

Research for REGI Committee: Delegation note - economic, social and territorial situation and policies in the United States of America (focus: Boston, Massachusetts)

This briefing was prepared to provide information for the visit to Boston (Massachusetts) and Washington, DC from 7 to 11 May 2018 of a delegation from the European Parliament's Committee on Regional Development (REGI).

1. Political-administrative system

The United States of America (the US) is the third largest country in the world, based on population and land area. Approximately 42 % of the total population lives in predominantly urban areas (mid-range among OECD countries).¹ The US has no official national language at federal level, but English has a de facto official status in the country and an official status in 32 of the 50 states; Hawaiian is an official language in the state of Hawaii, and 20 indigenous languages are official in Alaska². The currency in use is the United States dollar (USD).

Table 1: Key data

	United States	Boston city	Washington city, District of Columbia (DC)
Total area:	9 831 510 km ² ³	48.28 square miles (land area) ⁴	61.05 square miles ⁵
Population ⁶	325 719 178 Men: 49.2 % Women: 50.8 %	673 184 (Massachusetts: 6 859 819) Men: 47.9 % Women: 52.1 %	681 170 (same for DC in 2016) Men: 47.5 % Women: 52.5 %
Population change 2010-2016 ⁷	4.5 %	9 % (Massachusetts: 4 %)	13.2 % (same for DC)

The population of Boston grew faster than other cities in the north-eastern United States, at a high rate given that it is a geographically constrained historic city.⁸

The US is made up of **50 states and one district, the capital is Washington, DC. Massachusetts** (officially called a commonwealth) is one of the 6 New England states located in the north-east corner of

¹ Source: [United States Country Notes, Regional Outlook 2016, OECD](#).

² <https://www.cia.gov/library/publications/the-world-factbook/geos/us.html>.

³ Source: [The World Bank, Databank, World Development Indicators](#).

⁴ Source : www.census.gov.

⁵ Source : www.census.gov.

⁶ Source: www.census.gov 1 July 2017 estimates for US, Massachusetts, 1 July 2016 for Boston and Washington city and for gender data (2010 for Boston and 2016 for Washington/District of Columbia).

⁷ Source: www.census.gov.

⁸ Source : Boston's Economy Report 2017, The Boston Planning & Development Agency, May 2017.

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the US. The state is bordered to the north by Vermont and New Hampshire, to the east and south-east by the Atlantic Ocean, to the south by Rhode Island and Connecticut, and to the west by New York. In terms of total area it is the seventh smallest state; **the capital is Boston.**⁹

Map 1: Commonwealth of Massachusetts



Source: Shutterstock.

The US is a **constitutional federal republic** with a strong democratic tradition. The **legislative branch** consists of a bicameral Congress: the Senate (100 seats with two representatives from each of the 50 states serving a six-year term with one third of membership renewed every two years) and the House of Representatives (435 directly elected members serving two-year terms). The Republican Party has majorities in both chambers of Congress at the time of writing. The power of the **executive branch** is vested in the President (together with the Vice President, both serving a four-year term, eligible for a second term), who is both head of state and head of government and commander-in-chief of the armed forces. There are 15 **executive departments** (each led by a Cabinet member) that carry out the day-to-day administration of the federal government.¹⁰ The Cabinet (an advisory body made up of the heads of the 15 executive departments) is appointed by the President, and is approved by the Senate. The President receives advice and support from the so-called Executive Office of the President (EOP). Six distinct areas are covered currently by the EOP offices, including the [Office of Management and Budget](https://www.eop.govt/management-and-budget/), the [Council of Economic Advisers](https://www.eop.govt/economic-advisers/) and the [Office of Science and Technology Policy](https://www.eop.govt/science-and-technology-policy/).

Powers not granted to the federal government are divided between **states and local governments**. Each state has a written constitution, and all state governments are modelled after the federal government (having an executive, legislative, and judicial branch), but they vary greatly with regard to the executive structure. The executive branch is headed by a directly elected governor in every state. All 50 states have legislatures that are made up of elected representatives. All states, with the exception of Nebraska, have a bicameral legislature made up of two chambers: a smaller upper house (always called the Senate) and a larger lower house (most often called the House of Representatives, as is the case in Massachusetts). Local governments generally include two tiers: counties (in some states divided into townships), and municipalities, or cities/towns. State constitutions define the ways municipalities are structured and named. The local government in Boston consists of the mayor and the City Council (13 members).

The US is ranked 7th among OECD countries on public spending decentralisation: 47.9 % of its government expenditure is undertaken at subnational level.

⁹ <https://www.britannica.com/place/Massachusetts>.

¹⁰ <https://www.cia.gov/library/publications/the-world-factbook/geos/us.html> and <https://www.whitehouse.gov/about-the-white-house/the-executive-branch/>.

