Regional innovation policy, transformative change and the three frames of innovation policy

4th–7th July 2017 Bogotá, Colombia
Commissioned by Colciencias
# Contents

Introduction  
1  
Learning objectives  
2  
Programme  
3  
Three frames: a comparison  
5  
Three frames – appendix  
10  
Recommended readings  
11  
Lecturers  
12  
Notes  
15
Introduction

Welcome to your training course – Regional innovation policy, transformative change and the three frames of innovation policy, delivered by the Science Policy Research Unit (SPRU) at the University of Sussex, as part of the co-operation agreement between SPRU, and Colciencias (Government of Colombia’s Department of Science, Technology and Innovation). The co-operation aims to strengthen Colciencias’s science, technology and innovation policy design and evaluation unit. It outlines areas of collaboration, training, mentoring and mutual learning and provides exciting opportunities for joint working both on new research projects and the development of innovation policy.

Alejandro Olaya Davila, Deputy Director of Colciencias said: “We recognize that SPRU is the leader in the world for science policy. In Colombia right now we are developing a new national science and innovation policy. We want to do this with the best organisation in the world to help improve our system in Colombia”. SPRU has an outstanding track record working with partners across the globe, combining world leading academic research and practical policies. It has long-standing expertise on Latin America, and the agreement deepens its relationship with Colciencias, the main actor in Colombia on science, technology and innovation policy.

Professor Johan Schot, Director of SPRU said; “The world is currently in a period of deep transition, requiring structural changes to deal with the big challenges of today. At SPRU we are working on ideas for the next generation of innovation policies, focused on promoting sustainable and inclusive innovation. We are delighted to be working with Colciencias, and hope this agreement paves the way for a long-term relationship that will see us develop our ideas together.”

During this course participants will learn about the three frames for innovation policy – research and development (R&D), National Systems of Innovation and Transformative Change/Innovation in the regional context. They will start to apply these to specific regional innovation policy initiatives in Colombia. Key concepts and tools including the multi-level perspective and strategic niche management will be un-packed to allow a deeper understanding of the nature of transformative change, the importance of experimentation and an opportunity to re-think the aims of innovation policy in direct relation to specific societal and grand challenges.

Having built up a strong base on the three framings participants will learn about this in relation to two specific types of innovation that are important in the regional context – Grassroots Innovation and Inclusive Innovation. Through a combination of lectures and group exercises we identify regional examples and apply the frameworks and tools to explore the potential of transformative change. Finally, the importance of evaluation in the context of the three framings of innovation will be explored, highlighting the importance of using different evaluation tools for specific roles within the policy process.

The expert team at SPRU that have developed this course have really enjoyed putting it together and are looking forward to a very productive days, working with all participants to share and discuss new ideas on developing innovation policy for transformative change. We hope you enjoy it as well, and welcome your participation and feedback throughout the course and beyond.
Learning objectives

THREE FRAMINGS OF INNOVATION

• Understand characteristics of three frames for innovation policy
• Ability to recognize the three frames on different regional innovation initiatives in Colombia
• Understand how the three frames complement and question each other

EXPLAINING TRANSFORMATIVE CHANGE USING THE MULTI-LEVEL PERSPECTIVE

• Recognize key elements on transformative policy
• Understand importance and process of experimentation and opening up for Transformative Change
• Applying transformation thinking to regional innovation in Colombia

REGIONAL INNOVATION POLICY

• Recognizing differences across regional policy approaches and understanding their significance
• Understanding the need for policy mixes and recognizing some instruments to implement it
• Understanding the need for keeping options open to policy design and implementation
• Understanding the importance of governance and multi-level governance for policy design and implementation

INCLUSION AND REGIONAL POLICY

• Discuss examples of inclusive innovation through different policy frames and its relevance for Colombia.
• Apply network analysis as a diagnostic tool for inclusive innovation and recognize different networks architectures and network dynamics.

