

Summary

Brainport Agenda



BRAINPORT
EINDHOVEN

Preface

This is a summarized version of the Brainport Agenda the multiannual agenda for the Brainport Eindhoven region. The agenda gives an overview of Brainport's ten key tasks for the coming five years and of the corresponding actions. The region's entire population should benefit from the results of the Brainport Agenda. Think of better job or housing opportunities, excellent transport facilities and accessibility, new amenities and state-of-the art healthcare and education.

Brainport Eindhoven's strength is driven by the cooperation between public authorities, educational and knowledge institutes and the industry. This cooperation is also called the triple helix. The Brainport Agenda is intended to further enhance this strength. To allow Brainport Eindhoven to be of even greater value to the people living in the region and to the Netherlands and Europe as a whole. We are truly committed to realizing this ambition.

A two-year journey

Hundreds of organizations and persons worked together to establish the Brainport Agenda as part of a journey that started two years ago. The journey comprised of many sessions with representatives from companies, institutions and public authorities and in-depth interviews with experts. Enabling us to outline future scenarios for e.g. healthcare, sustainability and mobility. Furthermore, we researched the major changes the healthcare sector, labor market and manufacturing industry are currently experiencing.

Three pathways, ten tasks

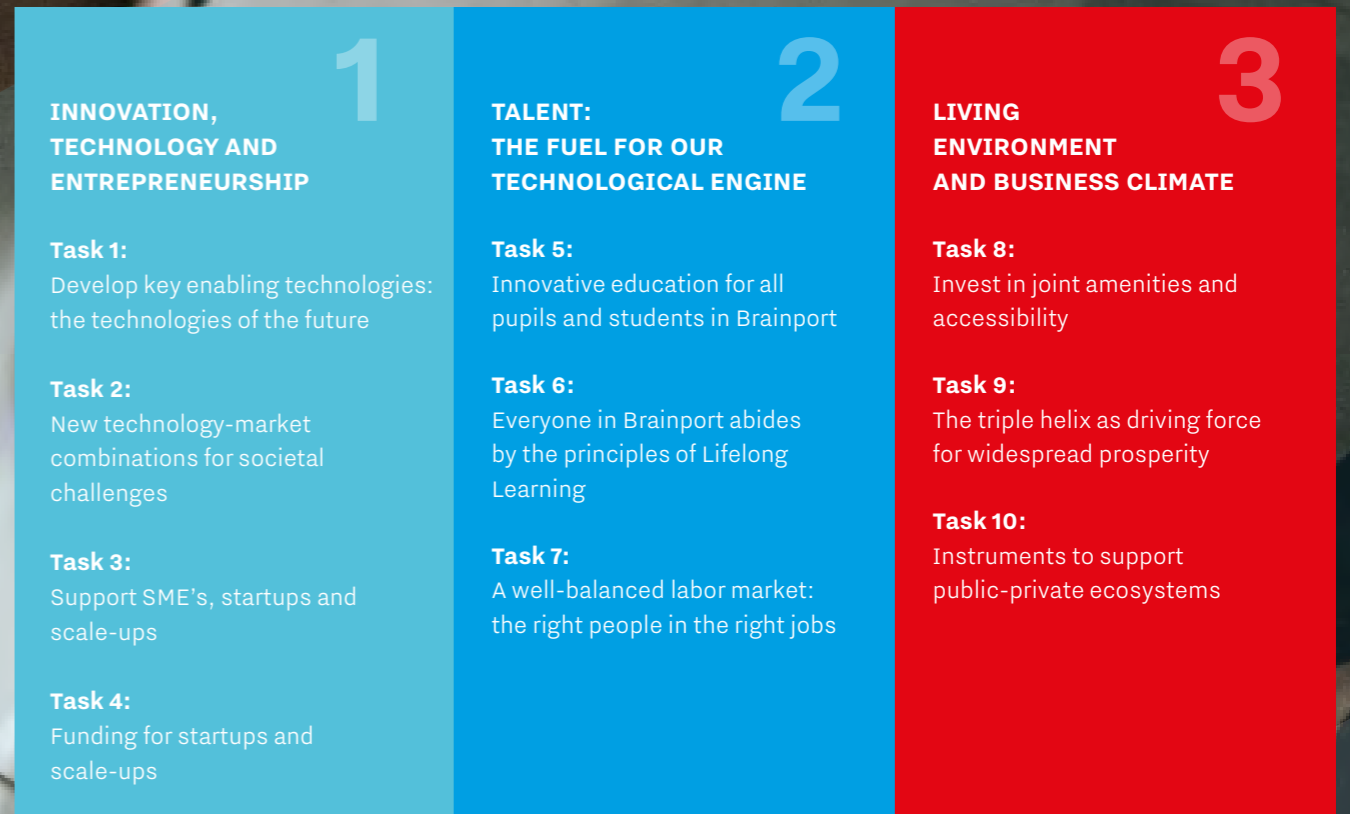
The final result is this Brainport Agenda, which follows three pathways:

- Innovation, technology and entrepreneurship
- Talent, the fuel for our technological engine
- Living environment and business climate.

We have defined ten key tasks as part of these three pathways.

Covid-19 crisis

We are presenting this agenda amidst the Covid-19 crisis. During a period in which we worry about the more vulnerable people in our society and do not know what the future will hold in socio-economic terms. The crisis has brought new social issues to light and has stressed the importance of economic resilience. However, the crisis has also shown Brainport Eindhoven to be a strong region. That is reassuring, especially during these times of uncertainty. The Brainport Agenda can help build a stronger economy and offer a solution to societal challenges.



BRAINPORT NATIONAL AGENDA FOR ACTION AND REGIONAL DEAL

The national government and the Brainport region have laid down their long-term cooperation in the Brainport National Agenda for Action (Brainport Nationale Actieagenda, BNA). The priorities and topics the region and the national government want to focus on during their long-term cooperation are defined in this agenda. The BNA will be under constant

development. This is necessary to be able to respond to the developments in the region and in the world around us. The priorities defined in the BNA constitute an important basis for the future cooperation with the government as part of the BNA.

The Brainport Agenda is also related to the Regional Deal (Regio Deal), a joint financial stimulus from the national government (€ 130 m.) and the region (€ 240 m.) to Brainport Eindhoven. The Regional Deal focuses on projects related to amenities, talent and social innovation. Projects that also contribute to the priorities defined in the Brainport Agenda.

Task 1

Develop key enabling technology: the technology of the future

Key enabling technologies can help solve societal challenges when manufacturing companies apply those technologies in their groundbreaking innovations. By applying key enabling technologies, they can furthermore increase their competitiveness, open up new markets and generate more jobs.

Expand international leadership position

The Brainport region has an international leading position with respect to several key enabling technologies. We want to expand this leadership position. Furthermore, we are constantly searching for other technologies that can be used in (new) fields of application. In order to do that, we must look across borders and seek out cooperation. Educational and knowledge institutes - at all levels - also have an important part to play in this search.

Public authorities and companies

The expansion of this international leadership position requires investment and a strong national investment and business climate. In addition, public authorities and companies must work more closely together. For example, by ensuring that public funding can more easily be linked to extensive private R&D investments. However, the mission-driven policy of The Hague and Brussels is a point of concern. The policy particularly focuses on finding solutions to societal challenges.

Whilst key enabling technologies are often at the base of many of those solutions.

Transparent cooperation

Open innovation is key to the development and use of key enabling technologies. Meaning that parties are cooperating, both regionally and (inter) nationally, in a transparent way to allow for innovation. The Brainport region therefore wants to stimulate technological cooperation within Europe. To maintain a technological lead over the US and China and maintain control over the supply of vital products. In order to do this, it is also important to maintain our leadership positions. The Covid-19 crisis has once again stressed the importance of those leadership positions.

Innovations for the market

Innovations developed through key enabling technologies are great. But there has to be a market for these innovations and the innovations must find their way onto that market. It is therefore important to embed the right market

approach into the development process. To allow new companies to justify their existence and existing companies to further grow. Enabling the manufacturing industry to be more profitable.