Table 1: Political summary

Head of State and Head of Government	Donald J. Trump (Republican Party)
Secretary of US Department of Housing and Urban Development¹¹	Ben Carson (Republican Party)
Secretary of US Department of Agriculture¹²	Sonny Perdue (Republican Party)
Governor, Massachusetts	Charlie Baker (Republican Party)
Mayor, Boston city	Martin J. Walsh (Democratic Party)
Mayor, Washington DC	Muriel Bowser (Democratic Party)
Presidential election	Most recent: November 2016 Next: November 2020
United States House of Representatives elections	Most recent: November 2016
United States Senate elections	Most recent: November 2016 Next: November 2018 ¹³
Mayoral election in Washington DC	Most recent: November 2014 Next: November 2018
Mayoral election in Boston city	Most recent: November 2017 Next: November 2021

2. Socio-economic situation

The US has the largest and most technologically advanced economy in the world, however, as the findings of the OECD country note highlight, territorial disparities continue to represent a challenge in the country.

'The GDP per capita in the United States, more than USD 56 000, is 36 % above the OECD average, ranking the United States the 5th richest in the OECD. Inter-regional disparities of GDP per capita, as measured for small (TL3) regions using the Gini index, were below average for the OECD but have grown since 2000. However, when looking at the differences in only the top and bottom 20 % of regions (states), the United States had the third widest gap in the OECD. The country has the largest inter-regional disparities in the OECD on a composite index of health indicators (mortality rate and life expectancy), with Hawaii ranking in the top 30 % of the OECD and Mississippi in the bottom 1 %. The United States also has one of the highest poverty rates (after taxes and transfers) in the OECD of 18 %, with regional values between 10 % and 27 %. The range between the best and worst performing regions in terms of labour productivity spanned from 70 % to 150 % of the country average. One third of the regions are catching up with the most productive ones. The rest of the country is mostly keeping pace, but some regions, such as Georgia, Michigan and Florida, are losing ground.'

Source: [United States Country Notes, Regional Outlook 2016, OECD.](#)

¹¹ <https://www.hud.gov/>.

¹² <https://www.usda.gov/>.

¹³ National Elections take place every even-numbered year. Every four years the president, vice president, one third of the Senate, and the entire House are up for election (on-year elections). On even-numbered years when there isn't a presidential election, one third of the Senate and the whole House are included in the election (off-year elections). Source: <https://www.senate.gov/reference/Index/Elections.htm>.

Table 2: Key socio-economic data

	US	European Union
GDP at current prices (million USD, 2015)	18 036 650	16 300 451
GDP per capita, current prices (USD, 2015)	56 084	32 018
GDP, change on previous year (2015)	2.6 %	2.3 %
Employment rate, age 15+ (2015)	58.8 %	52.1 %
Unemployment rate, age 15+ (2015)	5.3 %	9.4 %
Unemployment rate, age 15 to 24 (2015)	11.8 %	20.3 %
Inflation rate (annual change of price index on previous year)	0.1 %	0.0 %
Research & development (R&D) expenditure, % GDP (US: 2012, EU: 2014)	2.8 %	2.0 %
Researchers in R&D sector, per 1 million inhabitants (US: 2012, EU: 2014)	4 019	3 480
Resident patent applications, per 1 million inhabitants (2015)	897	195
Internet users, per 100 inhabitants	74.6	79.5
Broadband subscribers, per 100 inhabitants	31.5	32.0

Source: Statistical country profiles G20 Member States, Edition 2017, issues covering [United States](#) and [European Union \(EU-28\)](#), Federal Statistical Office of Germany (Destatis).

According to the [Global Innovation Index 2017](#) (GII)¹⁴, the US ranks fourth among countries included in the report (after Switzerland, Sweden and the Netherlands and before the United Kingdom). The GII recognises that innovative activity tends to be concentrated in geographic clusters and it attempts to identify and rank the world's largest clusters of inventive activity (based on international patent filings). An interesting finding is that for most clusters, the largest patent applicant is a company, but for several of them it is a university, notably the Massachusetts Institute of Technology (for the Boston–Cambridge cluster that ranked 8th in the GII analysis).¹⁵

According to [Boston's Economy Report 2017](#)¹⁶, the economy of Massachusetts has experienced strong growth in wages and jobs, but forecasts point to a gradual slowing in growth by 2020. In the **Bloomberg 2016 US State Innovation Index**¹⁷, Massachusetts ranked first in the country, ahead of California. This status is attributed to a great extent to 'university power', pointing to the important role universities play in the regional economy. There is overall a good environment for innovation in Massachusetts, namely a good mix of tax incentives (to draw in companies), research partnerships (universities and local businesses) and commercialisation of research.