GRASSROOTS INNOVATION

• Appreciate grassroots innovation as an outlier site of innovation activity that challenges conventional approaches to STI

EVALUATION: CONCEPTS, ROLES AND ITS RELATION TO THE THREE FRAMINGS OF INNOVATION

• Obtain knowledge of the different ways in which evaluation can be understood, its roles within the policy process and how different roles will call for different evaluation techniques.
• Understand how specific evaluation techniques imply, often implicitly, a specific understanding of innovation
• Identify key elements, connections and evaluation questions based in programme theory approach and third frame of innovation
• Generate awareness of the implications of using participatory approaches in evaluation of research policies and processes
# Programme

<table>
<thead>
<tr>
<th>TIME</th>
<th>TOPIC</th>
<th>LEARNING OBJECTIVES</th>
<th>SPEAKER</th>
</tr>
</thead>
</table>
| 9.00 – 9.30 | Welcome & Introduction | • Understanding societal and grand challenges and the role of transformative innovation policy in providing new ways of them.  
• Understanding the potential of transformative innovation policy for Colombian regions | Alejandro Olaya Matias Ramirez |
| 9.30 – 11.00 | Lecture: introducing three frames, including various innovation models. | • Understanding characteristics of three frames for innovation policy  
• Understanding how the three frames complement and question each other | Matias Ramirez |
<p>| 11.00 – 11.15 | Break | | |
| 11.15 – 12.00 | Group work: identify innovation policy initiatives in Colombia that match the three frames | • Recognizing the three frames on different national/regional innovation initiatives in Colombia | Team |
| 12.00 – 13.00 | Lecture: Importance of transformative change for Colombian regions | • Rethinking the aims of innovation in direct relation to specific societal challenges and understand the transformative innovation framing and apply it to societal challenges in Colombia | Matias Ramirez |
| 13.00 – 14.00 | Lunch | | |
| 14.00 – 15.00 | Lecture: Different types of regional innovation policy | • Recognizing differences across regional policy approaches and understanding their significance | Edurne Magro |
| 15.00 – 16.00 | Group work: Mapping up regional innovation policies and their contribution to changes in socio-technical systems (creation and destruction of regimes) | • Understanding complementary roles of policy in order to destabilize regimes and enable systemic change | Edurne Magro Jonas Colen |
| 16.00 – 16.15 | Break | | |
| 16.15 – 17.00 | General discussion: Opportunities for transformative change in Colombia? | • To wrap up the discussion on transformative change and their value for regional innovation policy | Matias Ramirez |</p>
<table>
<thead>
<tr>
<th>TIME</th>
<th>TOPIC</th>
<th>LEARNING OBJECTIVES</th>
<th>SPEAKER</th>
</tr>
</thead>
<tbody>
<tr>
<td>9.00 – 10.00</td>
<td><strong>Lecture:</strong> Experimentation for transformative change</td>
<td>• Recognizing differences across regional policy approaches and understanding their significance</td>
<td>Edurne Magro</td>
</tr>
<tr>
<td>10.00 – 11.00</td>
<td><strong>Group work:</strong> According to the challenges identified can you define an area for experimentation and what would be your role?</td>
<td>• Understanding the features of a transformative change policy</td>
<td>Edurne Magro</td>
</tr>
<tr>
<td>11.00 – 11.15</td>
<td><strong>Break</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11.15 – 12.00</td>
<td><strong>Lecture:</strong> Inclusion and regional policy</td>
<td>• Discuss examples of inclusive innovation through different policy frames and its relevance for Colombia</td>
<td>Matias Ramirez</td>
</tr>
<tr>
<td>12.00 – 13.00</td>
<td><strong>Lecture:</strong> Introduction to grassroots innovation and its relevance for Colombian context</td>
<td>• Appreciate grassroots innovation as an outlier site of innovation activity that challenges conventional approaches to STI</td>
<td>Jonas Colen</td>
</tr>
<tr>
<td>13.00 – 14.00</td>
<td><strong>Lunch</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14.00 – 15.30</td>
<td><strong>Lecture:</strong> An introduction to the concepts and roles of evaluation. Evaluation approaches across the three frames of innovation policy</td>
<td>• Knowledge of the different ways in which evaluation can be understood, its roles within the policy process and how different roles will call for different evaluation techniques</td>
<td></td>
</tr>
<tr>
<td>15.30 – 16.00</td>
<td><strong>Closing remarks</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Three Frames: a comparison

Input provided by: Johan Schot (SPRU), Ed Steinmueller (SPRU), Laur Kanger (SPRU), Tuomo Alasoini (Tekes)

This table allows you to grasp easily the distinctiveness of each frame.

