

Climate Innovation Insights offers a platform for reflections and lessons from renowned climate innovation experts to spark discussion about the process of tackling climate change through innovation. The independent opinion pieces discuss best practices, different methodological approaches towards climate innovation and implications for business, society and politics. The series is supported by Climate-KIC, Europe's largest public-private climate innovation partnership.



Nurturing Talent: A Novel Education Model for Climate Innovation Clusters

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Key messages

- Education must play a visible and central role in helping people to understand the impacts of global warming and increasing 'climate literacy'.
- Novel multi-disciplinary education frameworks can help to build the human capital needed to empower people and organisations to take positive climate action.
- Education initiatives can act as a catalyst, bringing local authorities, academia, citizens and businesses together to work on climate challenges.
- Education frameworks provide knowledge and a space for innovators to incubate and accelerate their ideas to the market place.

Introduction

The United Nations Educational, Scientific and Cultural Organization aims to make education a more central and visible part of the international response to climate change. Its ambition is to help people understand the impacts of global warming today and increase 'climate literacy' within society. To achieve this, it will be important to have a workforce with the entrepreneurial and innovative skills needed to address this global challenge and take advantage of the opportunities arising from it.

Europe is recognised for its excellence in education and training, and the creation of human capital. However, in the twenty-first century, knowledge has become a commodity

due to its global availability through the internet; impactful education no longer needs to follow the traditional 'classroom model'.

This *Insight* describes how Climate-KIC created a strong education framework, focused on skills and talent, to support entrepreneurship and innovation competencies. It also outlines innovative approaches used to deliver this.

Tackling the climate challenge through education

In 2009, several European organisations came together to create Climate-KIC, an integrated network focused on tackling

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climate change. Climate-KIC was established to be a leading global centre of excellence, educating, inspiring and empowering leaders and 'change agents' with creative and innovative solutions for a low-carbon society. These solutions are outcome-focused, integrating scientific, social, economic, cultural, policy and ethical dimensions.

The organisations that formed Climate-KIC were drawn from across the European Institute of Innovation and Technology's (EIT) knowledge triangle (see Figure 1).¹ These included research and technology institutes (e.g. the Potsdam Institute, the Grantham Institute, L'Institut national de la recherche agronomique and Deltares), higher education institutes (e.g. Imperial College London, ETH Zurich and Université Pierre et Marie Curie) and businesses.

Each academic partner was different in terms of the content of their programmes and the selection of candidates. Some were more traditional in their core academic course focus, while others brought in elements of wider innovation and transferrable skills. In this fashion, Climate-KIC's focus on interdisciplinary, action-orientated and holistic approaches was intended to create future business leaders, professionals and policymakers who are informed about the opportunities in climate change.

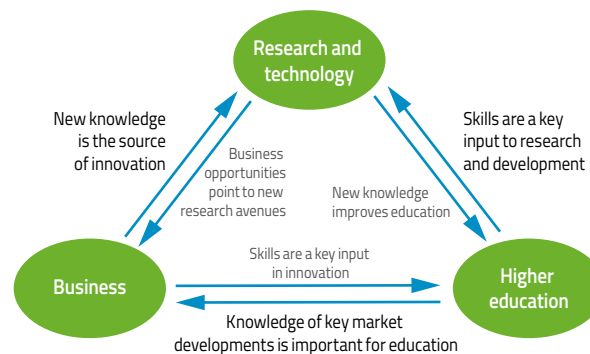
Today, Climate-KIC brings together the best of Europe's business, research and education organisations to address the systemic global challenge of climate change, creating a pool of invaluable human capital. Collaboration has also created pan-European partnerships, multiplying the impact of each organisation's local innovation clusters.

Climate-KIC's innovative approach to education

The shift to the knowledge economy has created space for radically different approaches to education. Climate-KIC acted on this to create a new and wide range of educational offerings to support the diverse needs of its climate innovation clusters.

Figure 2 shows the Climate-KIC education portfolio and innovation framework, including its education exemplars and how innovation processes are enhanced by capturing knowledge and supporting the development of skills.