Boston has witnessed economic growth with low unemployment (below 3 % in 2016) in recent years, and this trend is likely to continue. Growth between 2014 and 2015 ran ahead of the growth rate of the US economy (3.6 % as measured by Gross City Product)¹⁸. Boston is a major regional employment centre, and annual job growth was stronger in the same period than in both Massachusetts and the US. The largest number of people (18.5 % of total jobs) are employed by the health care and social assistance industry in Boston (five of the 10 largest employers in Boston are hospitals), while the biggest job growth was registered

¹⁴ The Global Innovation Index 2017: Innovation Feeding the World is the result of a collaboration between Cornell University, INSEAD and the World Intellectual Property Organisation (WIPO) as co-publishers, and their Knowledge Partners.

¹⁵ Source: The Global Innovation Index 2017 report.

¹⁶ Boston's Economy Report 2017, The Boston Planning & Development Agency, May 2017.

¹⁷ The Bloomberg US Innovation Index scored each of the 50 states on a 0-100 scale across six equally weighted metrics: R&D intensity; productivity; high-tech density; concentration of science, technology, engineering and mathematics (STEM) employment; science and engineering degree holders; and patent activity. Source: <https://www.bloomberg.com/news/articles/2016-12-22/here-are-the-most-innovative-states-in-america-in-2016>.

¹⁸ Gross City Product (GCP) is an aggregate measure of economic activity, analogous to national Gross Domestic Product (GDP).

in the professional, scientific, and technical services industry¹⁹, with high-tech industries (information and manufacturing with a high percentage of their workforce in the science, technology, engineering and maths (STEM) occupations) averaging 10 % annual job growth between 2010 and 2015. The finance and insurance sectors, as well as the government, employ large numbers of people in Boston. Inflation in the Boston metropolitan area was higher than nationally: the 'Boston area consumer price index excluding housing costs'²⁰ grew by 2.6 % between January 2016 and January 2017, compared to 2.0 % growth at national level.

Boston excels in **knowledge industries** that rely on a skilled and educated workforce; the above-mentioned most important industries have large shares of highly-skilled knowledge workers, in particular the professional, scientific, and technical services industry, within which the area of medical and life science research employs a large and productive workforce. The aforementioned report highlights that 'for the 22nd year in a row, Boston led the nation in total dollars of National Institute of Health (NIH) funding. In FY2016, Boston received a total of USD 1.85 billion, with its nearest competitor being New York City, which received USD 1.63 billion.' Boston is home to **30 colleges and universities** (almost 150 000 students). The quality of the labour force is a critical factor for firms requiring educated and skilled labour: in recent years several major firms have relocated their corporate headquarters or announced plans to relocate to Boston (as one consequence, for example, Boston has become the centre of the footwear industry in the US).

Boston has a high share of young adults between the ages of 20 and 34 (34.5 %, compared to 20.7 % in the US as a whole), partly due to the fact that Boston is a centre of higher education, but it may also suggest that the city is an attractive place to settle. Low unemployment, walkability, public transport and low crime rates all make Boston an attractive city. On the other hand, however, it is an expensive place to live, especially with regard to the housing market.

Finally, in terms of future prospects, the Report mentions the following risks:

'Areas of uncertainty for Boston include aging of the labour force, immigration policy and federal funding. The aging of the labour force, while not unique to Boston, will present challenges as a smaller share of the population will be participating in the labour market. The BPDA projects that the share of Boston's population 65 and older will increase from 11-14 % of the population between 2015 and 2030. Immigration policy is a major concern, as Boston's population growth relies heavily on foreign born migration to the city and region. The foreign born represent 31.2 % of the city's labour force. Lastly, federal funding is also a significant concern as Boston and the region are large recipients of federal research and development funding, particularly National Institutes of Health grants. Significant changes to funding levels would directly impact local hospitals, universities, and companies whose work relies on cutting edge research, and would spread throughout the Boston economy through impacts on local supply chains and reduced local consumer spending. Apart from any such major policy or funding changes, economic and demographic projections for the city suggest continued growth in population and jobs, particularly in high knowledge industries.'

Source: Boston's Economy Report 2017, The Boston Planning & Development Agency, May 2017.

3. Regional development and innovation policies in the US

The United States at federal level, does not have a 'cohesion' policy that would be directly comparable to that of the EU. Economic development is predominantly the responsibility of state governments. There is no overarching national policy framework for regional, rural or urban development. There are, however, various programmes for economic development with a place-based approach – these tend to focus on areas of economic distress or reconversion. The definition of the spatial unit targeted by the interventions depends on the programme ('region' can be smaller than a city (a neighbourhood or community), however in some cases the focus is on a much larger area).²¹

¹⁹ It contains a variety of industries including computer systems design, scientific research and development, management consulting, architecture and law companies.