<table>
<thead>
<tr>
<th>FRAME 1: R&amp;D</th>
<th>FRAME 2: SYSTEMS (A) AND ENTREPRENEURSHIP (B)</th>
<th>FRAME 3: TRANSFORMATIVE CHANGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>TIME OF DOMINANCE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1960s-1980s</td>
<td>1980s to today</td>
<td>Emerging</td>
</tr>
<tr>
<td>MAIN GEOGRAPHICAL FOCUS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>National</td>
<td>National and regional systems of innovation intersecting with sectoral and technological innovation systems (a)/ National with particular attention to “centres of excellence” or “clusters” of innovative activity (b)</td>
<td>Multi-scalar: focus on grand challenges that extend to multiple scales exceeding geographical, sectoral, technological and disciplinary boundaries</td>
</tr>
<tr>
<td>FOCAL ACTORS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Government, scientists and industry actors with a tendency to prioritize large firms</td>
<td>Interlinked configurations of government, science and industry actors with particular attention to the role and missions of universities (a)/ enterprises, markets and the government with a particular focus on New Technology-Based Firms and start-up culture (b)</td>
<td>Government, science, industry, civil society, end-users and non-users (as potentially affected parties and contributors to the innovation processes)</td>
</tr>
</tbody>
</table>
REGIONAL INNOVATION POLICY AND TRANSFORMATIVE CHANGE

JUSTIFICATION FOR POLICY INTERVENTION

Fixing market failures: industries fail to conduct basic scientific research that is not fully appropriable or conduct less of this research than socially desirable

Fixing structural system failures: increase in R&D spending does not automatically lead to high performance in terms of innovative activities

Fixing transformational system failures: R&D, innovation systems and commercialization do not necessarily lead to solving important social and environmental problems

MAIN STRATEGY

Knowledge generation: provide support for basic and applied science

Knowledge utilization: boost absorptive capacity; increase system performance by creating of links between actors and facilitating mutual learning (a)/ promote entrepreneurship and facilitate the creation of markets for innovative goods and services (b)

Solving social and environmental challenges: tilt the regulative playing field on the global level and provide more space for experimentation with niche solutions on the local level, enabling socio-technical systems change

NATURE OF CRITICAL KNOWLEDGE

Appropriate and transferable: easy to adopt, apply and utilize without protective measures

Sticky and situated: utilization requires proximity, absorptive capacity and interactive learning

Emergent and co-produced: generated through dialogue between multiple actors as part of a collective search process

FOCAL AREAS

High technology: stress on the creation of radical novelty

Radical and incremental product and process innovations: stress on significant price/performance improvements through successive incremental innovations

Socio-technical systems: stress on fundamental transformation of system architecture, changing both its components and its directionality of development
### Typical Policy Activities

**FRAME 1: R&D**
- R&D stimulation (subsidies, tax credits, procurement, mission-oriented programmes)
- Building the Intellectual Property Rights regime
- Education policy with emphasis on Science, Technology, Engineering and Math (STEM) subjects
- Science communication to explain the importance of STEM to wider public
- Foresight to select focus areas, regulation and technology assessment to manage negative impacts

**FRAME 2: SYSTEMS (A) AND ENTREPRENEURSHIP (B)**
- Constructing links between actors (building platforms, networks, databases) and organizing technology transfer
- Stimulation of learning-by-doing, learning-by-using, learning-by-interacting
- Use of demand stimuli (e.g. procurement) to enhance and accelerate market development
- Building regional and national systems of innovation by assessing capabilities gaps and technological opportunities, implementing policies to address them
- Enhancing skill development based on proactive analysis of skill gaps and shortfalls
- Programs to stimulate entrepreneurship and incubators (including indoctrination in the social value of entrepreneurship)
- Improving business conditions for Small and Medium-Sized Enterprises and start-ups
- Addressing the nature of equity markets (mezzanine level finance, IPO, inclusion in exchanges), especially angel and venture capital markets

**FRAME 3: TRANSFORMATIVE CHANGE**
- Stimulation of experimentation with niche technologies, scale-up and acceleration of socio-technical transitions (e.g. Strategic Niche Management, innovation intermediaries, Transition Management)
- New institutional solutions for changing the directionality of existing R&D and innovation activities (e.g. technology forcing, Responsible Research and Innovation, policy mixes for stimulating niches and destabilizing existing systems)
- Promoting social, inclusive, frugal and pro-poor innovation
- Bridging science/engineering, social sciences and humanities in the education system

