt. That is why a smart VET system is going to be implemented, to provide a response to new goals, to use new methods and establish new organisational models, developing the intelligence applied throughout the VET system.

PRINCIPLE SIX

Improving the lives of people by boosting social cohesion

The Basque VET wants to boost its role as a transformer and regenerator of society, contributing to the move towards a model of sustainable, human, inclusive development, focusing on people as human beings with rights and obligations, and guaranteeing equal opportunities

**PRINCIPLE
SEVEN**

**Boosting
collaborative
networks as value
creators**

Work on collaborative networks will continue to be a priority in Vocational Education and Training. Only through collaborative work will we succeed in effectively implementing our learning model and meet the needs of the Basque production system, fostering permanent collaboration among VET centres, and between these centres and businesses.

**PRINCIPLE
EIGHT**

**Helping to
respond to
challenges
relating to
the problems
of climate
change, global
warming and
environmental
pollution**

We must transform VET to direct it towards an economy that is efficient in its utilisation of resources, where the objective is to guarantee zero greenhouse gas emissions by the year 2050, and economic growth in harmony with sustainable use of the resources.

That is why it is essential to add new knowledge for the purposes of achieving the Sustainable Development Goals.

3.3. GENERAL OBJECTIVES OF THE PLAN

- 1 Implementing a new transformation of the Basque VET System with a revamped, advanced, disruptive model, to meet the challenges posed by the advance and development of the Fourth Industrial Revolution.**
- 2 Boosting the skills of those studying Vocational Education and Training** so that they can attain high qualifications and become the talented professionals our production network needs.
- 3 Encouraging gender equality among the students** moving into the various professional families in VET.
- 4 Encouraging and extending the digital transformation** throughout the VET system.
- 5 Boosting the collaborative networks of VET centres,** establishing smart network hubs.
- 6 Boosting collaboration among VET centres and businesses, facilitating networking,** development of flexible training, encouragement of applied innovation and smartness, and progress towards the digital transformation.

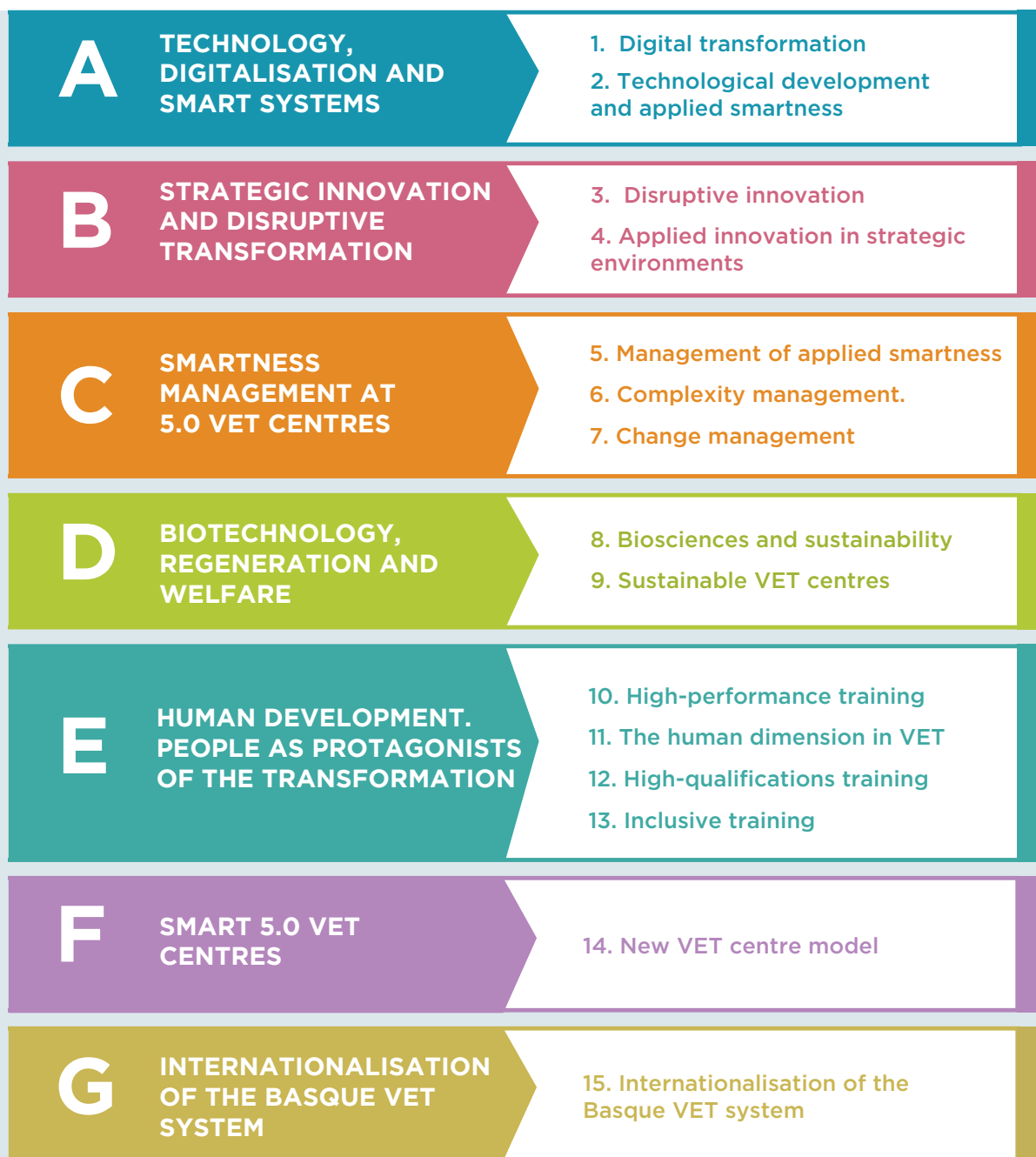
- 7 Facilitating the adaptation and modernisation of infrastructures,** and the organisation of VET centres, to enable them to become 5.0 smart organisations, be agile and guarantee the necessary capacities to react, anticipate and disrupt.
- 8 Encouraging the responsible use of digital technologies** to prevent any possible gaps in order to boost social cohesion.
- 9 Driving sustainable development** in keeping with the Agenda Basque Country 2030.
- 10 Guaranteeing inclusive VET,** in keeping with the needs of people, to help them obtain the necessary professional qualifications for their personal and professional development.
- 11 Establishing and implementing the necessary professional qualifications and skills to enable people** to respond to the triple transition discussed in this plan: the technological-digital transition, the energy-climate transition, and the social/health transition.

3.4. STRATEGIC APPROACHES AND INTERVENTION AREAS

We have defined 7 strategic orientational approaches, with 15 action areas

7 strategic orientational APPROACHES

15 intervention AREAS



A TECHNOLOGY, DIGITALISATION AND SMART SYSTEMS

Technology is the Plan's first strategic approach, and accounts for two intervention areas.

INTERVENTION AREA 1:

Digital transformation

Digitalisation generates major opportunities and challenges for Vocational Education and Training systems, since VET is inherently experiential in that it involves learning based on practical experience.

Moving towards the 4th industrial revolution requires a digital transformation, which must be accompanied by proper preparation of people and transformation of organisations. To do this, it is necessary to have teaching staff and learning environments relying on digital technologies as essential tools to improve people's qualifications, applied innovation and output in production sectors. Vocational Education and Training must ensure that teaching staff are properly supported and committed to digital technologies as tools for the different learning processes.

Digitalisation in the context of Vocational Education and Training is conceived with the main objective of facilitating the development of new pedagogical approaches, to develop the skills of teachers and students in the digital era, and their adaptation to rapid changes in the job market. Through the use of digital technologies and the creation of new organisational and learning environments, the Basque VET system will be ready to take on the challenges of training demanded by business, people and society as a whole.

The development of VET centres is also conceived in terms of forward-looking organisations. Smart organisations launching collaborative projects and creating polyvalent teams, boosting innovation, smartness and know-how in people as the main value, in a digital environment.

Effective deployment of digital technologies to build a flexible top-quality VET system means establishing and launching a number of initiatives in a systemic fashion. Therefore we have set out 6 work lines below in coherence with those stipulated in the Basque Education System Digital Transformation Plan in relation to VET.

This intervention area includes 6 lines of action:

1.1. Establishment of the digital transformation strategy for the Basque VET system.

- » Identify the status of digitalisation in Vocational Education and Training in the Basque Country.
- » Narrow the digital gap.
- » Define a shared vision of the digitalisation strategy in Vocational Education and Training in Euskadi.
- » Undertake digital transformation of processes.
- » Identify the digital tools necessary in a smart organisation:
 - Communication
 - Interactive technologies, immersive technologies and learning accelerators
 - Big Data. The data culture
 - Cybersecurity
 - Internet of Things, Internet of Machines, Internet of Everything
 - Artificial intelligence and data analytics
 - Blockchain application
 - Infrastructures, advanced training and backup for teaching staff
- » Define and design sustainable digital organisations.
- » Emphasise the concept of digital drivers.
- » Launch digital knowledge networks.

1.2. Implementation of a sustainable digital maturity model

- » Design and identify the characteristics of the model in the Basque sustainable digital maturity VET.
- » Determine the level of digitalisation at centres depending on the maturity model.
- » Identify the basic and advanced digital skills and competences to drive digital transformation in the VET system.

1.3. Launch and develop the digitalisation strategy implemented by VET centres in Euskadi, boosting the capacitation of teachers in digital skills and their adaptation to various transformations

- » Implement the strategy to deploy the adoption of digital technologies applied to training, encouraging their use in practice at VET centres.
- » Give priority to teacher training so that they can become digital experts.
- » Communicate and train teaching staff so that they understand the scope, implications and opportunities of the changes in store.
- » Provide teaching staff with the proper digital and material tools so that they can be the central figure in their own learning processes.
- » Launch collaboration among VET centres, creating networks for digital training innovation and knowledge networks.

1.4. Consolidation of the digital media Observatory

- » Carry out technology oversight, using artificial intelligence, among other technologies, to drive the digital transformation.
- » Develop the capacity for reaction and anticipation by means of digital tools

1.5. Reinforcement of the necessary infrastructures to meet needs in relation to connectivity, platforms and equipment.

- » Establish the necessary procedure to install infrastructures to support the various platforms operated at VET centres.
- » Establish the necessary communication channels for effective and efficient management of the data generated in the VET system, in the centres and also in the VET Subdepartment's technical advisory bodies.
- » Deploy a cloud solution to provide VET centres with cloud resources to work with applications, programmes and other tools.

- » Identify, define and implement the necessary training in various digital environments.
- » Implement desktop virtualisation technologies to guarantee access to high-performance software solutions and equipment, from any location.
- » Establish the platform to provide support for VET centres for learning processes.
- » Guarantee access to a range of technologies and devices, in order to ensure that all students have the necessary tools to access the digital media furnished by the centres.
- » Implement a solution for the simultaneous posting of notifications (Digital Signage) for direct distribution and exposure of the notifications at all VET centres

1.6. Research into disruptive technologies applied to Vocational Education and Training.

- » Implement the technologies that will make it possible for Vocational Education and Training to be carried on across a range of smart environments.
- » Investigate the possibilities offered, from the point of view of training, by interactive digital technologies applied in distributed collaborative spaces.
- » Investigate the possibilities offered, from the point of view of training, by immersive environments, featuring technologies such as virtual reality, augmented reality or fused reality, creating environments to work on multisensorial interaction.
- » Carry out tests on the usage of haptic feedback interfaces, in order to include the sense of touch in the utilisation of immersive environments.
- » Continue research into technologies in relation to interface-brain-computer, applied to cerebral activity in digital commands.
- » Explore the interaction opportunities furnished by the use of holograms and avatars.
- » Investigate the possibilities offered, from the point of view of teaching, by learning accelerators such as simulators and digital twins, and gamification or ludification techniques and solutions.
- » Implement telepresence rooms for multiuser videoconferences, in an environment that guarantees quality communication and simplifies organisational administration.
- » Design and apply conversational digital presence solutions (“Beyond Videoconference”) for virtual distance attendance of meetings, enabling instantaneous interaction with those at the meeting.

INTERVENTION AREA 2:

Technological development and applied smartness

In recent years we have worked in line with the RIS3 Euskadi and PCTI 2020 Plan strategies and other schemes for VET policies. We now have a revision of these strategic documents, with a focus on the year 2030 and showing significant progress with a view to adopting the production model associated with a 4.0 economic and production network and industry 5.0.