²⁰ Boston-Brockton-Nashua, Massachusetts-New Hampshire-Maine-Connecticut.

²¹ Source: [Regional Development Policies in OECD Countries](#), OECD, 2010.

The following executive departments (also referred to as government agencies) play a role in matters most relevant for regional development on federal level.²²

The **Department of Commerce** promotes economic development and technological innovation through a number of services, for example gathering economic and demographic data, providing information on the environment, ensuring the effective use of scientific and technical resources, formulating telecommunications and technology policy and assisting and enforcing international trade agreements. In terms of regional development, the main objectives focus on the competitiveness of lagging regions, reviving areas distressed by industrial shocks, capacity building for subnational government, and innovation. The budget of the Department is USD 6.5 billion. The **Economic Development Administration (EDA)**, which is responsible for economic development at federal level, is an agency of the Department of Commerce. The EDA serves distressed areas through regional strategy development and public investments that support regional competitiveness. The main orientation of policy tools in recent years has increasingly been towards innovation and business development, workforce development and clusters. The EDA provides financial and technical assistance for economic development, it has a network of regionally-based staff and a portfolio of flexible grant tools. The [EDA's programmes](#) include: Public Works (expanding and upgrading physical infrastructure), Economic Adjustment (strategies to bring about economic change, including the [Revolving Loan Fund Programme](#)); Planning (long-term economic development strategies); Regional Innovation Strategies (see more details in Chapter 3.1); Trade Adjustment Assistance for Firms; University Centres (partnership of the federal government and academia); Research and National Technical Assistance (research of leading edge, world class economic development practices and information dissemination efforts); Local Technical Assistance (mainly in distressed areas); and Economic Development Integration (leading the federal government's efforts to maximise the integration of economic development resources from all sources, including federal, state, local and philanthropic).

According to information on the EDA's website, it invested nearly USD 1.4 billion in 3 244 projects between the financial years of 2012 and 2016. 615 projects (worth USD 786.2 million) are expected to create and/or retain 226 393 jobs and attract nearly USD 29 billion in private investment. In 2017 the EDA had USD 222 million at its disposal for economic development assistance²³.

The **Department of Housing and Urban Development** is responsible for national policies and programmes related to housing and supporting homeownership for lower- and middle-income families (mortgage insurance and rent subsidy programmes). Offices include the Federal Housing Administration, the Office of Fair Housing and Equal Opportunity and the Community Development Block Grant Programme, which focuses on economic development, job opportunities and housing rehabilitation (the Department also administers public housing and homeless assistance and has a mandate to create special economic zones for disadvantaged neighbourhoods and capacity building for subnational actors). The budget of the Department is approximately USD 40 billion.

The **Department of Agriculture**, on top of its numerous specific tasks, also aims at fostering local communities and deals with rural development policy issues. The objectives of the Department focus on agriculture, infrastructure (basic and advanced) and following a stakeholder-centred approach. The budget of the Department is approximately USD 95 billion.

Other federal departments also run programmes relevant for regional economic development and innovation, for example the Department of Defence and the Department of Labour. The Employment and Training Administration is an agency of the latter; it has six regional offices that monitor programmes, services and benefits provided under the Workforce Innovation and Opportunity Act, Unemployment Insurance Programme, Trade Adjustment Assistance programme and other grant investments. Technical assistance is also provided to state and local governments and other organisations that implement actions under these programmes for the benefit of jobseeker and business customers.²⁴

²² Source: <https://www.whitehouse.gov/about-the-white-house/the-executive-branch/> and [United States Country Notes, Regional Outlook 2016, OECD](#).

²³ [The Department of Commerce Budget in Brief Fiscal Year 2018](#).

²⁴ See more: <https://www.doleta.gov/reports/program/>.

Overall, recent policy changes in the US affecting the mandate of these departments have taken a similar evolutionary path to those in the EU: moving away from grants (subsidies) towards other forms of support (investments), enhanced focus on a place-based approach for development and public investment, efforts for greater coordination and integration of policies for regional, urban and rural development at federal level and greater policy integration at programme level through multi-department programmes. Disaster recovery is also high on the agenda for several federal departments. The tools deployed under these areas most relevant for the thematic focus of the REGI Delegation include:

- **Business development/innovation support:** Manufacturing Communities Partnership (strengthening value chains across regions by brokerage and investments); Regional Innovation Strategies Programme (grants to communities to accelerate the development of regional innovation ecosystems); Manufacturing Extension Partnerships (helping manufacturing SMEs by giving innovation and administrative support, to retain jobs);
- **Clusters/technology platforms/centres of expertise:** Research and National Technical Assistance programme (setting up clusters as well as cluster mapping in order to identify clusters that could be supported).