### Underlying Model of Innovation

- **Linear model**: invention (discovery) leads to innovation (commercialization) leads to diffusion (adoption)
- **Linear model**: invention (discovery) leads to innovation (commercialization) leads to diffusion (adoption) Interactive and system-bound: chain-linked model stressing feedback loops between invention, innovation and use; evolutionary model, stressing ongoing interactions between actors, networks and institutions (a)/demand-pull model – needs of organizations and individual consumers largely drive innovative activities (b)
- **Systemic and experimental**: quasi-evolutionary model including non-random (purposeful) variation, selection and retention, stress on feedback loops between invention, innovation and use, and ongoing interactions between actors, networks, institutions and technologies
FRAME 1: R&D

- Division of labour: clear division of labour – government provides, science discovers, industry applies and consumer adapts; increase in R&D will automatically translate into more innovation
- Conflict vs. consensus: most often embedded in a military-industrial complex that takes defence needs as forerunners and large industries as the “natural” intermediary to translate scientific advances into commercial application; open conflict with new firms and industries that are not part of the club
- Technological and social progress: the link between the two is largely uncontested

FRAME 2: SYSTEMS (A) AND ENTREPRENEURSHIP (B)

- Division of labour: multiple closely interacting actors with different but partially overlapping roles contributing to the overall performance of the system (a)/ clear division of labour – the task of the government is to facilitate the operation of existing markets and to create markets where they do not yet exist; left to themselves markets provide novel products and services at optimum quantity and price (b)
- Conflict vs. consensus: evolutionary in rhetoric but functionalist in practice, emphasis on cooperation between various actors, leading to the fulfillment of system functions (a)/ tends to be conflict-oriented, mainly stressing international competitiveness of states and competition between enterprises (b)
- Technological and social progress: the link between the two is largely uncontested

FRAME 3: TRANSFORMATIVE CHANGE

- Division of labour: blurred boundaries, multiple actors crossing various domains and enacting overlapping roles, resulting in the co-production of science, technology and society
- Conflict vs. consensus: mix of competition and cooperation is required to achieve disruptive socio-technical systems change
- Technological and social progress: non-neutrality of technology, specific technological designs and the directionality of innovative activities might serve to create, solidify or amplify environmental and social problems

BASIC ASSUMPTIONS ABOUT INNOVATION

- Dealing with consequences: new technologies are associated with high degree of uncertainty and unpredictability making it virtually impossible to address major environmental and social impacts proactively
- Causality: stress on innovation as a motor of economic growth leads to public welfare as a bonus

- Dealing with consequences: largely reactive, major environmental and social impacts are usually addressed after they have occurred, sometimes with a particular emphasis on the provision of adequate market stimuli (b)
- Causality: stress on innovation as a motor of economic growth and increased competitiveness leads to public welfare as a bonus

- Dealing with consequences: proactive, stress on anticipating alternative futures associated with certain technological choices
- Causality: stress on innovation as a means for directly addressing environmental and social challenges leads to economic growth and increased competitiveness as a bonus
REGIONAL INNOVATION POLICY AND TRANSFORMATIVE CHANGE

FRAME 1: R&D

FRAME 2: SYSTEMS (A) AND ENTREPRENEURSHIP (B)

FRAME 3: TRANSFORMATIVE CHANGE

MAIN HAZARDS

- Government failure: insufficient funding for basic R&D
- Market failure: negative externalities that require regulation
- System failure: innovation system fails to perform as a synergistic whole and to enhance innovative activities (a)
- Government failure: too many state restrictions on business activities (b)
- Market failure: regulatory need to deal with negative externalities in a way that would not stifle entrepreneurship (b)
- Transformative failure: failure to induce fundamental transformation to socio-technical systems forming the backbone of modern societies
- Societal and environmental needs failure: failure to solve extra-economic and collective problems on multiple scales

PARALLEL COUNTER-NARRATIVES

- Appropriate Technology movement, focus on small-scale solutions
- Politics and democratization of Science and Technology
- Inclusive and interactive technology assessment
- Technological fix: strong state intervention with massive investment in Big Technologies which promise to solve large environmental and social problems
- Social innovation: move away from technical solutions which are perceived as part of the problem
Three Frames: appendix