In a scenario of transformation and technological disruption such as that we are now experiencing, Basque Vocational Education and Training intends to follow technological cutting edge and consolidate its immersion in smart environments. To this end we will deploy 5.0 solutions to apprise students of the details of their implementation and development, and to enable them to experiment state-of-the-art environments as users. In this task we will work with multiple technologies that will be developed across a range of specialisations, such as the Internet of Machines - Internet of Everything, communications and cloud systems, smart systems, industrial cybersecurity and additive manufacturing.

We are also moving towards smart learning networks, based on technology and artificial intelligence and vision to guide the student's learning process. Thanks to these technologies we can issue recommendations and guide students, adapting the resources available to their individual needs, thereby personalising the learning process. All this entails sensorisation of the learning environment, and gathering and analysing the information. This is the basis for an analysis of patterns of behaviour in the learning process and the output obtained. We are observing a disruptive scenario which we must explore to find the best alternative applicable, with the certainty that ethics and the rights of people must be a priority for technological progress.

We are not forsaking opportunities for generating smart environments in the primary and services sectors. In the primary sector, in agriculture, for example, for some time now it has been possible to control environmental conditions by applying various technologies. Now we must take advantage of the potential of precision agriculture, which features some of the technological solutions that have been developed in other sectors such as, for example, drones with multispectral devices and sensor equipment applied to plant production and supervision of the health and physiology of crops. In the services sector, the challenge lies in using the opportunities furnished by technology and transforming the way in which people interact, in sectors as important as trade and tourism, among others.

Simultaneously, we will continue to identify and develop areas of specialisation in line with the RIS 3 Euskadi 2030 strategy:

- **IN THE AREA OF ADVANCED MANUFACTURING**, we intend to elaborate on the development of various 3D printing alternatives, where additive metal manufacturing is on the up and up, along with new advanced materials, digitalisation techniques and optimisation of designs. Healthcare applications are also of great interest in this area.
- **IN THE AREA OF SMART SYSTEMS**, artificial intelligence applications will create a before-and-after in the user experience at VET centres. Smart learning platforms will lead to an improvement in the services offered, enhancing monitoring processes and offering greater customisation to meet the needs of VET students. Higher quality is expected in the production environment with Machine Learning, improving and optimising production processes.
- **IN RELATION TO CYBERSECURITY**, we must lay the emphasis on teacher and student training in order to guarantee any knowledge that may be necessary. In industrial environments using what are known as Operational Technologies, when the problem of an Internet connection to devices that have not been designed to be cybersecure has been taken on board, a dual challenge is posed from the point of view of SMEs and the VET system. In relation to SMEs, there are insufficient proper profiles to give them what they need. Vocational Education and Training, meanwhile, will have to make an effort to train teachers teaching areas relating to networks and security, in order to reach industrial cybersecurity environments also. VET must also assist SMEs and Mini SMEs with their digital transformation and security.
- **IN THE AREA OF AUTONOMOUS ROBOTICS**, a clear effort is ongoing to simplify methods to build, programme and interact with robots. Machine learning, collaborative robotics or the use of exoskeletons transform work methods in many sectors. The focus on VET students in this environment is guaranteed, because they will definitely be involved in updates of communication infrastructures, robot programming and configuration, integration and maintenance. For these reasons we consider areas of specialisation to develop the knowledge required by VET teachers and students in relation to autonomous, collaborative, assistential robotics.

- » **TURNING TO CONNECTIVITY**, communications and the cloud environment, the emergence of 5th generation mobile networks and new wireless transmission standards such as WiFi6 throw up a scenario in which it will be possible to achieve higher speeds, shorter delays and service for an almost unlimited number of devices. This opens the door to new applications and services hitherto unthinkable. But all this will not be possible if there is no guarantee of the knowledge necessary to gain access to the infrastructures to support it (servers, networks, storage etc.). This is where Cloud Computing and Edge Computing come in.

This intervention area includes 9 lines of action:

2.1 Immersion of VET in smart environments / 4.0 and 5.0 environments.

- » Deploy 4.0 and 5.0 solutions geared towards development for smart industry, in order to apprise students of the details of their implementation, and to enable them to experiment state-of-the-art environments as users. This entails using a range of technologies, including IoM, communications and the cloud, smart systems and/or industrial cybersecurity, among others.
- » Move towards smart learning systems to which technologies are added to guide students' learning process, applying ethical principles and protecting their rights in all cases.
- » Explore opportunities for generating smart environments in the primary and services sectors.

2.2 Technological launch of advanced manufacturing-3D printing at VET centres.

- » Select and implement advanced additive manufacturing solutions, based on various technologies in order to satisfy a number of needs in relation to materials and/or finishes.
- » Select and implement scanning solutions in order to work on digitalisation processes associated with design, topological optimisation and segmentation.
- » Boost collaboration with healthcare research centres in order to move forward in areas such as biomodel printing, among others.

- » Provide the network of VET centres with professional additive printing solutions to boost their ability to cater for the needs of the business sector and assist with the implementation of possible collaboration scenarios, guaranteeing the highest possible levels of quality.

2.3 Technological launch of smart systems and applications of artificial intelligence in Vocational Education and Training.

- » Apply artificial intelligence solutions to learning platforms, making use of the ethical principles required and protecting the rights of students, in order to:
 - Monitor students' activities by means of smart agents and chatbots.
 - Improve VET services on the basis of the conclusions of data analysis.
 - Provide feedback and support for users and students with respect to academic and administrative processes.
- » Apply Machine Learning related to Automatic Learning of the system, in processes featuring data analysis, monitoring and decision-making in real time.
- » Apply artificial intelligence APIs (Application Programming Interfaces) to management processes.
- » Analyse the applicability of artificial intelligence APIs in various areas of VET.

2.4 Technological launch of cybersecurity in ICT environments and industrial environments.

- » Encourage training schemes to raise the level of technical development of digital security for teachers and students.
- » Design and deploy cybersecurity labs (Cyber Ranges) to recreate the real-life conditions of IT environments (Information Technologies: networks and computers) and of OT environments (Operational Technologies: industrial communications), in order to study proper configuration and vulnerabilities, carrying out controlled attacks and deploying countermeasures.

- » Application of artificial intelligence solutions to analyse systems and detect and table solutions for complex situations.

2.5 Technological launch of autonomous robotics in VET.

- » Knowledge of a range of industrial, collaborative and assistential robotics platforms.
- » Configure and programme different types of robots.
- » Carry out developments on open platforms and systems to examine the details of assembly of different types of robots.
- » Acquire knowledge to address the maintenance of autonomous robots.
- » Seek opportunities for collaboration with other specialist areas (smart systems, IoM, industrial cybersecurity etc.).

2.6 Technological launch of communications and the cloud in VET

- » Deploy private 5G networks.
- » Implement and monitor WiFi6 communication networks.
- » Work with the hybrid cloud (critical local data and hiring services in the cloud).
- » Automation of development processes in the cloud.
- » Manage containers in the cloud.
- » Test alternative cloud infrastructures and create a catalogue of services.

2.7 Adoption of technologies and extension of prototypes.

- » Adoption of technologies and extension of prototypes, addressing the adaptations necessary for VET centres to have the spaces they need to make use of the new hi-tech equipment.
- » Implementation of solutions for simultaneous posting of digital notifications in a unified manner.
- » Apply blockchain to the process of certification of training activity (issuance of diplomas, recognition of skills units etc.).
- » Implement authentication solutions to guarantee secure anonymous participation in decision-making in faculties, social councils, departmental meetings etc.
- » Implement interactive and immersive technologies to be used as learning accelerators (Virtual Reality, Augmented Reality, Mixed Reality, simulators, digital twins, among others).
- » Implementation of spaces to generate digital contents (audio, video, Virtual Reality, Augmented Reality etc.).
- » Creation of spaces to develop capacities related to cybersecurity (Cyber Ranges).
- » Implementation of smart systems in learning spaces.
- » Artificial intelligence spaces.

2.8 Sustainability and the Circular Economy in the automotive sector.

- » Make the hi-tech associated with electric cars, the hydrogen battery and others accessible, through a range of projects.
- » Didactify commercial vehicles with the latest on-board technology in order to provide them for the centres.
- » Promote the circular economy in the area of advanced sustainable repair, transferring knowledge to teaching staff and SMEs on new technical and environmental processes.
- » Furnish documentation and procedures for repairability and second-life stationary applications for traction batteries (High Voltage) in hybrid, electric and hydrogen cars.

2.9 Digital and smart mobility.

- » Analyse and document the cutting-edge communication systems and technologies used in autonomous and connected cars.
- » Digitalise and update diagnosis equipment at Automotive VET centres in order to analyse, update and programme the control systems of state-of-the-art cars, using the official car makes' web platforms.
- » Use immersive technologies and virtual and augmented reality in training and technical distance assistance.
- » Analyse and provide the centres with 3D model libraries to work on virtualised cars.

B

STRATEGIC INNOVATION AND DISRUPTIVE TRANSFORMATION

The changes that will be emerging, mainly due to the evolution of technology and the development of digitalisation, establish the need to focus on various schemes to prepare people, VET centres and businesses so that they have the capacity to respond to new situations across a range of different environments. These changes entail the need to deploy different transformations, many of which are disruptive, because for many of them there will be no past references to serve as a guide to draw up solutions for the future.

In a social and economic context in which things change at great speed, a smart organisation must seek to make anticipation and flexibility the hallmarks that enable the organisation to undertake a serious commitment to the challenges and developments of continuous innovation, a driving force capable of carrying out the necessary transformations to undertake new development in unknown emerging areas, which all form part of a new context of applied smartness.

Strategic innovation constitutes a guaranteed response to uncertainty, boosts employability, by training people for a more complex professionalism, deploys strength and aspirations, generates a culture of change and creates an atmosphere of confidence for a better future.

We are talking about an open concept of innovation, strategic innovation which is consubstantial with an open project based on transformation, which involves change and is incompatible with the short-term culture of refraining to take on challenges and believing that the passage of time will solve everything. Strategic innovation is based on values making up a new work culture, which is one of the main advantages for the future. Innovation based on cooperation, which is a powerful force creating an incalculable value to make progress in terms of improvement and of producing a job well done.

When everything changes we have to rely on two basic aspects: ethical principles and constant learning. Values and training are concepts that are consubstantial with strategic innovation. This innovation based on values arises from the convergence of three basic factors: technology, knowledge and cooperation. Three factors which must provide the necessary scope to work, in many cases, on the development of disruptive transformations.

Technology constitutes one of the driving forces of the innovation model. In particular, Digital Technologies and Smart Systems. Knowledge is another driving force. Knowledge is based on three basic components: information, training and communication. It is related to talent and creativity.

Lastly, cooperation is the third driver of strategic innovation. It is an internal feature of VET centres, whereas outside the centres it acts as a guarantee of an open project under development, capable of generating cooperation networks throughout the VET system.

This innovation model, which must be an open model, must include the basic factor of dynamism, which is time. If we want innovation to be strategic, this calls for continuous movement. This is how time to innovate becomes speed of innovation and rapid response to any transformations, many of them disruptive, that may arise. Making new features a habit, learning and applying effective methods with properly defined methodologies and measuring the results, because this cannot be an improvisation exercise, is the basis which ensures we can take on the future with a guarantee of success.

Innovation needs every one of us, those who are the same and those who are different. The urgent necessity to respond to the rapid advance and development of the fourth industrial revolution is cooperation to innovate on all levels. The values which generate culture on the basis of the innovation model are the main medium-term and long-term advantage, in a complex future offering considerable opportunities.

This approach contains 2 intervention areas:

INTERVENTION AREA 3:

Disruptive innovation

Disruptive innovation is essential in all areas, and also in Vocational Education and Training. We must permanently question what we are doing and where we are going and be able to make use of technologies and new focuses to transform our activity proactively, and radically on occasion, and not allowing others and/or events to do this for us.

We intend to carry through strategic disruptive innovation, based on “innovating innovation” by means of technology, knowledge and cooperation, in other words deploying a strategy which goes beyond that which we had been considering to date, with a special focus on issues such as:

- Seeking a more disruptive and transformational profile for projects, preferably implementing those with the largest dimensions and the greatest transformational capacity, which seek to find a respond to major questions or problems.