The [US Small Business Administration \(SBA\)](#) is an independent agency of the federal government that was created in 1953 to aid, counsel, assist and protect the interests of small businesses. It carries out activities in the United States, Puerto Rico, the U.S Virgin Islands and Guam, through a broad network of field offices and partnerships with public and private organisations. The SBA primarily provides assistance in four ways:

- business financing (from micro-lending to substantial debt and equity investment capital (venture capital));
- entrepreneurial development (education, information, technical assistance & training);
- government contracting (federal procurement, to ensure small business participation and reach the goal of 23 % of prime contract dollars);
- advocacy (reviewing congressional legislation, assessing the impact of the regulatory burden, conducting research on American small businesses and the small business environment).

According to a 2015 OECD policy brief, the SBA played an important role during the recovery from the recent financial crisis, when SME loans declined by more in the US than in other OECD countries: partially guaranteed loans (in 2013, a record number of guarantees amounting to USD 22.6 billion) were provided to SMEs. Furthermore, progress was made to tackle market and regulatory obstacles.²⁵

The SBA has offices across the country. The New England regional office (located in Boston) covers 'region I', which consists of Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island and Vermont. The Boston District Office is responsible for the delivery of programmes and services.

The **executive branch of the state government in Massachusetts** has several divisions active in fostering economic development. The **Executive Office of Housing and Economic Development** assists businesses and communities with financing, deals with economic opportunity for residents, collaborative leadership in communities, and aims to foster an environment that supports job creation and business growth. It also supports new housing for residents through targeted investments. The most important among its programmes and grants are micro-lending and community development funds (to increase capital available to small businesses that cannot secure financing through banks) and the Urban Agenda Grant programme (flexible funding for initiatives that entail community-driven responses to community-defined economic opportunities, and that build leadership, collaboration, and capacity at local level). The **Department of Housing and Community Development** provides affordable housing options, financial assistance, and other support to Massachusetts communities. The **Massachusetts Office of Business Development (MOBD)** offers services to businesses intending to relocate to Massachusetts or to expand their current operations. The Regional Economic Development Organisation Grant Programme offers resources to those organisations that facilitate regional business development projects. The Economic Development Incentive Programme aims at offering credits to lower taxes in exchange for job creation. The State Trade Expansion Programme aims to compensate international business development and related marketing costs for small businesses.

²⁵ [United States Policy Brief, Entrepreneurship](#), OECD, 2015.

The MOBD is also involved in the above-mentioned micro-lending and community development funds. The **Massachusetts Office of International Trade and Investment** assists Massachusetts companies interested in foreign expansion and potential foreign investors.

On the city and metropolitan area level, the [Metropolitan Area Planning Council \(MAPC\)](#) is the regional planning agency serving the 101 cities and towns of metropolitan Boston. The [Boston Planning & Development Agency \(BPDA\)](#) is the planning and economic development agency for the City of Boston (and a department of the city administration). The BPDA is involved in planning (institutional, urban design, urban renewal, etc.), zoning (shaping zoning codes that dictate the allowed shape, density, and use of development in a given area), development review (facilitating the evaluation of design, density, use, and physical and social impacts for all development projects, including residential, commercial office, hotel, retail, and research & development in Boston), housing (housing opportunities for Boston residents and certified artists) and research (economic analysis, maps with a focus on Boston). The Neighbourhood Development department focuses on housing issues, the Mayor's Office of Workforce Development support programmes that provide educational opportunities, job training and financial coaching to Boston's workers. The Education Cabinet creates connections among stakeholders, leaders and institutions in Boston's education ecosystem. The [Mayor's Office of Economic Development](#) offers a one-stop shop service to businesses (a business strategy team helps expand, move, or keep and grow a business in Boston, the small business development team offers permitting and licensing resources, as well as technical help and certification for businesses owned by local people, women, minorities and veterans).²⁶

3.1 Innovation policy²⁷

The US has **never had a centrally directed innovation policy**, even though publicly-funded research has been important for several sectors. In the 1980s and 1990s some steps were taken in the direction of creating a European-style industrial policy, for example the creation of the Small Business Innovation Research Programme (SBIR) which obliged federal agencies to allocate part of their research budgets to small firms. Overall, the central focus of US technology policies has been on national security and public health. Nevertheless, government support for scientific research has, to highlight a highly successful example, contributed to many of the innovations relevant for the evolution of the US information technology industry.