Integration systems engineering

In addition, we will enhance the manufacturing industry by further integrating systems engineering within the region. Systems engineering is a field of engineering that systematically merges disciplines and technologies as part of complex processes. To be able to do this, it is key that multiple parties are cooperating in the innovation and production process. For example, by defining clear and shared principles and by using one common language and one way of sharing information.

Items on the Brainport Agenda

- Continuously explore key enabling technologies and fields of application
- Translate technological qualities and key enabling technologies to the market
- Stimulate open innovation and respond to research programs at an early stage
- Invest in the development and use of systems engineering
- Increase investments in the key enabling technologies in which we are market leader/want to become market leader:
 - Advanced manufacturing (smart industry), with a specific focus on additive manufacturing (3D printing)
 - Integrated photonics
 - Artificial Intelligence
 - Micro and nano electronics

Pathway 1: Innovation, technology and entrepreneurship

Technology and technological development have been the mainstay of our economy for years. Developments are accelerating, technology is becoming increasingly complex and new business models are turning sectors upside down in a short time. In order to maintain or even improve our position on the global high-tech stage, we need to invest in the development and application of key enabling technologies. This requires an integrated approach that combines forces and links economic opportunities, social challenges and public values. Companies, educational and knowledge institutes in the region must cooperate intensively in order to develop the next generations of competing applications. Our region is bursting with innovative and organizational strength. It is our ambition to continue to use that strength to be able to achieve success in the future. We defined the agenda on the basis of key enabling technologies, societal challenges and the impetus for market creation and valorisation



Task 2

New technology- market combinations for societal challenges

We are exploring several new fields of application for key enabling technologies. By using these technologies in various fields of application, we are creating more markets, products and business models. Thus, enhancing the competitiveness of our region and businesses. We are currently focusing on five promising technology-market combinations, which will allow the region to help solve societal issues.

1. Conversion and storage of energy generated from sustainable sources

We will make a significant contribution to the transition of energy by accelerating the development of technology for conversion and storage of energy. Technology, which is affordable and can be used at a large-scale. Our region already has the knowledge and field labs. The government will act as a launching customer and will be the first to use the innovations, stimulating the manufacturing industry to develop new technologies.

2. Smart and sustainable mobility

Our ambition is to achieve 0 congestion, 0 emissions and 0 deaths in the region. To realize that ambition, we need smart technological solutions. Which will also help us strengthen both our position as cradle of smart mobility and our economic position. The high concentration of automotive companies is an important advantage to the region.

Furthermore, the number of ICT companies that are seizing the opportunities arising from the smart mobility market, is also increasing.

3. Health, vitality and healthcare

Through smart technology, we are able to improve the quality of healthcare, support healthcare professionals, save costs and develop preventive solutions. Therefore, Brainport wants to support the necessary transition of the healthcare sector by focusing on three areas: medical technology as part of 'cure', innovation of the healthcare system as part of 'care' and vitality.

4. Agriculture and food processing industry

The current food producing, processing and transport system is not sustainable. Resulting in the depletion of raw materials and waste. We need to change the way we think about food. And we need technological innovations. This will open doors for the manufacturing and



software companies in our region. We will particularly target our efforts on smart farming (smart production of food) and smart & mild food processing (generation of less waste during the food processing process).

5. Security

Our living environment is under pressure because of urbanization and demographic growth. In addition, the use of data, in private and in business, and the associated risks are increasing. Both developments require smart solutions. Companies, knowledge and educational institutes and security organizations can jointly help create those solutions.

In addition to these five promising markets, we are also researching other opportunities for significant innovations and new revenue models. Think of innovations in the construction industry, such as the Urban Development Initiative and Brainport Smart District.

Furthermore, we want to look into the future viability of rural areas in relation to the major transition of the agricultural sector. And finally, we can help realize the ambition to create a fully circular Dutch economy by 2050.