- Moving on from the concept of a project to the concept of a “project platform” (projects which complement each other in relation to a single central objective).
- Seeking a radical orientation to the creation of value for recipients (students, teaching staff, centre, businesses, society etc.), by addressing problems relevant to them, developing the management of projects with more speed and agility, active monitoring, collaborative structures to accelerate learning, support and continuous transfer.
- Putting the focus on transfer and exploitation of disruptive innovation projects.
- Intensive application of technology and bringing in all potential talent in the Basque VET system.
- Working in collaborative networks at all times

The idea is to systematically apply a disruptive focus to all activities and levels (projects, centres, VET system), proactively seeking transformational innovation to resolve major problems and/or take up opportunities with a high potential for generating value for students, teaching staff, the centres, the VET system, businesses and society.

This intervention area includes 3 lines of action:

3.1 Development of innovative talent

- » Development of innovative talent among teachers, boosting their role as “innovation agents”
- » Development of innovative talent among students, through the launch of an expert specialisation programme in advanced innovation management.

3.2 Launch of disruptive innovation at VET centres

- o Take on disruptive innovation projects at VET centres (“innovating innovation”).
- o Launch a project to devise an advanced management methodology for disruptive innovation projects, based on the following principles:
 - Work on the sidelines, to identify real problems.
 - Questioning the status quo (“conspiring” against what we now believe to be good).
 - Generate a portfolio of disrupting and disruptive projects.

- Configure qualified, agile, multidisciplinary, open teams.
- Apply technology to everything.
- Create communities for learning and practical experience.
- Deploy an open networks culture.

3.3 Boost to transfer and dissemination of knowledge concerning innovation.

- » Boost transfer of innovation (advisory-training services) to other educational phases and/or VET systems.
- » Boost transfer of disruptive innovation to businesses, giving priority to SMEs and Mini SMEs.
- » Launch a project to disseminate knowledge concerning innovation by drawing up various kinds of publications (guides, models, protocols, manuals etc.) and carrying out other communication activities targeting society in general and the VET environment.

INTERVENTION AREA 4:

Applied innovation in strategic environments

The Basque VET Research and Applied Innovation System, which is fully ongoing, is a world VET reference. In this new Plan, Vocational Education and Training must act as a transformational lever helping to accelerate the triple transition defined in the Science, Technology and Innovation Plan (PCTI) Euskadi 2030: technological-digital transition, energy-climate transition and social/healthcare transition, based on 4 essential concepts (scientific excellence, industrial technology leadership, open innovation and talent).

The constant transformation of our production fabric thanks to disruptive technologies makes the implementation of strategic initiatives and projects a vital component of the Basque VET. Updating the priorities of Vocational Education and Training and bringing them into line with the Basque innovation strategy are essential to create wealth and welfare, leading to the creation of specialised strategic environments.

To do this we have to enhance existing network hubs by adding new strategic sectors, and refocus and reinforce applied innovation projects and areas of specialisation. It is time to deploy vigilance in new sectors, to drive the activity of the network hubs in order to bring VET centre stage in the target sectors and broaden the focus to help detect opportunities for collaboration with the interactive agents.

One of the major strengths of the VET research and applied innovation system is that the centres structure work in collaborative networks, to meet the needs of the production environment and people's employability requirements. To make this strength effective, it is necessary to maximise transfer of the knowledge generated by VET teachers to the production fabric, piloting solutions with students alongside businesses.

Using the programme for strategic environments (TKgune), we wish to continue to provide backup for small and medium-sized enterprises to enable them to push applied innovation in manufacturing products and processes, improving their competitiveness and building systems around them to create and apply knowledge. The knowledge acquired will improve the qualifications of VET students, because one of the priority objectives is for them to familiarise themselves with and implement any innovation arising in the various sectors making up the Basque production fabric. To do this, it is essential to support SMEs in digital and technological transformation, establishing priorities, undertaking technological innovation projects for manufacturing products and processes, facilitating the development of talent and helping to create specific strategic environments.

The need to continue to encourage entrepreneurship as a lever of social and economic transformation in the Autonomous Community of the Basque Country makes it essential

to search for new sources that will generate wealth and employment, preferably in the strategic sectors of the future, as the basis of the Basque Country's future competitiveness and sustainability.

Finally, VET also aims to encourage and help implement a system to manage innovation at businesses, an assistance project which contains innovation diagnoses, establishes follow-up routines, impact analyses and an assessment of the value added, by measuring applied innovation capacity.

This area defines 4 lines of priority action:

4.1. Promotion of technological innovation at SMEs (TKGune)

- » Launch applied innovation projects with SMEs and Mini SMEs across a range of strategic environments to encourage and boost the technological transition in terms of digital, energy and advanced services, primarily in the digitalisation, robotics, biosciences and health sectors.
- » Launch digital transformation and applied innovation projects at SMEs, creating a network of "innovation agents" to enable them to implement and head up a system to manage applied innovation in businesses.
- » Consolidate strategic environments through the TKGune Network and establish processes for transfer of knowledge and experiences, increasing the number of participants in applied innovation projects.
- » Disseminate and boost collaboration with a number of clusters, technology centres, employers' associations and institutions, making VET centres key players in the implementation of applied innovation projects, chiefly with SMEs and Mini SMEs.
- » Help design projects to boost competitiveness, through training and applied innovation of SMEs, alongside the Subdepartment of Industry, the Subdepartment of Technology, Innovation and Digital Transformation, SPRI, Provincial Councils and other institutions.
- » Incorporate VET in programmes that permit advanced management or traceability of processes between SMEs and driver enterprises through the digitalisation of production flows.
- » Transfer the knowledge extracted from projects carried out in the VET centre network, launching applied innovation projects with SMEs in these areas, and draw up the strategic lines, boosting the collaboration networks.

4.2. Use VET to generate and spearhead schemes to encourage entrepreneurial culture and initiative.

- » Boost personal entrepreneurship through a culture of enterprise to enable VET students to become entrepreneurs in their own lives.
- » Establish the procedure necessary to support the entrepreneurship platforms operated at the centres.
- » Boost entrepreneurship with a scientific-technological base, drawing up programmes to raise student awareness of disruptive technologies as the basis for future business models.
- » Launch schemes focusing on social, emotional and humanist entrepreneurship, with a view to creating green employment and sustainable economic growth.
- » Help generate businesses through the results of disruptive innovation projects. The Basque Vocational Education and Training system's start-up lab.
- » Create platforms for "digital entrepreneurship", creating an entrepreneurship ecosystem, encouraging co-working spaces among teaching staff, students and the agents driving entrepreneurship (institutions, businesses etc.).
- » Create entrepreneurship areas at VET centres, carrying out activities to encourage entrepreneurship and intraentrepreneurship and enrich students' culture of enterprise.
- » Boost entrepreneurship among teaching staff to generate new projects.
- » Design and implement programmes to assist with generational change, administering processes drawn up alongside the institutions and associations.

4.3. Reinforcement and improvement of exploitation of results in the Basque VET Research and Applied Innovation System

- » Boost mechanisms to publicise the results of specialist lines and applied innovation projects. Web platform for internal use by centres.
- » **Reinforce and improve the transfer of knowledge from the specialist lines, by means of:**
 - Single training platform to enable teaching staff to gain access to all courses available at any time.

- Adaptation of training available to teaching staff to facilitate its implementation in classes.
 - Secure a commitment by teaching staff to disseminate the training received among students and related businesses.
 - Secure a commitment by centres to add the new knowledge acquired to the catalogue of courses for the unemployed and those in employment.
- » Help identify transversal transfer opportunities

4.4. Effectiveness of supervision hubs

- » Create supervision hubs in different sectors to help us stay ahead of future needs.
- » Encourage dialogue with players in the strategic environments.
- » Extend the activity of the hubs to new areas of interest
- » Detect collaboration opportunities at the Supervision Hubs



SMARTNESS MANAGEMENT AT 5.0 VET CENTRES

We are moving towards an automated, cognitive world with immediate access to data, in which everything will be connected to everything. The future will be a continuous movement which requires dynamic systems to respond to changing environments, using complex technologies. The VET centres will play an essential role in all this,

By encouraging applied smartness we are vastly improving quality, enabling the VET centres to respond to the challenges posed by the future with the necessary effectiveness, with the obligation to transform their management model to this end.

The transformations that are taking place, primarily due to the advance of the fourth industrial revolution and implementation of the digital transformation, are taking us towards an increasingly complex world. A complexity which ushers in new possibilities and brings us to face some very different and motivational perspectives. The scope of what is possible is being exponentially broadened, leading VET centres to a major challenge. The ability to understand, analyse, take action and extract the implicit value of a complex environment. Digital technologies, smart systems, artificial intelligence and immediate access to a large amount of data available through Big Data open up a huge world of possibilities for VET and its centres.

They can address the challenges that will be posed in the future by means of a range of possibilities, and most especially in new smart environments. Intelligence is becoming something that is tangible and manageable. An essential capacity of VET centres that can be deployed as a new advanced system to manage them. We are approaching a new era of transformation, innovation and progress at VET centres in the years ahead, through smartness management.

A transformation based on smartness will prepare Vocational Education and Training to comprehend and make use of complexity as an essential source of value. VET centres will be able to take action and find solutions with greater efficiency, agility, effectiveness and accuracy, creating a differential value in what they do with in-depth knowledge of the present and of the future.

By encouraging applied smartness we are vastly improving quality, enabling the VET centres to respond to the challenges posed by the future with the necessary effectiveness, with the obligation to transform their management model to this end.

Smartness Management chiefly comprises three essential aspects: Management of Applied Smartness, Complexity Management and Change Management.

This approach contains 3 intervention areas:

INTERVENTION AREA 5:

Management of applied smartness

Management of smartness means making use of all existing information and knowledge inside and outside the Basque VET system, with a view to making the best decisions. VET centres will work in the new 4.0 and 5.0 environments, deploying a major digital transformation. They will work with cutting-edge technologies, smart systems and artificial intelligence applied to training and the systems, organised in different areas of knowledge. Training will be high-performance in order to reinforce the main objective of their work: sustainable human development.

The Basque Country's VET centres will become smart 5.0 centres. To this end they must identify the components that will form part of their normal operations, and must have defined clear strategies and transform them, in such a way that Smartness Management can define and identify the parameters of their strategy, to enable them to address challenges and changes in the present and in the future in an effective manner.

This intervention area includes 3 lines of action:

5.1 Establishment of a management model to carry out a transformation towards applied smartness, by way of a benchmark for all VET centres.

- » Create applied smartness areas at VET centres
- » Establish 4.0 and 5.0 environment collaboration networks in all sectors to which the Basque VET responds.
- » Work on an organisational structure which manages the implementation, start-up and development of advanced digital technologies, smart systems, artificial intelligence and digital security.
- » Implement the integral scorecard for smart VET centres.
- » Collaborate with and support SMEs and Mini SMEs in the implementation of management of applied smartness in their organisations.

5.2 Development of the culture of data and analytic talent in the Basque Vocational Education and Training system.

- » Create Big Data for the Basque Vocational Education and Training system.
- » Development of the culture of data and analytic talent among teaching staff and students.
- » Create data analytics learning communities.

5.3 Establishment of smartness management based on humanist leadership.

- » Boost humanist leadership in a management system which must furnish a respond to new smart environments, where the main objective is sustainable human development, assisted by smart technologies.

INTERVENTION AREA 6:

Complexity management

Complexity management includes management of strategy, management of expectations, management of sustainability and operational management.

This intervention area includes 4 lines of action:

6.1 Establishment of a Strategy Management system to enable VET centres to respond rapidly and effectively to the various challenges arising at any given time.

- » Establish a transformational strategy to help VET centres encourage various orientations in the short and medium term, boosting their ability to react and anticipate.

- » Establish systems to capture the relevant information needed, by means of Big Data in the Basque VET system itself or from other sources, for the purposes of analysis, storage, preservation and distribution, to enable decisions to be taken subsequently at the VET centres.
- » Deploy Digital Knowledge Networks at VET centres in order to channel forecasts and technology oversight through collaborative networks sharing information, ideas and strategies.
- » Establish effective Communication Networks, in order to transmit the information to VET centres with the necessary speed and accuracy, allowing this information to be exchanged in a flexible, continuous fashion.
- » Implement a new organisational structure at VET centres to work on the necessary strategy and transform it in a flexible, continuous fashion.
- » Design and implement standardised processes to manage strategy, at all VET centres.
- » Design and publish Strategy Management Support Guides, by way of backup for the VET centres.