The **innovation system** is highly decentralised and diverse, involving multiple actors (branches of federal and state governments, public agencies, universities, private sector, and non-profit and intermediary organisations). The US innovation system rests on two pillars: a high level of R&D (basic and applied research with basic research sponsored particularly by federal government agencies, including technology that is too risky for the private sector) and a strong orientation towards applications and commercialisation. Moreover, competition among the different players is an additional positive element (funding agencies, universities competing against each other for talent and for funds, innovation clusters such as those based in San Francisco and Boston, and firms).

There are several federal agencies that have interests in innovation policy and programmes. The **Department of Commerce** is particularly relevant in this context. The **Office of Innovation and Entrepreneurship (OIE)** is housed within the EDA and has the aim to 'foster innovation and the commercialisation of new technologies, products, processes, and services with the goal of promoting productivity and economic growth in the United States'. Two primary initiatives run by the OIE are:

- the National Advisory Committee on Innovation and Entrepreneurship (Federal advisory committee chaired by the Secretary of Commerce); and
- the Regional Innovation Strategies (RIS) Programme (national grant programme with a focus on regional capacity-building).

The focus of both these initiatives lies on how to translate innovations into jobs and growth, including innovations that have received federal research funding. Ad hoc policy expertise on innovation, technology

²⁶ Source used in this paragraph: www.boston.gov.

²⁷ Sources used in this chapter: Owen, Geoffrey (2017) [Lessons from the US: innovation policy](#), Policy Exchange, Westminster, London; [Innovation Policy around the World: United States: The Need for Continuity](#), Brian Kahin, Christopher T. Hill; and [International Benchmarking of Countries' Policies and Programs Supporting SME Manufacturers](#), Stephen J. Ezell And Dr. Robert D. Atkinson, The Information Technology & Innovation Foundation, September 2011.

commercialisation and high-growth entrepreneurship is also provided by the OIE to 'clients' such as the White House and other agencies.

Regional Innovation Strategies (RIS) Programme

'(...) EDA currently awards grants that build regional capacity to translate innovations into jobs (1) through proof-of-concept and commercialisation assistance to innovators and entrepreneurs and (2) through operational support for organisations that provide essential early-stage risk capital to innovators and entrepreneurs. The RIS Programme consists of two separate competitions: the i6 Challenge and Seed Fund Support (SFS) Grants competition. The i6 Challenge is a leading national initiative designed to support the creation of centres for innovation and entrepreneurship that increase the rate at which innovations, ideas, intellectual property, and research are translated into products, services, viable companies, and, ultimately, jobs. Through the SFS Grants competition, EDA provides funding for technical assistance to support the creation, launch, or expansion of equity-based, cluster-focused seed funds that invest regionally-managed risk capital in regionally-based startups with a potential for high growth.'

Source: <https://www.eda.gov/oie/ris/>.

In 2017, USD 17 million was available to the Programme; the EDA made 42 investments and leveraged USD 22 million in private, state and local matching funds. Eight new states joined the programme, which now covers 40 states and one US territory. Investment areas include industries such as advanced manufacturing, aerospace, agricultural technology, healthcare technology and these ecosystems supported by the programme are considered to be a dynamic, essential part of regional economies. In the state of Massachusetts (Cambridge) the [Metro North Regional Employment Board](#) was granted support of USD 500 000 from i6 Challenge, for a project aiming to create and strengthen links between an emerging 'Hardware Startup Cluster' and an established 'Advanced Manufacturing Cluster' located within the target region.

In addition to public players, intermediary and cross-boundary bridging organisations play an important role in national innovation policy-making, such as the [Council on Competitiveness](#) (Harvard is represented by the renowned economist, Professor Michael E. Porter in the executive committee) and the [National Academies](#). Further to undertaking studies and organising workshops, these organisations provide fora for policymakers to review performance and discuss new strategies. Both the private sector and university leaders together with public agencies play a key role in providing expertise to these organisations.

As explained earlier, in the US the states have the main responsibility for economic development, education and regional innovation policy. Moreover, cities and other localities may also develop their own innovation policies. At the local level, intermediary organisations (chambers of commerce, public-private partnerships, entrepreneurship forums, etc.) are actively contributing to policy-making in most metropolitan areas. Educational institutions, particularly at the tertiary level, play a very important role in the US innovation system: universities not only educate students, but perform R&D and are typically involved in the local economy. Recently they have been taking up more and more the role of facilitators of the innovation process (technology transfer roles, hubs for incubators, spin-offs, knowledge transfer, and state and local innovation policy-making). Finally, private non-profit foundations have traditionally been highly involved in funding for research activities.