Figure 1. The EIT knowledge triangle

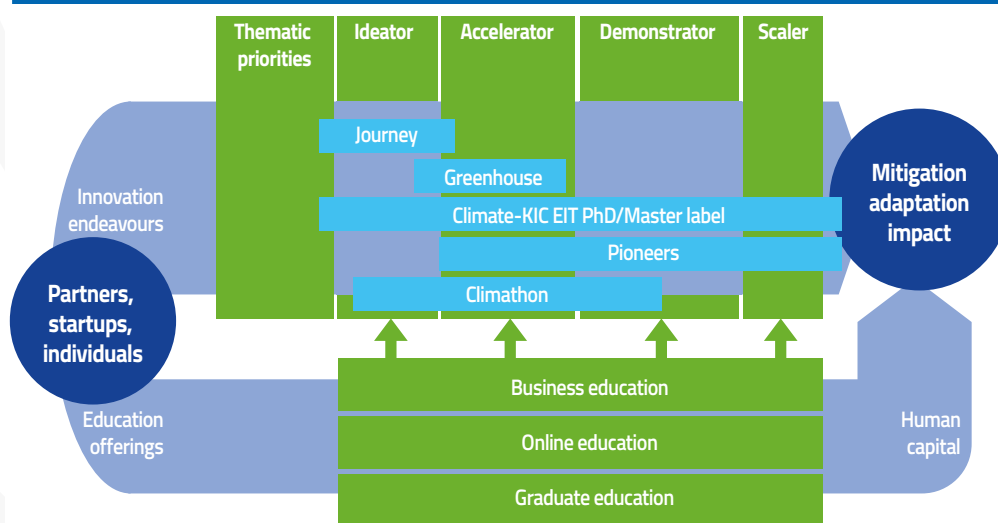


Source: EIT (2012)²

At the start of this system, there is a rigorous selection process to ensure the most competent and motivated individuals are selected. Training is then provided across the range of education activities, starting from prioritising themes and ideation (the formation of ideas or concepts) all the way to scaling up impacts. In addition to the training, new knowledge is captured to create learning opportunities for the community. Interventions into existing education ecosystems are made to strengthen their innovation impact.

Human capital and individuals are the lifeblood of this ecosystem, continuing to learn, create and disseminate new knowledge for the community. The key output of human capital is driven by inspiring optimism and elevating people to drive climate action. This approach gives particular attention to developing unique teaching and learning features with well-balanced content.

Figure 2. Climate-KIC's education portfolio and innovation framework



Source: Climate-KIC

Climate-KIC also uses 'trigger' moments – life-changing, transformative educational experiences that inspire climate action – to foster, nurture and inspire an entrepreneurial spirit for transformative impact. For example, many graduates that have been involved in early stage ideation courses have gone on to create successful entrepreneurial ventures based on their new knowledge and skills.

Examples of Climate-KIC's education offerings

Climate-KIC has developed a range of different programmes to provide these skills and training. Five of these are described here in more detail: Journey, Greenhouse, the Climate-KIC EIT Label, Pioneers and Climathon.

Journey: Inspiring young leadership

Journey³ is a five-week summer school that works with innovation clusters to introduce young talent to entrepreneurship. The programme has been running with 40 Journeys since 2010, operating in 27 unique locations across Europe. With over 1,500 participants from 50 countries so far, it is the world's largest climate summer school and has generated more than 300 climate-related business ideas.

Participants learn to work effectively in multi-disciplinary teams. They combine scientific insights with new entrepreneurial and innovation skills, and ultimately deliver a climate-related business solution. The format emphasises challenge-based contextual learning using a 'learn by doing' approach, with supportive coaching. Participants are introduced to entrepreneurship as a way of applying and developing their collective knowledge. It operates on a cross-continent structure, with knowledge exchanged between the multiple Journeys that run concurrently across Europe.

Journey offers a context for businesses, universities, research organisations and public bodies to collaborate on an inspirational education programme; they can also draw on this pool of innovative talent from across the world. Around 10 per cent of the ideas generated go directly to the student incubator, Greenhouse; an increasing number go on to the Accelerators and then enter the marketplace.

Greenhouse: Bridging ideas and acceleration

Greenhouse supports students and young professionals operating in virtual innovation clusters to design and test business models for their ideas. It is an informal, flexible environment that enables participants to assess the market potential and commercial viability of their ideas or services. Participants can also access innovation clusters across Europe

to find people with the right qualities to exploit the market potential of their ideas. As such, Greenhouse provides a bridge between the formation of ideas and business accelerators.

As well as being a valuable route into business accelerators, the Greenhouse supports participants' personal and professional growth. Experience shows that some graduates need more educational orientation to nurture their entrepreneurial ideas; business accelerators tend not to emphasise personal and professional development. However, around 30 per cent of entrants to the Greenhouse go on to take part in Climate-KIC's Accelerators.

The Climate-KIC EIT Label: Boosting graduate education

The Climate-KIC EIT label⁴ is an innovative certification programme that complements the existing postgraduate education system (PhD and master's programmes), providing a creative approach to disseminating entrepreneurship, innovation knowledge and training.