Items on the Brainport Agenda

Conversion and storage of energy generated from sustainable sources

- Engage regional manufacturing industry and scale up new technologies from lab to industry.
- Realize Battery Competence Center for the development of new battery technology, applications and a business case for recycling and reuse.
- Develop better and more efficient electrolyzers to make the production of green hydrogen affordable.
- Establish a large-scale public-private cooperation, which enables high-tech suppliers to work jointly with drivers from the chemical supply chain to render the processing industry more sustainable.
- Accelerate time to market and large-scale use of (regional) energy innovations, such as thin film solar technology, LED lighting and charging infrastructure.

Smart and sustainable mobility

- Invest in use of artificial intelligence for mobility.
- The ICADI institute is looking into a standard for Connected Automated Driving (CAD).
- Further develop batteries and hydrogen as energy carriers for zero emission heavy duty transport and logistics.
- Assess companies and competences in the automotive industry to be able to address the weaknesses and to build on the strengths.
- Enhance (inter)national visibility. For example, by bringing the Formula E, the car race category for electrical cars only, to the Brainport region. Proving Brainport Eindhoven with a stage to promote the smart and sustainable mobility solutions developed in the region.

Health, vitality and healthcare

- Bring medical technology (MedTech)

companies together and encourage SME's to join to enhance their position and their capacity to generate revenue.

- Scale up healthcare and vitality innovations.
- Bring together regional knowledge and expertise with respect to digitization in the healthcare sector. For example, through e/MTJC platform

Agriculture and food processing industry Smart farming, precision agriculture and vertical farming.

- We take precision agriculture and vertical farming as starting point.
- Identify who is offering relevant technologies, such as (micro) robotics, sensor and vision technology.
- Look into the ambition and drive of companies to set up smart farming activities. Subsequently, mobilize promising fields of application and create a roadmap.

Smart & mild food processing

- Identify who is offering relevant technologies.
- Identify the players and the cooperation needs within the food processing industry.
- Analyze the need for technologies in the food processing industry.
- Expand the cluster around Food Tech Brainport, with a focus on smart & mild food processing.
- Boost Food Tech Brainport as national field lab for innovative food processing technologies and as food processing challenge hub.

Security

- Realize a security campus around the military base in Oirschot. Security parties are jointly developing new products here. Products that are helping to ensure a safe living environment.
- Deploy, jointly with security parties, innovative solutions in the field of data



applications and data processing, also with respect to robotization and autonomous mobility

- Enhance resilience of companies by bringing them in contact with the Cyber Resilience Center Brainport (Cyberweerbaarheidscentrum)
- Set up a Security Operations Center (SOC) to increase the capacity to respond to cyberattacks.

Task 3

Support SME's startups and scale-ups

SME's, startups and scale-ups are important for the region. However, we have noticed that they are dealing with specific issues that may hamper their development. Part of the SME's for example, have difficulty keeping pace with technological development. Whilst startups and scale-ups sometimes have difficulty accessing new capital or new markets.

Extensive support SME's

Several organizations within Brainport Eindhoven, such as Brainport Development, the employers' organizations, branch organizations and trade associations, are offering extensive support to entrepreneurs. From access to financial means to help to solve issues regarding the labor market. And from the development of new business models to digitization and digital security (Cyber Resilience Center).