4. The Massachusetts Institute of Technology (MIT) and Harvard University

As mentioned above, universities play an important role in the local and regional economy in Massachusetts, in terms of economic development catalysts but also as employers and partners of the City of Boston²⁸. Based on the results of the QS World University Ranking 2018 edition, MIT was confirmed for a sixth consecutive year as the world's highest rank university (among 959 institutions considered). Harvard took third place.²⁹

²⁸ See for example: [Harvard University's Cooperation Agreements with the City of Boston](#), annual reports 2016-2017.

²⁹ Source: <https://www.topuniversities.com/university-rankings/world-university-rankings/2018>. See also critiques about the shortcomings of this ranking methodology: https://en.wikipedia.org/wiki/QS_World_University_Rankings.

Founded in 1861, **MIT** has more than 11 000 graduate and undergraduate students enrolled in five schools (architecture and planning; engineering; humanities, arts, and social sciences; management; and science). Many scientific and technological breakthroughs can be attributed to MIT, for example the first chemical synthesis of penicillin and vitamin A, the development of radar, the invention of magnetic core memory, which enabled the development of digital computers, discovery of quarks, contributions to the Human Genome Project, the creation of GPS, pioneering 3D printing, the invention of the electronic spreadsheet and of encryption systems that enable e-commerce. **Current areas of research and education** include digital learning; nanotechnology; sustainable energy, the environment, climate adaptation, and global water and food security; Big Data, cybersecurity, robotics and artificial intelligence; human health, including cancer, HIV, autism, Alzheimer's and dyslexia; biological engineering and CRISPR technology; poverty alleviation; advanced manufacturing; and innovation and entrepreneurship.³⁰

MIT was founded with a focus on practical education, differing from other private universities of that era, which offered classical education. There are several resources dedicated to fostering entrepreneurship and innovation, including a strong business-oriented curriculum (with an industry internship component) and structures to support startups, for example: the Technology Licensing Office (TLO) strategically evaluates, protects and licences technology, the Venture Mentoring Service matches perspective entrepreneurs and mentors who can provide day-to-day professional advice and coaching in areas relevant to the needs of new entrepreneurs, The Martin Trust Centre for MIT Entrepreneurship offers courses and educational programmes for potential entrepreneurs. There are also many student clubs and initiatives involved in entrepreneurship or innovation. MIT is home to [educational 'accelerators'](#) that aim to help student entrepreneurs accelerate their progress 'towards validating their target market and starting to build a viable, sustainable venture'.

'Startup accelerators support early-stage, growth-driven companies through education, mentorship, and financing. Startups enter accelerators for a fixed period of time, and as part of a cohort of companies. The accelerator experience is a process of intense, rapid, and immersive education aimed at accelerating the life cycle of young innovative companies, compressing years' worth of learning-by-doing into just a few months.'

Source: [What Startup Accelerators Really Do, by Ian Hathaway, March 01, 2016, Harvard Business Review](#).³¹

MIT fosters partnerships with industry and other leading research institutions: more than 700 companies collaborate with the faculty and students, through Institute-wide programmes (for example the Industrial Liaison Programme), the MIT Energy Initiative, and in smaller collaborations³²:

'Research sponsored directly by industry totalled USD 148 million in fiscal year 2017, or 21 % of all MIT research funding. According to the National Science Foundation, MIT ranks second in industry-financed research and development expenditures among all universities and colleges without a medical school. [...] In fiscal year 2017, the TLO received 794 invention disclosures (including 84 from Lincoln Laboratory), filed 271 US patents, had 298 US patents issued, executed 137 licenses and options, had 25 companies formed using MIT intellectual property, and received USD 53.6 million in total licensing revenue.'

Source: <http://web.mit.edu/facts/industry.html>.

An example of collaboration with industry is the [MIT-IBM Watson AI Lab](#) focusing on fundamental artificial intelligence research.

Harvard University is a private university based in Cambridge and Boston, Massachusetts. Harvard is the oldest higher education institution in the United States (established in 1636), with its alumni including 48

³⁰ Source: <http://web.mit.edu/>.

³¹ See also: [The Difference Between a Business Accelerator and a Business Incubator? Fernando Sepulveda, Managing Director, Impulsa Business Accelerator](#).

³² Source of information in this paragraph: <http://web.mit.edu/facts/entrepreneurship.html> and <http://web.mit.edu/facts/industry.html>.