Application of three frames to Evaluation and Inclusive Innovation Issues, as introduced by Jordi Mollas-Gallart and Ismael Rafols (evaluation) and Matias Ramirez (inclusion)

<table>
<thead>
<tr>
<th>EVALUATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Focus on input and output indicators: R&amp;D expenditures, patents, publications.</td>
</tr>
<tr>
<td>Focus on network links and processes leading to learning and generation of impact.</td>
</tr>
<tr>
<td>Inclusive discussion of policy objectives and evaluation criteria, consideration of the directionality of innovations, space for variety, alternatives.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>INCLUSION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Linear and planned, fragmentation, paternal, participative.</td>
</tr>
<tr>
<td>Learning, connectedness, institutions, System dynamics.</td>
</tr>
<tr>
<td>Social entrepreneurs, community, opening up; Bottom-up, different directions are legitimised.</td>
</tr>
</tbody>
</table>
Recommended readings

Listed here are recommended background readings to provide participants with a broader and deeper understanding of the content shared during the course and to reflect on following the lectures. For the full texts please see the Appendix.

THREE FRAMES OF INNOVATION AND TRANSFORMATIVE CHANGE


REGIONAL INNOVATION POLICY


GRASROOTS INNOVATION


INCLUSION

- Sutz, J. and Tomasini, C., (2013) “Knowledge, innovation, social inclusion and their elusive articulation: when isolated policies are not enough”. In International workshop on new models of innovation for development, University of Manchester (Vol. 4, No. 5). July pp. 1-13

EVALUATION

Lecturers

**EDURNE MAGRO**

Edurne Magro is researcher at Orkestra-Basque Institute of Competitiveness and lecturer at the Deusto Business School of the University of Deusto (Spain), where she teaches undergraduate and postgraduate courses and coordinates one postgraduate module. She received a PhD. on Economic Development and Business Competitiveness from the same university, after having been visiting researcher at the Manchester Institute of Innovation Research (University of Manchester) in UK.

Edurne has a long professional career as a researcher, having started at the Tecnalia Technology Corporation. With 15 years of experience, she has coordinated and participated in research projects on competitiveness and innovation at European (ESPON, Framework Programme), national and regional levels. During the last years she has focused her work on the fields of territorial strategy and smart specialization strategies, regional innovation systems, regional innovation policies and their evaluation, following a policy learning approach. In these fields she has participated in the organisation of national and international conferences. Edurne is the author of different scientific contributions in books and impact academic articles. Among these worth mentioning are articles in journals such as Research Policy, Science and Public Policy, Environmental Planning C or Review of Policy Research.

**ALEJANDRA BONI**

- Associate Professor at the Department of Project Engineering at the Polytechnical University of Valencia (UPV). Deputy Director of Ingenio (CSIC-UPV).
- PhD in Human Rights and Democracy from the U. of Valencia.
- Associate Professor at the Departamento de Proyectos de Ingeniería (Dpt. of Projects Engineering) at the U. Politécnica de Valencia and B.Sc. Law, University Complutense of Madrid, Spain.

Alejandra is lecturing in the Master on Development Cooperation at UPV on development processes, participatory research methods and evaluation of development interventions. Her research analyzes the relationships between human development, collective social innovation and transformative learning. She is keen to use participatory methods in her research (specially audiovisual ones) and teaching and to facilitate planning interventions. She has also a wide experience in the development aid field with links with public and non-governmental actors. She has more than 60 national and international publications and has been principal investigator in 19 projects and contracts. She is Vice-president of the International Development Ethics Association and Extraordinary Professor of the University of the Free State, South Africa. She has been visiting researcher in African, American and European research institutes. She has strong links with Colombian universities in Bogotá and Medellín.

[http://innovacion-soci.webs.upv.es/home-en](http://innovacion-soci.webs.upv.es/home-en)
[@sandraboni4](http://twitter.com/sandraboni4)
Dr Ramirez has undertaken research on topics related to the study of knowledge, innovation, networks and transformative innovation policy. Dr Ramirez is involved in the Latin American arm of the Transformative Innovation Policy Consortium (TIPC) project that brings together national policy makers from a range of countries interested in transformations in Science, Technology and Innovation. Other research has included studies of inclusive innovation in agribusiness clusters that include case studies of the palm oil clusters in Colombia, mango cluster in Peru and berry producers in innovation in Southern Chile. Prior to this Dr Ramirez led an ESRC funded project looking into the networks of knowledge workers in China’s largest high technology park in Beijing. He has published in a range of Economics, Geography and Management journals. These include the British Journal of Industrial Relations, Industry and Innovation, International Journal of Innovation Management, Service Industries Journal, New Technology Work and Employment, Regional Studies, Environment and Planning C and the International Journal of Human Resource Management.