Necessity digital transition

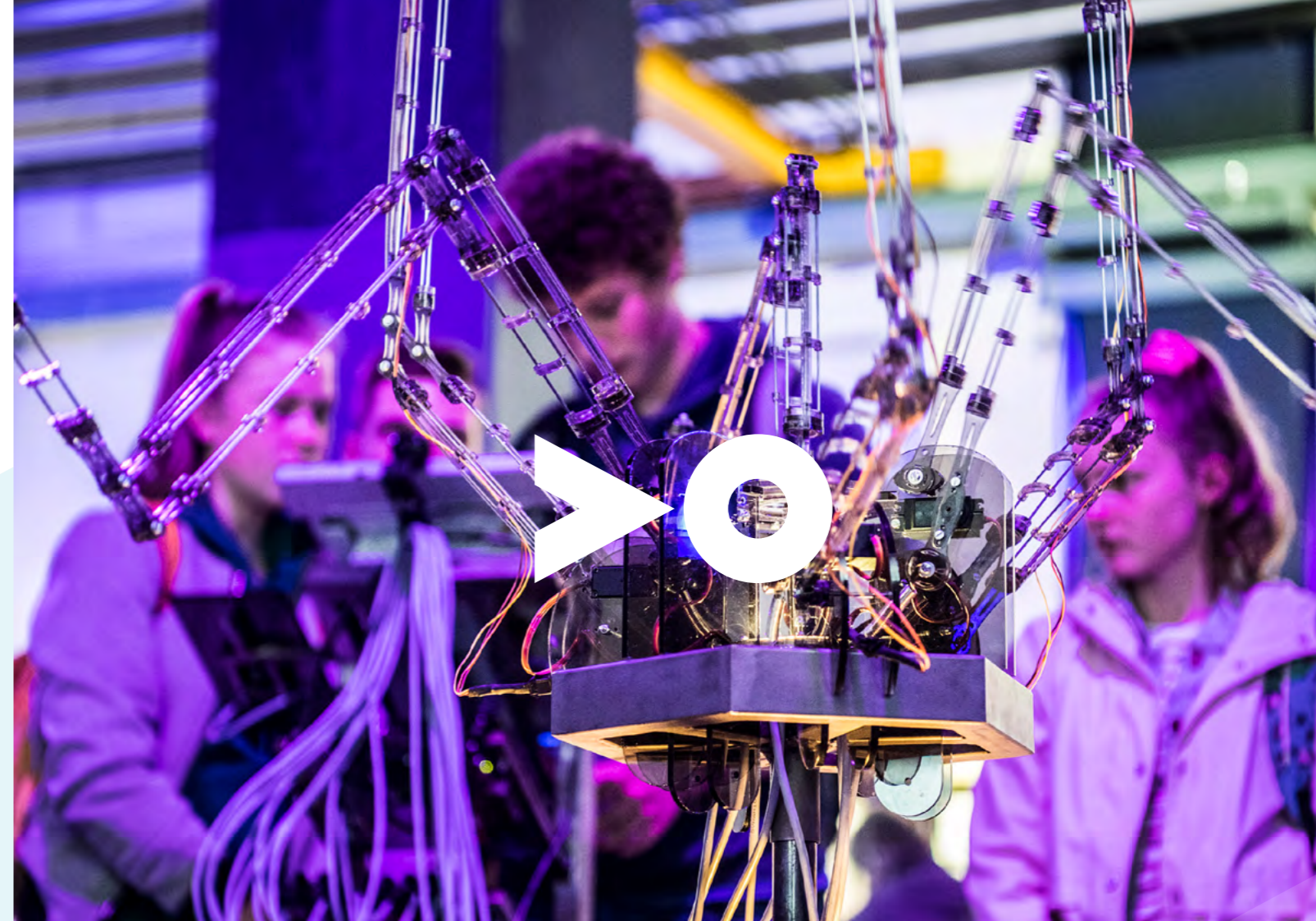
Helping SME's with their digital transition is an important priority. This transition will completely transform the industry. To maintain our leading position in technology, we must also stay ahead of our competition with respect to the digital transition. We do see a number of frontrunners in the region, but the majority of the SME's however, is lacking behind and doesn't know how to catch up.

Reduce the gap with frontrunners

To ensure a successful digital transition throughout the chain, the gap between the frontrunners and the rest of SME's must be reduced. SME's in the supply chain need to be stimulated to join the digitization process. We therefore want to provide them with better access to events, educational and knowledge institutes and best practices of frontrunners. Furthermore, we have set up a digital platform to connect entrepreneurs with one another and to enhance interaction.

Items on the Brainport Agenda

- Digitization and standardization throughout the entire chain
- Look into the possibilities of a platform within the chain to share standardized orders, logistic processes and technical data
- Stimulate frontrunners to enhance collaborations, clusters and field labs and to help fellow companies with their digitization process
- Conduct personal interviews with the entrepreneurs who are lacking behind and create preconditions to help them innovate



Task 4

Funding for startups and scale-ups

Startups are helping to solve the societal challenges and are attracting new talent. Startups in Brainport Eindhoven are more and more successful. However, in comparison with other regions, like Berlin and Stockholm, there is still room for improvement. Especially access to venture capital proves to be a serious bottleneck.