Nobel laureates, 32 heads of state and 48 Pulitzer Prize winners. Harvard currently has about 22 000 students enrolled and 12 degree-granting schools in addition to the Radcliffe Institute for Advanced Study.³³ Engineering and applied sciences at Harvard have a long history and in 2007, in recognition of the growing importance of engineering and applied sciences, the John A. Paulson School of Engineering and Applied Sciences was created. This school does not have traditional academic departments, research is carried out in multiple areas in collaboration with other schools throughout the university and beyond: for example, Harvard is part of an integrated partnership on nanoscience and nanotechnology research called the National Nanotechnology Infrastructure Network, led by Cornell and Stanford Universities. Links to industry are manifold, and go beyond the direct interest of industry as the future employer of students, cooperation in research activities is highly developed, for example:

BASF Advanced Research Initiative at Harvard University

'Set up as an integrated partnership among Harvard and BASF researchers, the BASF Advanced Research Initiative at Harvard benefits from having strong ties with departments and schools throughout the University. The decisive difference of this collaboration between academia and industry from most research initiatives is its more integrative nature: BASF researchers from Germany are working closely with Harvard academic research teams, easing scientific exchange on the projects, as well as fostering broader interaction between the two institutions. This arrangement also gives the students the opportunity to benefit from a close interaction and early exposure to industry. Present projects focus on approaches to prevent biofilm formation and the use of colloidal techniques to develop formulations of pharmaceutical actives.'

Source: <https://www.seas.harvard.edu/faculty-research/centers-initiatives>

Other research centres focus on a wide range of topics such as bio-inspired optics (sponsored by the Department of Defence and Air Force), quantum materials, quantum optics, computation and society, brain science, data science, environment, innovative computing, etc. Some initiatives focus on territorial issues, such as the Harvard–Mellon Urban Initiative, structured around ongoing city-based research projects, which 'brings together scholars and resources from across Harvard University and is directed toward establishing a vigorous, interdisciplinary, and coordinated study of urban environments in the humanities'.³⁴ During the 2016/17 academic year, the Initiative in partnership with the Radcliffe Institute for Advanced Study launched the '[Initiative on Urbanism](http://mellonurbanism.harvard.edu/about/)' to explore the challenges and tensions that people in urban communities face today. Another initiative linking the university with the community is the Boston Area Research Initiative (of the Radcliffe Institute and in cooperation with the Rappaport Institute for Greater Boston and the City of Boston). It aims at 'strengthening existing collaborations between the city and local colleges and universities to cross academic disciplines and administrative boundaries and develop new ways to connect scholars, policy-makers, practitioners and civic leaders'.³⁵

Research initiatives and projects at the Harvard Business School increasingly follow robust cross-disciplinary agendas. Examples include: the [Digital Initiative](#), which, according to information on its website, is a 'cross-unit venture that unites scholars and practitioners to explore and impact the transformation of business in today's digital, networked, and media-rich environment'; the activities of the [Arthur Rock Centre for Entrepreneurship](#); and the [Forum for Growth and Innovation](#), 'designed to discover, develop and disseminate robust, accessible theory in the areas of innovation and general management, in order to create a tighter link between research and practice in general management'.

Harvard is a favourable place for startup companies and innovation, and several structures are in place to support new ventures. The [Harvard i-lab](#) was launched in 2011, it brings together education, entrepreneurship and innovation, and it is open to any full-time, degree-seeking student from any of the Harvard schools, no matter what discipline the idea falls into and at any stage of its formation. The model followed by the i-lab enables students to explore entrepreneurship, meet other first-time founders and

³³ Source: www.harvard.edu.

³⁴ <http://mellonurbanism.harvard.edu/about/>.

³⁵ <https://www.radcliffe.harvard.edu/academic-ventures/research-initiatives/boston-area-research-initiative>.

experienced entrepreneurs, make prototypes and launch ventures. In addition 'students are able to tap into the i-lab's extensive connections to the regional and national startup ecosystem, gaining access to expertise and guidance across a broad range of topics and industry areas including health and science, technology, cultural entrepreneurship, social impact and consumer brands'.³⁶ The [Pagliuca Harvard Life Lab](#) is a shared laboratory space for high-potential life sciences and biotech startups founded by Harvard faculty, alumni, students, and postdoctoral scholars. [Harvard Ventures](#) is a large undergraduate venture capital platform, flagship programmes include VentureWorks (a tech accelerator that helps create new products), Ventures Startups Fellowship (which brings together Harvard students and Boston startups) and the i3 Pitch Competition awards (non-dilutive funding and advice for Harvard startups). The largest organisation bringing together Harvard's alumni is [Harvard Alumni Entrepreneurs, which aims](#) at promoting entrepreneurship, innovation and leadership. Finally, the [Harvard College Social Innovation Collaborative organisation](#) brings together members of the Harvard community aiming to pursue social entrepreneurship ventures. Activities include organising conferences, connecting students among themselves and cooperating with organisations looking for interns or with social entrepreneurs, as well as the running of a social enterprise incubator.

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Feedback If you wish to give us your feedback please email the Poldep-Cohesion Secretariat: poldep-cohesion@ep.europa.eu.

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³⁶ <https://i-lab.harvard.edu/explore/about/>.