Label students are provided with valuable skills beyond the academic context, which help to foster entrepreneurial thinking and generate commercially relevant projects. They complete the Journey programme, a mobility placement and additional business-oriented courses, and write a climate innovation thesis. The package contributes credits to their course of study under the European Credit Transfer System.

By being part of the Climate-KIC EIT Label, graduates can collaborate with a Europe-wide network and gather important contacts for their professional future. The core difference from conventional postgraduate courses is the focus on creating a new generation of entrepreneurial graduates focused on finding climate solutions.

Pioneers: Implementing climate action

Pioneers is Climate-KIC's professional mobility programme,⁵ which creates local and international innovation networks to drive systemic innovation. The training takes place over six months: an initial workshop is followed by a preparation period, culminating in a six-week placement in a host organisation.

The programme operates across Europe and, so far, over 800 professionals have participated. Over 300 host organisations have been involved, including industry, small businesses, universities and research institutes, public bodies and non-governmental organisations. Pioneers form a broad body of multi-skilled professionals, able to combine technical specialisms with social understanding and entrepreneurial spirit to develop a cross-disciplinary and international perspective.

There are benefits to everyone involved in the programme. Participants gain new knowledge and skills, as well as getting experience in new contexts, while always focused on implementing innovations. Hosts realise a number of outcomes, including the implementation of new innovations, practices and frameworks that influence their future processes and strategy.

The movement of professionals under this programme also means that best practices are shared across different innovation clusters in Europe, building continent-wide competency in climate innovation.

Climathon: Driving city-level climate action

Climathon⁶ is an annual 24-hour global event, held on the last Friday of October, in which participants work to define and develop new ideas and practical solutions to the climate challenges facing cities. Over two iterations, it has attracted more than 160 cities across six continents.

It uses a 'hackathon' model to accelerate ideas from conception to a business model. This development is supported by expert hackers, or 'hackxperts', comprising local stakeholders drawn from institutes in the knowledge triangle (see Figure 1). The event culminates with business ideas being pitched to sponsors and investors, with the best ideas progressing to implementation.

Climathon has created new innovation clusters across the globe, bringing together stakeholders – local authorities, academia, citizens and businesses – to work on the climate challenges that are unique to cities. It won the Guardian Sustainable Business Award in the communicating sustainability category in 2016,⁷ and continues to raise awareness of the collective action needed to solve climate change, as well as generating a 'can do' mindset among the public.

Conclusions

These experiences have demonstrated that, to create impact, innovation needs to be an element in education models. At the same time, the design and delivery of education must be inspiring and creative. This approach – of vision-driven and challenge-focused education – will accelerate the innovation needed to tackle climate change by inspiring and enhancing human capital.

Climate-KIC offers a unique educational experience with significant socio-economic and climate impacts. The programmes it operates provide participants with tools, incentives, training, coaching, mentoring and relevant knowledge to help them turn their ideas into impact.

In delivering these programmes, Climate-KIC is building and connecting networks of organisations and active change agents worldwide. It has educated over 2,000 graduates and professionals in multiple disciplines, who are now having an impact in the climate innovation clusters; around 15 per cent of Climate-KICs alumni now work in start-ups. They continue to draw on the Climate-KIC network to strengthen their skills and receive training in cleantech and transition thinking.

Endnotes

1. EIT (2012) *Catalysing Innovation in the Knowledge Triangle*, Budapest: European Institute of Innovation & Technology (https://eit.europa.eu/sites/default/files/EIT_publication_Final.pdf)
2. Ibid.
3. See: <http://www.climate-kic.org/journey2016>
4. See: <http://www.climate-kic.org/for-students/degrees>
5. See: <https://pioneers.climate-kic.org>
6. See: <https://climathon.climate-kic.org>
7. Yeomans, M. (2016) 'Copenhagen to Washington: 24 hour climate hack to make cities sustainable', *The Guardian*, 27 May (<http://www.theguardian.com/sustainable-business/2016/may/27/copenhagen-washington-climate-hack-cities-sustainable-cycling-food-waste>)

Climate-KIC UK and Ireland

Climate-KIC is Europe's largest public-private innovation partnership focused on climate change.

Our partnership consists of dynamic companies, the best academic institutions and public authorities. We drive innovation in tackling climate change through creative partnerships large and small, local and global, and between the private, public and academic sectors. The UK and Ireland is a core geographic region within Climate-KIC and is home to some of the most energetic climate innovation clusters and businesses in Europe.

Climate Innovation Insights offers a platform for reflections and lessons from renowned climate innovation experts to spark discussion about the process of tackling climate change through innovation. The series is supported by Climate-KIC. We would like to thank the Series Editor, Dr Andrée Carter and the two external reviewers, Dr Matthew Hannon and Dr Merylyn Hedger OBE.

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