6.2 Management of expectations at VET centres among teaching staff and administration and services staff, and also students and their families, fostering motivation, enthusiasm and commitment, and conveying confidence and credibility to do so.

- » Maintain fluid communication with all those forming part of the centres, and convey to them the information necessary at any given time, in such a way as to create genuine expectations, based on the interests of each of them.
- » Boost the confidence of those working and studying at VET centres, ushering in effective communication, transmitting rigour and credibility in terms of fulfilment of the expectations generated.
- » Identify, explore and implement a range of activities for both teachers and students in secondary education, education and employment advisers, and also families, in order to attract young people to Vocational Education and Training.

6.3 Establishment of a Sustainable Management Model at VET centres, based on Agenda 2030.

- » Carry out schemes at VET centres to help achieve sustainable development goals and objectives.
- » Manage activities and projects in accordance with sustainability criteria.
- » Take account of economic, environmental, social and cultural development, for sustainable management at VET centres.
- » Manage the natural and environmental resources used at VET centres in an efficient, sustainable and regenerative manner.
- » Manage and select any processes in the organisation of VET centres that help minimise their environmental impacts.

6.4 Establishment of an Operational Management Model at VET centres to ensure at all times that the strategies selected are implemented and carried out.

- » Establish the necessary processes to carry out proper management of the knowledge acquired by those forming part of the VET centre.
- » Launch dynamics and procedures to reinforce the exchange of information and experiences among those forming part of the VET centre.
- » Boost the performance and results of VET centres through management of the knowledge acquired there, fostering and encouraging talent among those forming part of the centre.
- » To this end, boost the internal training of teaching staff and administration and services staff, collaborative work and transmission of knowledge via competitive intelligence platforms.

INTERVENTION AREA 7:

Change management

Change Management seeks to facilitate and bring about successful implementation of strategic transformation processes, acting as a lever to manage smartness, which means working with and for people, working with their knowledge and talent, and also with advanced technologies, helping in turn to deploy different knowledge networks.

Change management includes management of observation, management of innovation and management of transformation.

This area includes 3 lines of action:

7.1 Management of observation in relation to concepts that are relevant to VET centres.

- » Establish a technology oversight system by means of management of observation, enabling VET centres to anticipate future scenarios and therefore prepare and organise Change Management.
- » Create spaces for technology oversight and relevant data localisation.
- » Manage complexity at VET centres in an agile, flexible, simple and rapid manner, using Competitive Intelligence systems.
- » Acquire relevant information through forecasts and active oversight.
- » Establish the processes necessary to find, organise, filter and add value to the information selected, and share this with the knowledge networks.
- » Deploy a communication plan to respond to the transformation of a 5.0 VET centre.

7.2 Establishment of an Innovation Management System to boost the ability of centres to carry out innovative projects and schemes.

- » Create an innovation ecosystem in the Basque Vocational Education and Training system.
- » Encourage Innovation Routines, creating awareness spaces, spaces for observation, pre-projects and exploitation of projects.

- » Continue to foster the culture of innovation at VET centres, working on awareness and creating a portfolio of projects and exploiting them, for the purposes of Applied Innovation management in the various areas.
- » Work on Innovation Management at VET centres, through strategic oversight and competitive intelligence, technological forecasts, internal and external analysis, creativity, knowledge management and technological cooperation, among other aspects.
- » Establish creativity spaces to serve as a basis to carry out applied innovation projects.
- » Create knowledge areas at VET centres.

7.3 Establishment of a Transformation Management Model to enable VET centres to cope with any changes that may arise.

- » Launch a transformational strategy to deal with changes at VET centres.
- » Consolidate and reinforce the work of the new organisational structures for the transformation of VET centres.

D BIOTECHNOLOGY, REGENERATION AND WELFARE

As part of Agenda 2030, the Basque Vocational Education and Training system wishes to help respond to challenges relating to the problems of climate change, global warming, environmental pollution, improvement of the health of the planet and people, and recovery of the seas and oceans.

We must transform VET to direct it towards a fair and prosperous society, efficient in its utilisation of resources, and also competitive, where the objective is to guarantee zero greenhouse gas emissions by the year 2050, and economic growth in harmony with sustainable use of the resources.

The European Green Deal and Agenda 2030 will act as our roadmaps. Their materialisation will compel us to turn the climatic and environmental challenges into opportunities for all VET centres and professional families, and bring about a fair integrational transition for one and all.

At the present time, the Basque VET's trajectory offers opportunities to implement a training system the main feature of which is also sustainability. These opportunities are in place at VET centres in an attitude of developing students' skills, with a view to a critical analysis of problems and the establishment of creative solutions and alternatives.

Adding new knowledge for the purposes of achieving the Sustainable Development Goals is essential to boost a training scheme that can transform and undertake the challenges of the future.

With regard to this future, VET centres must adopt the design and implementation of an in-house model, by generating tools in order to help implement sustainability to train the professionals of the future. This model must be extended to the various economic sectors and the programmes operated by the VET system, thereby guaranteeing the acquisition of transversal skills as the basis of a sustainable social and economic environment.

Our goal is to join forces and demonstrate our national commitment, in a global scenario in which we want VET to act as a reference, in view of everything it contributes to achievement of the goals of Agenda Euskadi Basque Country 2030.

Commitment to the SDGs will also greatly benefit VET centres, because this will help demonstrate impact capacity, it will attract the interest of training in relation to the SDGs, create new alliances and define Euskadi's VET system as a committed institution.

This approach contains 2 intervention areas:

INTERVENTION AREA 8:

Biosciences and sustainability

In this intervention area we will address several lines of work in different sectors and environments. We wish to use VET to promote sustainable development of ecosystems in natural and marine environments, taking up the technological challenges to businesses, moving towards a green transition in the industrial sector in connection with agriculture, forestry and the food value chain's production systems, with a view to the employability of qualified people and from the perspective of the circular economy.

We also want VET to make a contribution to developing and strengthening the priority sector of the Smart Industry, sustainable cities and clean energy. The green and digital transition must be based on a design that takes account of the life cycle of the materials used, the introduction of more sustainable materials, greater energy efficiency and comprehensive, accessible smart refurbishment. Among others, these are a few of the challenges and tests on which VET must be based, in order to arrest the impact caused on climate and ecosystems by industry.

Finally, VET will also help us make a contribution to developing and strengthening the priority sector of personalised healthcare. The knowledge acquired would also be passed on to enable Basque companies to implement and export a substantial portion of new progress and solutions to healthcare challenges. It will also give a boost to relations between health research and food, in order to produce increasingly healthier foodstuffs, establishing synergies and multidisciplinary projects with common focuses among various VET centres.

This intervention area includes 3 lines of action:

8.1 Implementation of applied research within VET in agrotechnology, bioeconomics and healthy food.

- » Create an Applied Research Unit for VET to carry out applied research projects in Agrotechnology, Bioeconomics and Healthy Food.
- » Establish strategic environments and areas of specialisation in relation to Bioeconomics and associated sectors, improving the efficiency and sustainability of sectors based on the use of water and natural resources.

- » Launch a Circular Sustainable Food Lab in Euskadi's VET system, with professional families operating in Hospitality and Tourism, Agriculture, the Food sector and the Health sector, where the Circular Food Economy will drive innovation, and consequently the creation of value and jobs, and students will be taught the concept of the Circular Economy as a full component of sustainable development.
- » Develop agrofood and industrial biotechnology as a transversal discipline to solve demand for agrofood products and materials, in such a way as to reduce the impact of production processes on the environment.
- » Develop the potential of bioeconomics, agriculture and precision aquaculture in the context of the circular economy at VET centres.
- » Develop the various branches of agrotechnology - chemical, technological, biological and energy-related - in the VET system.
- » Develop Precision Agriculture at VET centres as an information technology based on the positioning of satellites, to obtain georeferenced data to enhance knowledge of the variability of output and quality expressed by crops.
- » Promote digitalisation in the agricultural and forestry sector at VET centres, for the purposes of improving production processes and boosting productivity based on natural resources.
- » Develop precision livestock breeding (PLB) at VET centres as a sustainable production system that reduces investment costs and environmental impact, and helps boost livestock production and animal welfare.
- » Apply and develop digitalisation processes throughout the food value chain at VET centres.
- » Develop the potential of Bioeconomics for rural areas at VET centres, generating new economic activities and boosting presence in new markets, in addition to demand for resources and products of biological origin.
- » Promote production systems at VET centres to implement efficiency in the productivity of forestry, agriculture-livestock and food processes, to generate new more sustainable products, with optimum use of water and natural resources, reducing the environmental footprint at VET centres.
- » Generate knowledge to encourage production and a more personalised and functional healthy food diet, based on the sustainability criteria of production, transformation and creation of foodstuffs at VET centres.
- » Promote and encourage personalised foodstuffs at VET centres on the basis of crops such as linseed, medicinal plants, marine crops and new value-added crops to generate new economic activities.
- » Promote environment-friendly agriculture, rural development and the generation of new commercial maritime, tourism-related and agriculture-livestock activities at VET centres, to assist with development in rural areas and create a stronger connection between rural areas and cities.

- » Develop technology based on bioelectronics applied to forestry, the agriculture-livestock sector and the food industry at VET centres, to improve and promote food safety.
- » Create a lab to develop technological experimentation prototypes and examine interaction with the digital sector and knowledge transfer to companies operating in Biosciences and Sustainability in the Basque Country.
- » Conduct research and innovate at VET centres in relation to smart materials, composed of biodegradable fibres and new-generation materials, in order to develop and apply new materials to reduce the environmental impact caused by using more sustainable production techniques.

8.2. Development of applied research at VET centres in relation to smart sustainable cities.

- » Create a VET applied research unit in relation to smart sustainable cities, in order to conduct applied research into smart materials and sustainability, the circular economy, climate change and the environment.
- » Carry out projects based on the circular economy at VET centres, with the aim of reducing the input of materials and the production of waste, by closing off the economic and ecological flows of resources.
- » Generate a multidisciplinary collaborative team to work on the circular economy as a transversal focus for all the professional VET families, from design of products to the reuse of waste.
- » Promote the need to maximise the efficiency of resources within the circular economy at VET centres, with collaboration among sectors in relation to the Smart Industry, Cleaner Energies, Ecoinnovation, Sustainable Cities and food, reducing production of waste and utilisation of raw materials.
- » Launch an offer of specialist knowledge at VET centres, adapted to the new employability requirements of Sustainable Construction and Smart Building, to cover the needs of businesses operating in the Urban Habitat sector.
- » Pass on and implement the BIM methodology (Building Information Modelling) to VET courses in relation to smart sustainable cities.

- » Promote and launch energy systems based on renewable, clean energies at VET centres, implementing digitalisation processes that will reduce the energy consumption of buildings and also of production processes.
- » Promote industrialised smart construction processes and the utilisation of sustainable materials at VET centres, to reduce the environmental footprint of buildings and improve their environmental impact.
- » Establish and carry out multidisciplinary collaborative projects in relation to smart building and sustainable construction at VET centres.
- » Carry out applied innovation projects at VET centres, using smart management to improve the environment and energy efficiency, and also to improve people's environment, welfare and living standards.
- » Develop and implement schemes on the sustainable digitalisation plan at VET centres, passing on knowledge through projects which boost energy efficiency, the utilisation of renewable energies and digitalisation of VET buildings and processes.
- » Implement an offer of specialised training pursuant to the new professional profiles relating to Green Digital.
- » Carry out any applied innovation projects that may emerge at VET centres in relation to building sanitation, in order to promote the use of sustainable materials, more sustainable building designs which are more energy-efficient and more accessible, and also healthier construction and operational practices, in order to protect people's health and help protect the environment.
- » Encourage the implementation of water optimisation and management systems, improving water efficiency in sustainable cities and rural and urban habitats.

8.3 Implementation of applied research within VET in personalised healthcare and precision medicine

- » Create an Applied Research Unit in the Basque VET system in relation to Personalised Healthcare and Precision Medicine, to conduct lines of applied research targeting professional VET families and the business reality of the Basque Country.
- » Encourage the development of Basque industry in relation to personalised healthcare at VET centres, offering skills adapted to needs detected in connection with Biosciences and Healthcare.