Hard to find capital

Brainport Eindhoven is an excellent location for high tech and deep tech startups. However, we do know that startups are experiencing difficulty finding capital during their startup phase. As do scale-ups that are in their growth phase. This is partly due to the fact that the available capital is not used adequately. In addition, investors that are interested still find the risks too high: the development costs are high and the period within which the company is expected to make profit is too long

Plenty of capital available

There is plenty of capital available and we have provided a clear overview of the financiers, subsidies and tax provisions in the SME Guide to funding (MKB Financieringsgids). However, an insufficient part of the available capital is finding its way to our region. Apparently, the available capital does not meet the capital needs in the Brainport region, particularly with respect to the necessary high-risk investments.

Insufficient identification of demand

Supply and demand of venture capital in the region does not fully match. However, the demand has not been sufficiently identified to be able to take specific actions. It is therefore important that we learn more about the relevant startups and scale-ups and their characteristics and needs.

Better access to funding

We want to research, together with investors and large companies, how to improve access to existing funding instruments. Furthermore, we are assessing if we need to develop a new instrument. An instrument specifically aimed at high-risk funding for the long term, which matches the need of startups and which allows us to attract new investors.

Items on the Brainport Agenda

- Create an overview of the startups and scale-ups that are based in Brainport Eindhoven, including their characteristics
- Identify the funding needs of these startups and scale-ups
- Assess if supply and demand are in balance and determine how to close the gap
- Create an overview of projects that financially support startups and scale-ups
- Exert any influence on the existing funding instruments or develop a new instrument for high-risk funding

Pathway 2: Talent, the fuel for our technological engine

The regional labor market for tech and IT talent is very tight. For example, to be able to meet demand, we need to double the number of tech and IT graduates. At the same time, the risk of a mismatch is high, because demand is constantly changing due to digitization and the development of new technologies. In addition, the region needs international talent. The arrival of such talent adds an international touch to the region and requires our educational system to adapt.

Hence, it is necessary that we attract, educate and train such talent. Therefore, all partners from the industry, educational and knowledge institutes and public authorities, and social partners have jointly defined three ambitions. These ambitions have been included and signed in the Brainport Talent & Skills Agreement. Ensuring that the region focuses on establishing a more balanced labor market. The same three ambitions have been listed as priorities on the Brainport Agenda.



Task 5

Innovative education for all pupils and students in Brainport

We are encouraging everyone to develop their talent by offering all pupils and students in our region innovative education. Education that matches the unique character of Brainport Eindhoven. For that reason, education in the Brainport region focuses on the following key themes: technology, entrepreneurship, creativity and world citizenship. These themes have been developed together with professionals from all levels of education. In addition, we are creating hybrid learning environments – learning environments where practice and education come together.

Items on the Brainport Agenda

- Connect education and the working population by means of key technologies. For example, through campaigns.
- Incorporate technology into the educational programs available
- Connect elementary and secondary education with the industry through challenges
- Incorporate entrepreneurship and creativity into the educational programs available
- Implement the Brainport model for international education. Children of expats who are staying in the region for a longer period of time will attend a mainstream school
- Equip all pupils with language and intercultural skills and world citizenship
- Deploy hybrid teachers who are working for regional employers at all levels of science, technology, engineering and mathematics (STEM) education
- Design and enhance hybrid learning environments



Task 6

Everyone in Brainport abides by the principle of Lifelong Learning

Lifelong learning is increasingly important in an ever-changing world. Not only with respect to traditional technical professions, but other professions are also changing because of digitization and robotization. When living in the Brainport region, it is important to be aware of the importance of Lifelong Learning and the opportunities the region is offering in that respect. It requires commitment from the public authorities, educational institutes, teachers and employers to ensure that Lifelong Learning becomes second nature to everyone.