Professor Johan Schot is Director at the internationally renowned Science Policy Research Unit (SPRU) at the University of Sussex. As a Professor in History of Technology and Sustainability Transitions Studies, Schot’s interests orientate around action – driven research that focuses on integrating disciplines and providing the historical perspective for increased knowledge to support positive societal change. He is the author of many influential publications including Transitions Towards Sustainable Development. New Directions In The Study Of Long Term Transformative Change (Grin, Rotman & Schot) and Writing The Rules For Europe: Experts, Cartels And International Organisations (Schot & Kaiser) Currently, his research directions span three areas. Firstly, he is fronting, along with colleagues at SPRU, the transition to transformative innovation policy.

This centres on examining how governments, and other actors, can create policies that enable innovations that transform our current idea of progress to address the issues of our ‘world in transition’ – climate degradation, security, migration amongst others.

He is the founder of the Transformative Innovation Policy Consortium (TIPC – www.transformative-innovation-policy.net). Policymakers and researchers, internationally, have the opportunity to move beyond current frameworks and models, to create a new thinking for innovation that could transform our approach to growth so that neither the environment, economy nor humanity are harmed further. This area also includes an exploration of the world in transition through the notion of ‘Second Deep Transition’.

The second research area demonstrates the vital role users of technologies play in Evolving them to a dominant position in society. The third arena of interest is with the International Panel on Social Progress, (IPSS – www.ipsp.org) where Schot examines the role of science and technology in developing a new agenda on social progress for the 21st century. Working papers and more information available at www.johanschot.com / www.transformative-innovation-policy.net / Follow on Twitter @Johan_Schot

Schot is a member of the Royal Netherlands Academy of Arts and Sciences (KNAW) elected for his achievements in interdisciplinary work. In 2002 he was awarded a VICI grant by the Netherlands Organization for Scientific Research (NWO). In 2015 he was awarded the Leonardo da Vinci Medal for his outstanding contributions to the history of technology. He won distinguished the Freeman Award 2014 for the Making Europe series.
JONAS COLEN

I am a PhD candidate at the Science Policy Research Unit, at the University of Sussex since September 2014. I am studying the development of urban transformative capacity and seeking to understand why particular urban contexts evolve as favourable environments for experimentation with sustainability. My research places me at the interface between grassroots and public sector innovation and has allowed me to study the fascinating contexts of Bristol and Medellín.

Besides my PhD, I am also a research assistant for the Transformative Innovation Policy Consortium, where I examine the rationales, practices and attitudes associated with Policy Experimentation.

I love to teach. Currently, I teach seminars on Innovation for Sustainability for master students in at SPRU. I have also coordinated the Eu-SPRI winter school on Innovation Policy for Transformative Change, and was responsible for coordinating the production of a Massive Online Open Course while working at the Stockholm Resilience Centre in Sweden.

I come from Brazil, but in the past 10 years, I have also lived and worked in the UK, Sweden, France and Spain.

CLAUDIA E. OBANDO RODRIGUEZ

• First year PhD student at SPRU under the Chancellor’s International Research Scholarship scheme, MSc with distinction in Technology and Innovation Management from SPRU (2010).
• Claudia is an Economist from Universidad Nacional de Colombia (2004).

Claudia’s professional career has been closely related to Science, Technology and Innovation Policy in Colombia. Claudia has worked at Colciencias, leading both the technology based entrepreneurship and the managing innovation programmes. In 2011, Claudia designed and ran the digital entrepreneurship programme Apps.co at Ministry of Information and Communication Technologies that became one of the most important entrepreneurship programmes in Colombia. Lately, she worked at Private Council of Competitiveness as Secretary General and Research Associate. Along with her studies, Claudia Works as research assistant at SPRU for the Transformative Innovation Policy Consortium and the Technical Agreement with Colciencias.
Notes
This course was developed and delivered by faculty from the Science Policy Research Unit at the University of Sussex