- » Position VET centres with professional families related to the social-healthcare sector and with innovation capacities and technology in the personalised healthcare ecosystem.
- » Carry out applied research and innovation projects in areas relating to tissue engineering and bioprinting, to assist with development of medicine and personalised healthcare.
- » Establish a line of applied research to develop bioanalytical devices based on microfluidic systems and clinical analysis in relation to environmental safety and food safety, as a discipline and transversal branch of Biosciences and Sustainability.
- » Establish the sector relating to healthy ageing as a transversal focus to be addressed by the VET families, carrying out collaborative multidisciplinary projects and implementing a Humanised Technology to cater for the needs of society and assist with people's welfare and living standards.
- » Conduct research and innovation in connection with smart textiles, in order to obtain special properties that make them ideal for application in various fields of human activity.
- » Generate new professional profiles with skills that respond to specific needs in relation to active ageing, nutrition, care focusing on people, among others, the elderly, establishing the basis for professionalisation of the sector.
- » Conduct research and innovation in connection with the development of humanised technology, to improve the welfare and living standards of people in their homes.
- » Promote biotechnology projects for personalised safe food, targeting various segments of the population depending on their needs, with better nutritional properties.

INTERVENTION AREA 9:

Sustainable VET centres

Taking the European Commission's "Agenda of Capacities for sustainable competitiveness, social justice and resilience" as a reference, Euskadi's VET system undertakes to carry out a green transition to assist with the implementation of basic green competences and improve living standards and welfare by transforming Basque VET centres, with a focus on people.

It is necessary to deploy all necessary capacities in people towards a green transition, along with schemes to help SMEs move towards sustainable competitiveness.

Addressing new approaches that will help us move forward in a transformation model based on sustainability calls for reflection on clean energy supply strategies at VET centres, production and consumption, infrastructures, transport, food, agriculture, construction and personalised healthcare.

It is essential to encourage the protection and re-establishment of natural ecosystems, the sustainable use of resources, and improvements to human health.

The VET centres are ideal forums to pass on information to students and teaching staff concerning the changes that must be made for a successful green transition. To this end a competence framework will be established to help develop and assess knowledge, capacities and attitudes in relation to climate change and sustainable development, and support materials will be provided to facilitate the exchange of projects in teacher training programme networks.

Technology, sustainable solutions and disruptive innovation are essential factors in attaining the goal of integrating sustainability in all VET professional families, conducting research and applied innovation projects in order to substantially boost the large-scale deployment and demonstration of cutting-edge technologies in all sectors, while building new innovative value chains.

We also make use of VET to protect, maintain and improve people's health and welfare against environmental risks and impacts, granting priority to the human dimension.

This intervention area includes 5 lines of action:

9.1 Sustainable transformation of VET centres

- » Establish the strategy for deployment of the Comprehensive Plan for a green transition in the Basque VET system.
- » Identify management processes that will improve sustainability at VET centres.
- » Identify learning processes to include sustainability in training cycles in a transversal manner.
- » Define the indicators for an assessment of the sustainable impact of the organisation: economic, environmental, social and cultural.
- » Identify and implement the Sustainable Oversight Panel for a sustainable transformation of VET centres, in order to position it within the European reference framework.
- » Establish a social responsibility guarantee brand at each VET centre.
- » Establish and identify processes which affect responsible purchase of products and responsible management of resources at VET centres.
- » Assess the implementation of environmental management systems at VET centres to reduce the environmental impacts caused.
- » Apply the necessary tools at VET centres to improve energy and the resources used and make them more efficient.
- » Deploy the plan to communicate the improvements made and the contribution to the Sustainable Development Goals by VET centres.

9.2 Creation of a team to implement sustainability at VET centres.

- » Create a team at each VET centre composed of students and teaching staff, to be responsible for promoting the sustainable transformation at the centre.
- » Establish and implement, in collaboration with VET centres, the projects necessary to achieve contributions to the European Green Deal and the Agenda of Capacities for sustainable competitiveness.

9.3 Strengthening communication and transfer in relation to sustainability

- » Launch a digital platform to identify and contribute courses of action by VET centres in relation to sustainability.
- » Transfer and disseminate the results obtained at the centres.
- » Transfer the courses of action taken by students at VET centres.
- » Transfer the results of applied research projects carried out by VET centres in connection with the contribution to the European Green Deal.
- » Establish and implement, in collaboration with VET centres, the projects necessary to achieve contributions to the European Green Deal and the Agenda of Capacities for sustainable competitiveness.

9.4 Implementation of infrastructures to improve environmental management at the centres

- » Supply and integrate digital systems to guarantee efficient preventive maintenance of buildings.
- » Fit sensors at different locations in the buildings, ensuring that the information gathered will be analysed, used and assessed on smart criteria.
- » Conduct a smart assessment of the buildings' data, using the Small Data applications to turn destructured data quantities into a real-time performance indicator.

9.5 Training and support for teaching staff in relation to sustainability and sustainable management

- » Launch an advanced training plan to support teaching staff, in accordance with the reality of sustainability at each centre.

E HUMAN DEVELOPMENT. PEOPLE AS PROTAGONISTS OF THE TRANSFORMATION

This approach contains 4 intervention areas:

INTERVENTION AREA 10:

High-performance training

Mirroring what is happening in other essential environments, the world of training is on the move and developing. Neuroscience discoveries, using increasingly more tools to find out what goes on in the brain during learning processes, and progress in pedagogical processes, psychology, other related disciplines and intensive digital transformation are ensuring that training and learning models are more alive than ever before.

We believe that the idiosyncrasy of VET, which always stays close to developments in the production and social sector, must lead the transformational movement that is coming about in and through training.

Although to date our main mission was to focus on developing people's skills to cover social and business needs through VET systems, the new life context combining rapid development and a constant uncertainty of what the near future has in store compels us to look up and strive for the transition of sustainable VET, VET which transforms and regenerates. It transforms, because it is a source and driver of production improvements and new ways to live out professional activity. It regenerates, because it is not sufficient to transform and improve what already exists, but rather we must set up initiatives that create value and generate a scenario of progress that helps us define the future.

To do this, we deploy a decisive focus on high-performance training, and offer the necessary conditions so that those moving into VET in the Basque Country will find an environment that is second to none in terms of preparation, an efficient, agile training environment, which will eventually boost the practical intelligence necessary to undertake and respond to the complexity of future challenges. An environment which devises innovative responses, works collaboratively, and provides agile responses.

We cannot offer technical-professional learning processes for situations we are not familiar with, but we can train people in transformation, so that they reflect, comprehend the new circumstances, adapt, react, anticipate and resolve these situations disruptively.

Our 5th Basque Vocational Education and Training Plan took up the UNESCO-UNEVOC Strategy for Technical and Vocational Education and Training, which homes in on the necessity to give people the skills needed for employment, quality jobs, the entrepreneurial spirit and lifelong learning. This made the development of specific and transversal skills the backbone of the action taken in the strategic Learning sector in the 4.0 context.

In the wake of good results, prospection exercises have shown us the need to give a substantial boost to transformational learning, leading us in the direction of a learning process geared towards development of Talent. We therefore strive to transform VET learning processes from people with know-how to people who feel, think and do.

During the last century, good professionals were people who carried out their tasks effectively as befitted the profession, and who therefore shone due to their technical skill. This concept of an effective person has gradually been transformed into the concept of a competent professional. This is a professional whose training has given them technical and transversal skills. It is not sufficient to have the skill to carry out the task properly, and one has to be efficient and combine this skill with the ability to carry out tasks as part of a team, manage time and resources, communicate properly, have autonomy, dedication, the capacity to solve problems, make decisions and know how to use digital tools and smart networks. We have moved on from professionals with know-how to intelligent professionals.

High-performance training, however, trains people who know how to direct their intelligence efficiently. Here we are talking about Professionals with Talent. Professionals with high practical intelligence arising from training processes providing input for emotional intelligence, generative intelligence and executive intelligence. 'Intelligent' professionals with the ability to direct attention, determine objectives, plan and deploy the resources needed to achieve them, with capacity for intuition, imagination, improvisation, analysis and reflection.

Talent which is enhanced by learning processes that take account of the genius of each person. The development of talent, assisted by the auto-perceived genius, hetero-perceived genius and the genius of teams taken into account in learning processes, is an example of high-performance training for a 5.0 context.

On the basis of a holistic view of learning, and chiefly in due consideration of the changing characteristics of professional and social environments, we have determined that learning must be a transformational, regenerative process. It causes and permits the development of the environment and simultaneously enriches the person.

This intervention area includes 3 lines of action:

10.1 Regeneration and consolidation of the learning model

- » Strengthen collaborative and smart networks to facilitate and enrich the implementation of a 5.0 learning model.
- » Deploy flexible functioning formats at centres to facilitate the implementation of this learning model.
- » Reinforce the cycle teaching teams as an essential component of the learning process.
- » Transform the skills assessment model for the learning process.
- » Move forward in the adaptation of learning spaces.
- » Introduce the STEAM philosophy to the learning model.
- » Encourage the culture of enterprise in the learning model.
- » Introduce the values to the learning process.
- » Move forward in the integration of the various components of the learning model.

10.2 Digital transformation of the learning process

- » Make use of the digital transformation to assist with the personalisation of learning processes and itineraries.
- » Enrich the physical and virtual learning environments through the paradigm of the digital transformation .
- » Deploy the collaboration networks needed for the digital transformation.
- » Add the digital transformation to the vision of teaching teams.

10.3 Development of people's talent

- » Add training strategies for the development of practical intelligence to the design of learning challenges, where practical intelligence is understood as the combination of generative intelligence, emotional intelligence and executive intelligence.
- » Enrich the development of talent through entrepreneurial competence as a part of the entire learning process.
- » Encourage personal and professional development through the vision of humanist leadership.

- » Activate co-existence mechanisms for environments in which human intelligence and artificial intelligence must operate on a joint basis.
- » Experiment and extend Euskadi's VET learning model to training for employment, in order to develop people's talent in employment environments.

INTERVENTION AREA 11

The human dimension in VET

The rapid advance of technology and digitalisation requires the robust implementation of a new human dimension to boost the significance of human beings in the future.

This means promoting leadership to rehumanise technology, the economy, industry and, in a word, society. Leadership based on collaboration and dialogue and personal values.

This level of the project attempts to promote a space for humanist integrational training, which does not separate human qualities (humanities) from technological knowledge, but combines them and reinforces them from an integrational perspective.

The approach to this plan requires that each student and each community in the VET system must be educated, trained and considered as leaders.

One essential component is the promotion of self-leadership. Tabling the proposal of leadership based on self-management and self-surpassment appears to be a successful formula that may be applied as a vision in the VET system. Leadership understood in this way flows from the bottom to the top, but it is also enhanced and driven by the leadership of management and teaching staff who have added responsibilities, by way of exemplary, inspirational leadership.

Technology and smart systems must be seen as components of development and support for people by means of a humanist perspective.

The essential idea on which this level of the project is based is humanist integrational training which reconciles the advantages of present technological knowledge, without forsaking all that has been achieved, and learning to include knowledge which gives us a better understanding of the basic problems that we face at the present time and that we will face in the future.

Comprehensive training in 4.0 values offer us the possibility of "cultivating humanity" to turn our students into humanist leaders.

With this approach, training is essentially a humanising and empowering task, in which students are the protagonists of their own life projects. This is why it is so important to provide them with sufficient tools and guidance, so that they can lead their own life project, integrating in society and offering value as people, as professionals and as citizens.

This humanist leadership is also in keeping with the new demands of the job market, in addition to knowledge and technical skills. The market increasingly appreciates transversal and personal skills that are in line with the new models of responsible sustainable businesses.

This intervention area includes 2 lines of action:

11.1 Introduction of various concepts to promote humanist leadership

- » Reflect on one's own values for the purpose of learning to give values a voice and work on an ethical vision for correct decision-making.
- » Define various personal and professional intentions. This means deciding: what is the most useful impact to have as a person and as a professional.
- » Bring up innovation and ingenuity as essential leadership attitudes, based on disaffection and the exploration of new opportunities.
- » Comprehend the importance of leadership, giving the very best of oneself in one's relationships with others through commitment and motivation.
- » Reflect, revise and assess the impact of one's own leadership in a context of analysis to propitiate actions.

11.2 Drawing up a comprehensive training process to train humanist leaders across the entire VET community.

- » Train humanist leaders across the entire VET community, starting with management teams and teachers. Leaders who in turn will train other leaders, the student body. It is a matter of training people able to direct and lead their own personal and professional development, to realise their self, find their vocation and transform reality.
- » Draw up a comprehensive training process to train humanist leaders across the entire VET community, who are able to direct their own development, realise their self through their vocation, transform reality and play a role in society as aware, responsible citizens.