Op de Brainport Agenda

- Create a regional educational infrastructure optimally designed for Lifelong Learning and tailored to the skills needed in the region
- Develop micro credentials specific for the region that prove that someone has a specific competency or skill
- Inspire working population with respect to key technologies. And provide a better understanding of what those key technologies can do. For themselves, for the labor market and for society as a whole
- Develop a regional infrastructure in support of Lifelong Learning for both individuals and employers



Task 7

A well-balanced labor market: the right people in the right jobs

The shortages in the labor market are becoming an ever more urgent problem, which must be dealt with. And we are taking various actions to do so. Those actions are not only targeted at the IT and technology sector, but we also target other sectors, which are already experiencing or will experience a shortage on the labor market, such as the healthcare sector. Moreover, we are looking into the best way to deal with the structural and conjunctural issues that are affecting our educational system and the labor market together with our partners. Because of the cyclical character of the manufacturing industry for example, it is important that we help companies retain their experts and knowledge workers when orders or revenue are suddenly declining.

Items on the Brainport Agenda

- Attract and retain (inter)national students and knowledge workers
- Offer retraining, refresher training and additional training programs for employees and jobseekers
- Improve innovation in HR and recruitment and realize opportunities for robotization and automation
- Utilize the strength of each level of education
- Provide educational institutes with a better understanding of the quantity and quality of students needed, now and in the future
- Establish a stabilization policy to help companies retain their experts and knowledge workers when demand is suddenly declining



Task 8

Invest in joint amenities and accessibility

The region's growth does not only create prosperity, it also causes pressure on amenities, the housing market and for example accessibility. This may affect all residents of the region. International talents also take this into account and compare our living environment with the living environment of competitive regions. We must therefore ensure a high standard of amenities and excellent accessibility.

Amenities

The amenities we offer must keep pace with the changing demographics and match the innovative ecosystem of Brainport Eindhoven. This is something the region cannot do alone. We need long-term public investments and collaboration between region and national government. Together with partners from national and provincial governments, we are working on a well-balanced housing market, a high quality of living and a high standard of amenities in the region. For example, with programs like the Regional Deal and the Brainport National Agenda for Action. Where possible, we choose innovative concepts when developing amenities, such as housing, culture and sports.

Accessibility

Especially the economic top locations in the region are experiencing difficulties because accessibility is less than optimal. To improve accessibility, we need innovative solutions (smart mobility) and better infrastructure. This

requires an integral approach and cooperation with the triple helix. The Brainport Foundation is the connecting party that can stress the importance of such solutions to the provincial and national governments.

Items on the Brainport Agenda

- Continuously align the agenda of the Metropolitan Region of Eindhoven (MRE) with the innovation agenda of the triple helix
- Put importance of and investments in amenities on the agenda. For example, via the Brainport National Agenda for Action and the Regional Deal
- Look into the fact whether the public authorities can be a launching customer for innovation
- Turn the Eindhoven International HubXL into a state-of-the-art urban environment and transport hub
- Develop and realize regional and sub regional smart hubs
- Invest in increase of scale of the public transport infrastructure to create a better

connection between prime locations and the important transport hubs

- Helmond is starting a pilot with an autonomous shuttle service as part of the Fabulos project. When funded through the Regional Deal, this pilot can be turned into a permanent solution, with the opportunity to extend the project to other locations in the region.
- Actions from the Brainport National Agenda for Action

Pathway 3: Living environment and business climate

Some find amenities the most important aspect of the economic business climate, where for others these are part of their home land, and a living environment where they want to feel at home. It is part of our vision that people and profit are no opposites. That is why we want to make the residents of our region aware of all the benefits Brainport Eindhoven has to offer. Some of the benefits we offer is that we are often the first region to incorporate social solutions, that we provide educational opportunities for everyone and that we invest in amenities and accessibility.



The triple helix as driving force for widespread prosperity

Widespread prosperity comprises all that people deem valuable. It is much more than just an income. Widespread prosperity also means: vitality and the opportunity to 'participate'. From a national and international point of view, our region is doing relatively well. However, we also see that some people in the Brainport region are struggling to meet the basic household needs. We are dealing with a metropolitan problem. And are of the opinion that people shouldn't feel neglected in their own region. The Brainport network can be the driving force with respect to the issues social organizations in the region are faced with. We already see many initiatives to use the triple helix way of thinking to help solve social issues.