- » Offer a training programme that constitutes an integrational response from different areas of knowledge and know-how, geared towards a humanist approach to training, with better preparation of professionals in an environment calling for provisioning, creative capacity and ingenuity in the face of uncertainty.
- » Provide the student body and the entire VET community with tools to bring about the harmonious comprehensive development of their capacities, from an integrational perspective.
 - This objective is in keeping with development of 5.0 Talent in Euskadi's VET system. Here leadership is used to give a maximum boost to the personal and professional development of the student body and the entire VET community, in order to respond to the new challenges posed by a 5.0 society.

INTERVENTION AREA 12:

High-qualifications training. A new learning itinerary - VOCATIONAL EDUCATION AND TRAINING + UNIVERSITY.

This new itinerary will establish two connection routes between Higher VET and University Degree Courses. The University will recognise credits earned on Higher Training Cycles similar to the University Degree Courses students wish to study. The VET system will also recognise credits earned on University Degree Courses.

Integrated training itineraries will also be defined and structured, drawing up a specific professional profile and a full curricular itinerary. One portion of training will respond to the skills forming part of Higher VET and will be taught at facilities authorised for this level, and another portion will concern the skills forming part of University Degree Courses, and they will be taught at a university facility authorised to this end.

These integrated VET/University Degree itineraries will be established in a coordinated fashion between the VET Subdepartment and the Universities Subdepartment.

This intervention area will include 3 lines of action:

12.1 Creating higher training and innovation environments in relation to the needs of the Basque Country's production fabric, requiring VET + University Degree qualifications.

- » Launch a Basque regulatory framework for VET + University Degrees.
- » Plan the new professional profiles requiring VET + University Degrees.
- » Encourage collaboration between the VET system and the University to foster innovation in the business environment, mainly with SMEs and Mini SMEs.

12.2 Working on mutual recognition of VET and university degrees of credits to be validated between the two levels of training.

- » Establish the VET and University Degree qualifications corresponding to each other.
- » Establish the credits that can be validated among VET qualifications and University Degree qualifications

12.3 Working on the definition of specific integrated VET + University Degree learning itineraries.

- » Establish integrated 5-year courses, 2 in the VET system and 3 on the University Degree course, with the same professional profile and a dual qualification after completion of the 5 years.
- » Establish a lengthy integrated itinerary starting off with Higher VET, moving on to a University Degree and, as the case may be, subsequently a Master's and/or a Doctorate.
- » Launch a complementary offer of dual qualifications between the VET system and University Degrees.

INTERVENTION AREA 13:

Inclusive training

A VET system requires more integral intervention models which, while guaranteeing the inclusion of the entire student body, encourage the necessary co-existence and social cohesion at the centres and in society, on the co-responsibility of the entire community.

The regulatory framework of VET in Euskadi (Law 4/2018 and Decree 86/2015) stipulates that basic VET is organised in accordance with the principle of observance of diversity among students, and that measures for observance of diversity will be geared towards responding to their specific educational needs and towards achievement of the results of the learning process linked to the professional competences of the qualifications, and will address the right to inclusive education that helps them achieve these objectives and the corresponding qualifications.

This necessarily entails acknowledgement of present diversity, overcoming all forms of discrimination and/or exclusion, the cohesion of groups of students and the guarantee of equal learning opportunities for all of them.

The scope of diversity throws up the need to draw up plans, define strategies, manage services, make decisions, and take steps that will affect the entire VET system, with the ultimate aim of enabling each student to develop their skills as far as possible.

This intervention area includes 2 lines of action:

13.1 Launching an inclusive VET system

- » Determine the policies, strategies and guidelines to furnish a response to the diversity of students within the inclusive system.
- » Provide access to VET for students in any of the professional families, with no gender bias.
- » Define the criteria for deployment and geographical and functional distribution of resources that will guarantee the same access opportunities.
- » Provide centres with the necessary technical and staffing resources to assist with inclusion.
- » Boost organisation and coordination to make comprehensive, rational and efficient use of staffing and technical resources, using all the resources available in a flexible, integrated manner.

- » Implement plans for initial permanent training of teaching staff, consistent with the principles of inclusive education and geared towards enhancing professional teaching competences, in order to address the difficulties involved in the process.
- » Encourage collaboration, participation and dialogue with social initiative organisations and organisations in the third sector working on diversity, in view of the major social role and added value they can contribute to the design and implementation of training policies responding to the diversity of the student body.
- » Alongside other administrations and other institutions, launch community programmes to create social-training-sanitary networks that will foster equal opportunities and help contextual situations which may generate exclusive and social inequality.
- » Establish collaboration agreements and accords with non-profitmaking associations or other public or private institutions working in the healthcare, social or educational sectors, in order to furnish an integrated response to the student body's need of intensive support.

13.2 Launching inclusive VET centres

- » Encourage participation and intervention by VET centres in schemes to meet the needs of the student body through their projects and resources and, where applicable, those they share with other entities and institutions with responsibilities for social, health and educational issues.
- » Make training projects focus on opening up to the environment, specifically in their annual plans, with effective participation in the community, offering services and making use of resources.
- » Assist with the training of all teaching staff in relation to the implementation of processes and strategies to pinpoint the barriers to learning and participation, and the encouragement of inclusive practices.
- » Draw up plans for curricula to further and develop the principles guiding universal learning designs: providing multiple formats for presentation of learning content, facilitating multiple formats to take action and express what has been learned, and providing multiple sources to motivate and boost learning processes.
- » Collaborate with all institutions and entities involved with the student body, building an integrated assistance network with them to boost learning processes.
- » Work actively and collaboratively with other VET centres to create more knowledge and share successful practices.

F SMART 5.0 VET CENTRES

Smart 5.0 VET centres are forward-looking integrated centres, undertaking changes and new challenges rapidly and with full anticipation. Smart organisations deploying new ways of understanding and working, encouraging collaborative projects and working in polyvalent teams, implementing high-performance training, applied smartness, strategic innovation and people's know-how as their primary value, in a digital, sustainable environment.

These are centres with areas of transversal knowledge, to assist the collaborative work of teaching staff, working in operational teams on strategy, applied innovation and digital transformation. Their daily work also entails disruptive technologies such as smart systems, immersive digital systems, interactive digital systems, analytics and data management and cybersecurity, with new spaces as levers of change and transformation.

The smart 5.0 VET centres will provide support for what will be a new kind of smart VET system. Vocational education and training based on five priority concepts: An advanced training model based on high-performance training, development of strategic innovation, transformation towards applied smartness, encouragement of the entrepreneurial culture and implementation of internationalisation. The centres will also form part of a number of collaborative networks, and will lead the digital transformation in the Basque VET system.

These spaces will cater for various learning processes by means of advanced disruptive technologies, in terms of digitalisation and also the development of the fourth industrial revolution, applied to all sectors affected by the Basque VET system.

To do this, the smart 5.0 VET centres will have spaces to allow work to be carried out with different technologies in relation to the five priority concepts already mentioned.

Work in high-performance training will be carried out with four different kinds of spaces:

- Smart high-performance spaces with digital technology.
- High-performance spaces with digital technology and smart systems onboarded.
- Interactive digital smart spaces.
- Immersive digital spaces targeting 4.0 and 5.0 sectors.

With respect to strategic innovation and applied smartness, the smart 5.0 VET centres will have spaces for Artificial Intelligence to improve learning processes, cybersecurity labs and spaces to work with smart systems and spaces for the development and application of the Internet of Things (IoT), the Internet of Machines (IoM), the Internet of Everything (IoE), and the Internet of Senses (IoS).

To allow work to be carried out on the entrepreneurial culture and business creation, the centres will have smart spaces for advanced enterprise.

This approach contains one intervention area

INTERVENTION AREA 14:

New VET centre model

We must continue to help our centres develop the capacity to address and manage change, complexity, strategic innovation and applied smartness. **The smart VET centres must have a number of characteristics:**

- Flexible organisational structure, with the ability to adapt in accordance with the challenges they decide to undertake at any given time.
- Focus on projects and results.
- Connection and opening; centres connected to technology, with the learning trends or high-value initiatives created in the environment, and open to talent, to opportunity, to new ideas, and to the surroundings.
- Operating an emerging strategy (strategy-action) as a result of their “skills/resources maps” and “opportunities/problems/needs maps”.
- Ambidextrous VET centre, able to work on today’s issues (operations), while it designs the future (innovation).
- Committed to agility, excellence and talent in all areas and activities.
- Committed to the digital transformation, the culture of data and data analytics.
- Expert in pedagogical and methodological progress in the contribution of neuroscience to the learning process and its practical application.

The development and training of teaching staff must evolve towards an approach that is better suited to the characteristics of an increasingly complex environment. In other words, a more strategic approach that links training to action, action to collaboration, and collaboration to results, with a real impact on improving the performance of teaching staff, the centre, and the entire VET system.

The development and training of centre management must also have a more personalised, flexible and results-focused approach. Management bodies must be implemented to forge a path to generate a reserve of future management bodies, and we must provide full support for the present bodies. To do this, we must progress from a focus on the programme (course) to a focus on managerial development, also including a training programme, other schemes in relation to strategy, innovation, technology development, sustainability and the confidence factor.

To this end we will continue to draw up a new model of organisation and management. The smart centres will have a new structure featuring a strategy area, an innovation area, an operational area and various areas of knowledge, and organisation will include the concept of a **“change driver”**.

This intervention area includes 2 lines of action:

14.1 Development of talent in teaching staff and the management bodies of the smart 5.0 VET centres.

- » Establish learning communities as instruments for significant teacher learning, especially in priority areas associated with the strategic plan.
- » Boost the training of teaching staff.
- » Define a protocol to plan changeovers of management bodies.
- » Establish a managerial development programme, for management candidates and for the present management bodies.
- » Design an advanced model for assessment of performance of the managerial function, working closely alongside the inspection function.
- » Deploy a strategy for recognition of managerial roles.
- » Establish forums for relations with management bodies in other kinds of organisations (the production sector or others) for an understanding of how the managerial function is carried out in other areas.
- » Carry out research and applied innovation projects in the area for development of teaching staff and the management bodies.

14.2 Establishment of a new organisational/managerial model at 5.0 VET centres

- » Lead the digital transformation of the Basque VET system, implementing advanced technologies, and adapting new spaces as levers of change and transformation.
- » Establish a new model for the organisation and structure of the centres, in keeping with future challenges and priorities.
- » Incorporate new technologies, new learning models and new ways of working in the training spaces.
- » Make use of the opportunities afforded by technology to manage VET centres by means of a strategic smartness model.
- » Define the concept of change drivers at VET centres.
- » Create different areas of knowledge in priority sectors.
- » Create different areas of knowledge at VET centres.

G INTERNATIONALISATION OF THE BASQUE VET SYSTEM

Since the 4th Basque Vocational Education and Training Plan, the internationalisation of our system has become extremely important. The mobility of the student body and teaching staff through the Erasmus+ programme, participation in a number of international networks, and most especially our relations with the European Commission, have enabled us to examine, explain and make progress on a range of strategic projects, which are allowing us to establish a VET system based on international collaboration with an extremely high level of efficiency.

Internationalisation is therefore a strategic factor for the Basque VET system. This 6th Basque VET Plan intends to continue to make progress and take further strides. Internationalisation is a feature that is transversal to VET as a whole, and this plan is geared towards establishing the comprehensive and complete internationalisation of the entire system. This means that the international dimension ought to be present in all the components of VET in Euskadi.

INTERVENTION AREA 15:

Internationalisation of the Basque VET system

Internationalisation is now a reality in the Basque VET system. Training which forms part of the world's main VET networks and allows it to collaborate with 166 countries on all five continents.

In this new plan we are seeking the comprehensive internationalisation of the Basque VET system, which means working in a number of different dimensions.

Firstly, it will still be a priority to showcase the Basque VET model on the international stage, and boost cooperation with other countries. We are aware that cooperation will help us learn and improve, and also allow us to share our experience and assist the implementation of other VET systems, and various international organisations.

We also intend to strengthen, to an even greater extent, our collaboration with the European Commission in all aspects of vocational education and training. It is a priority for the Basque VET scheme to continue to support, among others, the European initiative of VET excellence platforms and centres. The Research and Applied Innovation Centre, Tknika, headed up the European platform EXAM 4.0 for Advanced Manufacturing and Industry 4.0, in the first pilot initiative launched by the European Commission's

Directorate-General for Employment between 2019 and 2021. Over the next four years, i.e. up to the year 2026, Tknika will head up a new platform, LCAMP, focusing on Advanced Manufacturing and Industry 5.0. This puts us at the centre of one of Europe's leading VET initiatives.

In late 2019 and early 2020, the coordinators of the first five platforms set up a collaborative network through a Community of Practice. This community, which started out with 5 members, now has 25, and will have approximately 112 members by the year 2027. Tknika, together with the Netherlands' Katapult organisation, was an active participant in the coordination of the platforms. The European Commission has turned this Community of Practice into one of the mainstays of the initiative for European excellence platforms.

In the 6th Plan, the Basque VET system intends to continue to support this Community of Practice, collaborating with the European Commission's Directorate-General for Employment to help this project attain the level of excellence and effectiveness planned for VET all over Europe. In order to move this initiative forward and generally promote and foster VET excellence, we intend to organise an annual VET excellence conference in Euskadi. The idea is to make this an annual event to discuss and share the main initiatives relating to excellence in VET, analysing and reflecting on the main challenges of the future that must be faced by vocational education and training, and attended by the world's major institutions, centres, organisations and agents.

Science, research, technology and knowledge have also always been universal, and this is enhanced by the global nature of the world we live in. That is why this 6th Basque VET Plan is going to give a boost to the applied innovation and research we are implementing within the framework of the Basque VET. To this end we will continue to work with international agents on applied research and innovation, and boost our presence in the European Innovation and Research framework programme Horizon Europe, and on other European Innovation and Research programmes.

VET also intends to support Basque businesses with plants located in other countries, primarily in terms of preparing and updating its human capital.

Comprehensive internationalisation also has to address the technological dimension. The Basque VET system has a sound level of advanced technology. This has made us an international reference. By inserting cutting-edge technology, our VET centres are being transformed into smart organisations. These technologies, especially by means of virtualisation, offer an enormous potential for internationalisation. If we consider virtualisation solutions such as virtual reality, augmented reality, or mixed or fused reality, or the variants of digital twins, we have a great opportunity for remote international collaboration. We can connect the workshops of centres in Euskadi to the workshops of centres in other countries.

Students at VET centres can work on joint technology projects with students from other countries, with all the benefits this entails for their level of learning and personal development.

In addition to the technological portion, launching internationalisation also requires a focus on people. People must form the core of VET, and internationalisation enables them to develop essential aspects such as technical and transversal skills, better employability, opening to other cultures, motivation for learning, self-confidence and learning other languages.

While continuing to promote mobility, we intend to promote internationalisation, connecting learning spaces with different locations around the world, using the opportunities of technology to this end. This, therefore, entails innovating to work on virtual mobility, so that all VET students, including those who are not involved in any presence-based European mobility, can have international experiences.

This intervention area defines 3 lines of action:

15.1. Internationalisation of the Basque VET system

- » Disseminate and explain the Basque VET model at events, conferences, congresses, events, workshops and conferences by various international bodies.
- » Help other countries to improve their VET systems.
- » Support the European Commission's Directorate-General for Employment, and any other Commission Directorates-General and Bodies which may require support, in launching and setting up various schemes and projects that affect vocational education and training.
- » Lead the creation and management of the European VET Excellence Platforms' Community of Practice.
- » Continue to enhance collaboration with various international networks. In particular, with UNESCO-UNEVOC, the World Federation of Colleges and Polytechnics, EARLALL, the European forum of Technical and Vocational Education and Training, the Transatlantic Technology and Training Alliance and Chain5, among others.
- » Organise an annual VET conference in Euskadi.
- » Organise an annual international conference on excellence in VET in Euskadi.

- » Work on various projects pertaining to the New Aquitaine-Euskadi-Navarra Euroregion.
- » Reinforce relations with the VET centres and institutions in the French Basque Country and the region of Aquitaine.

15.2. Internationalisation of Applied Innovation and Research in the Basque VET system.

- » Lead an international VET Applied Research group.
- » Draw up institutional agreements with other countries on applied research and innovation in vocational education and training.
- » Create, develop and launch the European platform for excellence in VET, in Advanced Manufacturing and Industry 5.0.
- » Work on the internationalisation of VET centres, connecting different learning spaces by means of advanced digital technologies.
- » Create an international VET Applied Research periodical.
- » Work on projects on the EU's Horizon Europe programme.
- » Work on different kinds of EU projects.
- » Train the heads of internationalisation at centres to submit or take part in international VET applied research and innovation projects.
- » Advise any VET centres in the Basque Country seeking assistance with internationalisation.

15.3. European International Mobility

- » Continue to encourage student and teacher mobility on EU programmes, especially Erasmus+ Student.
- » Encourage the international mobility of teaching staff working on applied research and innovation within VET.
- » Encourage the international mobility of students and teachers working on entrepreneurial projects at VET centres, on the Ikasempresa and Urratsbat programmes.

7 Strategic orientational **approaches**

and

15 intervention **Areas**

*Towards
smart 5.0
Vocational
Education and
Training*







04

**Monitoring
the Plan**

MONITORING THE PLAN

The implementation of this 6th Basque Vocational Education and Training Plan will be monitored on at least an annual basis. It will be added to the General Plan for Assessment of the entire VET System.

The Basque VET Council will be the body responsible for carrying out this assessment, as stipulated in Article 20 of Law 4/2018 of 28 June.



4.1. ACTION PLANS

In order to deploy systematic monitoring and assessment of this plan, three areas of action have been defined:

1
Assessment and monitoring on the basis of quantitative indicators

A scorecard has been defined to measure the direct activity generated by the schemes in each Strategic Approach and Intervention Area in the Plan. The most relevant indicators have been chosen - where possible, indicators which already exist and are used in day-to-day management by the VET Subdepartment.

2
Qualitative assessment

A qualitative assessment will also be performed of the progress and impact of the schemes proposed on each Approach, identifying levers and barriers in achievement of the targets set. This exercise, which will be carried out annually through discussions in work groups, must act as a major source for learning and improving.

3
Assessment of budget implementation

Finally, an annual assessment will be conducted of the implementation of the budget established, and also the human and material resources used.

This will lead to a Monitoring Report on the level of annual achievement. A Final Assessment Report will also be drawn up when the plan has run its course.

4.2. SCORECARD

Approach

A. Technology, digitalisation and smart systems

INTERVENTION AREA	LINE OF ACTION	INDICATOR	INDICATORS VALIDATION 6TH BASQUE PLAN
1 Digital Transformation	1.1 Digital transformation strategy	- Strategy defined (yes/no) - Scope of processes transformed - N° of digital drivers implemented	- Strategy defined (YES/NO) - N° of digital drivers implemented
	1.2 Sustainable digital maturity model	- N° of centres added to the digital maturity model	- N° of centres carrying out the maturity diagnosis - N° of centres implementing their own training plan
	1.3 Digitalisation strategy for VET centres	- N° of centres involved in roadmap - % teaching staff trained	- N° of centres with a digitalisation plan. - N° of training activities carried out.
	1.4 Consolidation of the Digital Media Observatory	- Scope of technology oversight (qualitative)	- N° of centres with % of the Digital Media Observatory plan implemented. - N° of centres with oversight areas relating to the digital observatory
	1.5 Reinforcement of infrastructures	- N° of centres connected to cloud solutions - N° of centres with desktop virtualisation technologies	- N° of centres connected to cloud solutions - N° of centres with desktop virtualisation technologies
	1.6 Research into disruptive technologies	- N° of pilots implementing disruptive technologies	- N° of centres with disruptive technologies implemented.
2 Technological development and applied smartness	2.1 Immersion in smart environments	- N° of centres with 4.0 and 5.0 solutions deployed	- N° of centres with 4.0 and 5.0 solutions deployed.
	2.2 Launch of advanced manufacturing - 3D printing	- N° of centres with advanced manufacturing solutions	- N° of centres with advanced 3D printing manufacturing solutions
	2.3 Launch of smart systems and artificial intelligence solutions	- N° of centres working on artificial intelligence solutions on learning platforms	- N° of centres with AI learning platforms implemented
	2.4 Implementation of cybersecurity	- N° of centres with cybersecurity training schemes - N° of cybersecurity labs deployed	- N° of centres with cybersecurity training schemes - N° of training schemes deployed

INTERVENTION AREA	LINE OF ACTION	INDICATOR	INDICATORS VALIDATION 6TH BASQUE PLAN
2 Technological development and applied smartness	2.5 Implementation of autonomous robotics	- N° of centres with robotics platforms	- N° of centres with robotics platforms
	2.6 Implementation of communications and cloud	- N° of centres with 5G networks	- N° of centres with 5G networks
	2.7 Adoption of technologies and extension of prototypes	- N° of centres with authentication and blockchain solutions	- N° of centres with authentication and blockchain solutions - N° of authentication and blockchain solutions implemented
	2.8 Sustainability and circular economy in the automotive sector	- N° of intercentre competitions to make new technologies accessible - N° of training schemes and documentation on advances in circular economy	- N° of intercentre competitions to make new technologies accessible and sharing documentation on advances in circular economy.
	2.9 Digital and smart mobility	- N° of centres with documentation on 3D models of virtualised vehicles	- N° of centres with documentation on 3D models of virtualised vehicles

Approach

B. Strategic innovation and disruptive transformation

INTERVENTION AREA	LINE OF ACTION	INDICATOR	INDICATORS VALIDATION 6TH BASQUE PLAN
3 Disruptive innovation	3.1 Development of innovative talent	- N° of training schemes for teaching staff - N° of participants in "expert in innovation" specialisation programme	- N° of centres with a talent management plan - N° of training schemes for teaching staff - N° of participants in "expert in innovation" specialisation programme
	3.2 Implementation of disruptive innovation at VET centres	- N° of disruptive innovation projects - Advanced management methodology for disruptive innovation projects implemented (yes/no)	- N° of centres with disruptive innovation projects. - N° of disruptive innovation projects. - N° of centres with an advanced management methodology for disruptive innovation projects implemented (yes/no)
	3.3 Boost to transfer and dissemination of knowledge	- N° of schemes for transfer to other educational phases and/or VET systems. - N° of centres transferring knowledge to SMEs and Mini SMEs	- N° of centres transferring knowledge internally. - N° of centres transferring knowledge to SMEs and Mini SMEs

INTERVENTION AREA	LINE OF ACTION	INDICATOR	INDICATORS VALIDATION 6TH BASQUE PLAN
4 Applied innovation in strategic environments	4.1 Promotion of technological innovation at SMEs	- N° of innovation projects at centres - N° of strategic environments in the TKGune network	- N° of technological innovation projects at SMEs - N° of companies in the TKGune network
	4.2 Encouragement of entrepreneurial culture and initiative	- N° of centres and participants in awareness schemes and training in enterprise - N° of centres with multidisciplinary spaces to encourage enterprise	- N° of centres and participants in awareness schemes and training in enterprise - N° of centres with multidisciplinary spaces to encourage enterprise
	4.3 Reinforcement and improvement of exploitation of results in the applied research and innovation system	- N° of teachers who are sent results	-N° of centres with a plan for the exploitation of results in the applied research and innovation system.
	4.4 Effectiveness of supervision hubs	- N° of supervision hubs created	- N° of supervision hubs implemented

Approach
C. SMARTNESS MANAGEMENT AT 5.0 VET CENTRES

INTERVENTION AREA	LINE OF ACTION	INDICATOR	INDICATORS VALIDATION 6TH BASQUE PLAN
5 Management of applied smartness	5.1 Management model for transformation towards applied smartness	- N° of centres with applied smartness areas. - N° of SMEs and Mini SMEs collaborating in the management of applied smartness	- N° of centres with the applied smartness model implemented - N° of SMEs and Mini SMEs collaborating in the management of applied smartness
	5.2 Development of the culture of data and analytic talent	- N° of teachers trained in the culture of data and data analytics - N° of participants in data analytics learning communities	- N° of centres with the data culture implemented. - N° of teachers trained in the culture of data and data analytics
	5.3 Smartness management based on humanist leadership	- N° of centres operating models of smartness management based on humanist leadership	- N° of centres with shared/humanist implemented