Items on the Brainport Agenda

- Join organizational forces with all partners to provide expertise, resources and employees to help solve societal challenges.
- A first initiative is the new foundation Partnerfonds Brainport Eindhoven. A foundation that focuses, in close collaboration with civil society organizations in the region, on poverty, distance to labor market and vitality. This foundation is open to all companies and is constantly assessing the way companies and educational and knowledge institutes can help in achieving the social goals.
- The Metropolitan Region Eindhoven (MRE) is monitoring widespread prosperity to measure its progress based on specific indicators. As a region, we are committed to create better instruments to develop solutions to regional societal challenges.
- Jointly with the triple helix partners we are looking into the valuable link between societal challenges and technological solutions.



Instruments to support public-private ecosystems

The cooperation between public and private partners is the most powerful instrument our region (or even Europe) has to compete at a global level. It supports open innovation – which is the answer to the much larger amounts other countries are spending on research. That open innovation takes place in so-called ecosystems, such as Brainport Eindhoven. When we further develop such ecosystems, we bring about innovation, a well-balanced labor market, competitiveness, and solutions to social issues. It is with reason that the long-term growth strategy of the Netherlands is based on those ecosystems.

We can use Brainport Eindhoven's experience to help develop instruments at a national level to support the ecosystem strategy. Some good examples are The Brainport National Agenda for Action, The Regional Deal, the AI Coalition and PhotonDelta.

Items on the Brainport Agenda

- Further develop the national ecosystems strategy with the government
- Help to enable support of ecosystems at a national and European level
- Continuously renew and maintain our own regional ecosystem
- Extra focus on engaging new generations and SME's the coming years
- Structural funding of (knowledge) platforms



Examples



JOINTLY REALIZE ALTERNATIVE TRANSPORT

In 2019, fourteen companies, institutions and public authorities concluded the Collective Transport 2.0 Agreement (Collectief Vervoer 2.0). They want to offer employees and students another way of transport besides the car. Such as direct bus lines to work or school. To encourage employees and students to leave their car, cities along the route must create a network of hubs where people can park their car and take the bus instead.

JOINTLY SUPPORT THE UN GOALS

More than 150 parties in the region are jointly supporting the Sustainable Development Goals (SDGs) of the UN. Those goals also provide a framework on how to use innovation and technology to help sustainable development. A concrete example is Signify. The company uses Philips LED horticultural technology to maintain the production and quality of tomatoes consistent throughout the year. Resulting in more yield because of increased production and more efficient use of energy. By doing this, Signify is contributing to more sustainable production and consumption patterns (SDG #12)

JOINTLY STRENGTHEN EUROPE

Brainport Eindhoven is part of the Vanguard Initiative (VI) – a cooperation of almost forty EU regions. The cooperation focuses on growth and employment by means of a 'renaissance of the industry'. VI especially focuses on future industrial niche markets, which are ready for a market breakthrough. Furthermore, VI is creating European value chains in areas where individual regions are not capable of building their own value chains. To allow them to jointly develop global leadership. VI is also helping us with the development of innovative collaborations in Europe.

JOINTLY DEVELOP AI

The Eindhoven University of Technology (TU/e) has founded the new Eindhoven AI Systems Institute (EAIISI). Jointly with other knowledge partners, such as Fontys University of Applied Sciences and TNO, the institute is further developing the regional use of AI as part of the industrial systems. Substantial investments are needed to be able to become a global leader in the development of AI. That is why, over the next five years, the TU/e wants to invest 100 million euros in e.g. the attraction and education of AI top talent, the building of proper infrastructure and in research & development.

JOINTLY CREATE SUSTAINABLE FOOD

In 2020, we will start with the implementation of the pilot plant for vegetal residual flows. The plant will consist of a processing plant to process multiple vegetal residual flows - from produce like apples, leek, pears, etc. - into puree, juices and concentrates at a small industrial scale. And of a utilization plant, where residual flows will be processed into new valuable ingredients, such as proteins, dietary fibers and oils. This way, the pilot plant is helping to recycle raw materials, reduce energy consumption and produce healthy foods.



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