INTERVENTION AREA	LINE OF ACTION	INDICATOR	INDICATORS VALIDATION 6TH BASQUE PLAN
6 Complexity management	6.1 Agile and effective management of Strategy	<ul style="list-style-type: none"> - N° of centres participating in communication and knowledge networks for agile strategic management - N° of centres with new organisational model - Support guides to manage strategy implemented (yes/no) - N° of centres with LEAN methodologies as their management model 	<ul style="list-style-type: none"> - N° of centres with a strategy based on competitive intelligence - N° of centres participating in communication and knowledge networks for strategic management with agile automated processes. - N° of centres with an agile strategy based on LEAN methodologies.
	6.2 Management of expectations at VET centres.	<ul style="list-style-type: none"> - N° of communication schemes per year for teaching staff and administration and services staff 	<ul style="list-style-type: none"> - N° of centres with a communication plan implemented for management of expectations.
	6.3 Sustainable Management Model based on Agenda 2030	<ul style="list-style-type: none"> - N° of centres aligned with Sustainable Management Model 	<ul style="list-style-type: none"> -N° of centres aligned with Sustainable Management Model associated with Agenda 2030
	6.4 Operational Management Model	<ul style="list-style-type: none"> - N° of centres sharing knowledge and experience in operational management (by means of various dynamics) - N° of training schemes for teaching staff and administration and services staff 	<ul style="list-style-type: none"> - N° of centres managing and sharing talent/knowledge in operational management (by means of various dynamics). - N° of centres with a knowledge map defined.
7 Change management	7.1 Management of observation of relevant concepts	<ul style="list-style-type: none"> - Technology oversight system implemented (yes/no) 	<ul style="list-style-type: none"> - Oversight system implemented (yes/no)
	7.2 Innovation Management Model	<ul style="list-style-type: none"> - N° of agents involved in innovation ecosystem - N° of centres with innovation routines implemented - N° of participants in innovation management awareness/training schemes 	<ul style="list-style-type: none"> - N° of agents involved in innovation ecosystem - N° of centres with innovation routines implemented. - N° of teachers involved in innovation management awareness/transfer schemes
	7.3 Transformation Management Model	<ul style="list-style-type: none"> - N° of centres with a strategy and organisational model geared towards transformation 	<ul style="list-style-type: none"> - N° of centres with a strategy and transformational organisational model

Approach

D. Biotechnology, regeneration and welfare

INTERVENTION AREA	LINE OF ACTION	INDICATOR	INDICATORS VALIDATION 6TH BASQUE PLAN
8 Biosciences and sustainability	8.1 Applied research into agrotechnology, bioeconomics and healthy food	-Nº of centres conducting research into agrotechnology, bioeconomics and healthy food - Nº of projects carried out in the field of agrotechnology, bioeconomics and healthy food - Nº of teachers and students qualified in these fields	- Nº of centres conducting research into agrotechnology, bioeconomics and healthy food - Nº of projects carried out in the field of agrotechnology, bioeconomics and healthy food - Nº of teachers and students qualified in these fields
	8.2 Applied research into smart sustainable cities	- Nº of centres conducting research into smart sustainable cities - Nº of projects carried out in the field of smart sustainable cities - Nº of teachers and students qualified in these fields	-Nº of centres conducting research into smart sustainable cities - Nº of projects carried out in the field of smart sustainable cities - Nº of teachers and students qualified in these fields
	8.3 Applied research into personalised healthcare and precision medicine	- Nº of centres conducting research into personalised healthcare and precision medicine - Nº of projects carried out in the field of personalised healthcare and precision medicine - Nº of teachers and students qualified in these fields	- Nº of centres conducting research into personalised healthcare and precision medicine - Nº of projects carried out in the field of personalised healthcare and precision medicine - Nº of teachers and students qualified in these fields
9 Sustainable VET centres	9.1 Sustainable transformation of VET centres	- Nº of training cycles including sustainability in learning processes - Nº of centres with a social responsibility guarantee brand. - Nº of centres with an environmental management system implemented	- Nº of training cycles including sustainability in learning processes - Nº of centres aligned with a social responsibility guarantee brand. - Nº of centres with an environmental management system implemented
	9.2 Team to implement sustainability at VET centres	- Nº of centres with a team to implement sustainability	- Nº of centres with a sustainability plan implemented

INTERVENTION AREA	LINE OF ACTION	INDICATOR	INDICATORS VALIDATION 6TH BASQUE PLAN
9 Sustainable VET centres	9.3 Communication and transfer in relation to sustainability	<ul style="list-style-type: none"> - Digital platform launched (yes/no) - Nº of centres with schemes to boost sustainability - Nº of research projects carried out in relation to the European Green Deal 	<ul style="list-style-type: none"> - Digital platform launched (yes/no) - Nº of centres with schemes to boost sustainability - Nº of research projects carried out in relation to the European Green Deal
	9.4 Development of infrastructures to improve environmental management	<ul style="list-style-type: none"> - Nº of centres with infrastructures to improve the environmental management of buildings 	<ul style="list-style-type: none"> - Nº of centres with a plan for infrastructures and energy efficiency.
	9.5 Training and backup for teaching staff	<ul style="list-style-type: none"> - Nº of teachers trained in sustainability and sustainable management. . 	<ul style="list-style-type: none"> - Nº of teachers trained in sustainability and sustainable management.

Approach

E. Human Development. People as protagonists of the transformation

INTERVENTION AREA	LINE OF ACTION	INDICATOR	INDICATORS VALIDATION 6TH BASQUE PLAN
10 High-performance training	10.1 Regeneration and consolidation of the learning model	<ul style="list-style-type: none"> - Nº of participants in collaborative models to enrich the learning model - Nº of teachers trained in the model - Nº of centres with modernised learning spaces. - Skills assessment model for the learning process transformed (yes/no) - Nº of training cycles that have added values to the learning process 	<ul style="list-style-type: none"> - Nº of participants in collaborative models to enrich the learning model - Nº of teachers trained in the model - Nº of centres with modernised learning spaces. - Skills assessment model for the learning process transformed (yes/no) - Nº of training cycles that have added values to the learning process
	10.2 Digital transformation of the learning process	<ul style="list-style-type: none"> - Nº of participants in collaborative networks for the digital transformation - Nº of teachers trained for the digital transformation of the learning process 	<ul style="list-style-type: none"> - Nº of centres involved in collaborative networks for the digital transformation - Nº of teachers trained for the digital transformation of the learning process
	10.3 Development of people's talent	<ul style="list-style-type: none"> - Nº of training cycles that have incorporated development of practical intelligence (generative intelligence, emotional intelligence and executive intelligence) 	<ul style="list-style-type: none"> - Nº of centres with a talent/knowledge management plan

INTERVENTION AREA	LINE OF ACTION	INDICATOR	INDICATORS VALIDATION 6TH BASQUE PLAN
11 Human dimension in VET	11.1 Introduction of various concepts to promote humanist leadership.	- N° of centres promoting humanist leadership - N° of participants working on confidence management and emotions management	- N° of centres promoting humanist leadership - N° of participants working on confidence management and emotions management
	11.2. Comprehensive training process to train humanist leaders	- N° of training cycles promoting humanist leadership. - N° of participants in the mentoring process	- N° of centres with a plan to manage shared/humanist leadership.
12 High-qualifications training. Vocational Education and Training + University	12.1 Create higher training environments requiring VET + university degree	- N° of environments that require vocational training + University Degree	- N° of higher training environments requiring VET + university degree created.
	12.2 Mutual recognition of VET and university degree courses	- Number of recognized degrees	- N° of schemes agreed for recognition of VET and university degree courses
	12.3 Definition of specific itineraries	- Sectors involved in these itineraries	- N° of specific itineraries defined
13 Inclusive training	13.1 Launching an inclusive VET system	- Budget allocated to provide centres with the necessary technical and staffing resources to assist with inclusion - N° of teachers trained in inclusive training - N° of social agents collaborating in relation to inclusion and diversity (third sector, institutions etc.)	-N° of teachers trained in inclusive training N° of centres with inclusion plans.
	13.2 Launch of inclusive education centres	- N° of centres with inclusion schemes - N° of cycles which include opening up to the environment and participation in the community in their training plans	- N° of centres with inclusion plans.

Approach

F. Smart 5.0 VET centres

INTERVENTION AREA	LINE OF ACTION	INDICATOR	INDICATORS VALIDATION 6TH BASQUE PLAN
14 New VET centre model	14.1 Development of talent in teaching staff and the management bodies of the smart 5.0 VET centres	<ul style="list-style-type: none"> - N° of teachers involved in learning communities - N° of teachers being trained on the basis of projects - N° of participants on management development programme - Management assessment and recognition programme defined (yes/no) 	<ul style="list-style-type: none"> - N° of teachers involved in learning communities - N° of participants on shared leadership development programme. - Management assessment and recognition programme defined (yes/no)
	14.2 Organisational/managerial model at 5.0 VET centres	<ul style="list-style-type: none"> - N° of centres with the new organisational/managerial model - N° of centres with change drivers 	<ul style="list-style-type: none"> - N° of centres with the new organisational/managerial model implemented. - N° of centres with a change plan led by the role of the change driver

Approach

G. Internationalisation

INTERVENTION AREA	LINE OF ACTION	INDICATOR	INDICATORS VALIDATION 6TH BASQUE PLAN
15 Internationalisation	15.1 Internationalisation of the Basque VET model	<ul style="list-style-type: none"> - N° of top-level international events, conferences and congresses attended N° of projects supporting other VET systems Creation of the European Excellence Platforms' Community of Practice (yes/no) 	<ul style="list-style-type: none"> - N° of top-level international events, conferences and congresses attended N° of projects supporting other VET systems Creation of the European Excellence Platforms' Community of Practice (yes/no)
	15.2 Internationalisation of applied innovation and research	<ul style="list-style-type: none"> - N° of international VET applied research groups led - N° of international publications produced - N° of participations in European projects 	<ul style="list-style-type: none"> - N° of international VET applied research groups led - N° of participations in European projects
	15.3 Internationalisation of learning spaces	<ul style="list-style-type: none"> - N° of joint qualifications in conjunction with other VET systems 	<ul style="list-style-type: none"> - N° of joint qualifications in conjunction with other VET systems under way.
	15.4 Internationalisation of people	<ul style="list-style-type: none"> - N° of Erasmus students/year - N° of teachers on mobility schemes/year 	<ul style="list-style-type: none"> - N° of Erasmus students/year - N° of teachers on mobility schemes/year





05

**Economic and
budgetary
aspects**

**6th BASQUE
VOCATIONAL
TRAINING PLAN:
BUDGETARY
ASPECTS**



6th BASQUE VOCATIONAL TRAINING PLAN: BUDGETARY ASPECTS

STRATEGIC APPROACH	INTERVENTION AREA	TOTALS 2022	TOTALS 2023	TOTALS 2024
SA1 TECHNOLOGY, DIGITALISATION AND SMART SYSTEMS	IA1. Digital Transformation	31.603.993,15 €	14.456.889,15 €	14.482.532,67 €
	IA2. Smart Technological Development			
SA2 STRATEGIC INNOVATION AND DISRUPTIVE TRANSFORMATION	IA1. Disruptive Innovation	4.010.750,00 €	4.154.082,80 €	4.314.615,54 €
	IA2. Applied Innovation in Strategic Environments and Entrepreneurship			
SA3. SMARTNESS MANAGEMENT	IA1. Smartness Management	2.239.740,00 €	2.390.848,80 €	2.560.090,66 €
	IA2. Complexity Management			
	IA3. Change Management			
SA4. BIOTECHNOLOGY, REGENERATAION AND WELFARE	IA1. Biociencias and Sustainability	1.241.750,00 €	1.358.960,00 €	1.490.235,20 €
	IA2. Sustainable VET Centres			
SA5. HUMAN DEVELOPMENT. PEOPLE AS PROTAGONISTS OF THE TRANSFORMATION	IA1. High-performance Training	130.150.261,00 €	130.184.605,00 €	130.223.070,28 €
	IA2. Human dimension			
	IA3. Gender Equality in VET			
	IA4. Inclusive Training			
SA6. SMART 5.0 VET CENTRES	IA1. New VET Centre Model	6.184.200,00 €	7.815.720,00 €	9.463.022,40 €
SA7. INTERNASIO- NALISATION	IA1. Internationalisation of the Basque VET System	4.948.762,00 €	4.948.762,00 €	4.948.762,00 €
		180.379.456,15€	165.309.867,75€	167.482.328,74€
		513.171.652,64 €		

6th Basque Vocational Education and Training Plan







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