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New Skills for a European Bioeconomy

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CONFERENCE REPORT

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Directorate-General Research and Innovation
Directorate Biotechnologies, Agriculture, Food
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EUROPEAN COMMISSION

New Skills for a European Bioeconomy

Conference Report

Directorate-General for Research and Innovation
Biotechnologies, Agriculture, Food - Knowledge-based Bioeconomy

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INTRODUCTION

The European Commission Conference New Skills for a European Bioeconomy was organized by the European Commission and held in Brussels, Belgium, on 20-21 November 2012. The event gathered more than a hundred participants, representing bioeconomy stakeholders at national and international level, to discuss the role of knowledge and skills development in driving and facilitating the transition towards a bioeconomy.

The conference's main objective was to analyse one of the important prerequisites for successfully implementing the bioeconomy strategy: the availability of a well-trained workforce with the necessary knowledge and skills, in academia, industry or the primary production sector, across public and private domains, and encompassing different skill levels.

Many of the actions foreseen in the European Commission's Communication on 'Innovating for Sustainable Growth: a Bioeconomy for Europe' will require a sound skills base. Therefore, at the upcoming Bioeconomy Stakeholders Conference to be held in Dublin on 14-15 February 2013, there will be a session reporting on the main outcomes of this November 2012 conference.

Session 1 | Opening of the conference

Antonio di Giulio

At the opening of the conference, Mr Rudolf Strohmeier, Deputy Director-General, Directorate General for Research and Innovation at the European Commission, welcomed the participants and presented the current situation, stressing the importance of not just upgrading and matching skills and education needs, but also of anticipating those needs in order to promote further growth in the bioeconomy. Following Mr Strohmeier's opening address, Mr Ken Guy, Head of the Science and Technology Policy Division, Directorate for Science, Technology and Industry at the OECD, took the floor for a keynote address. He pointed out where the OECD's bioeconomy definition differs from the European Commission's, highlighting the OECD's greater focus on biotechnologies and the health sector. Mr Guy recalled to the audience that this distinction is important for understanding the scope of the bioeconomy and thus the type of skills needed for it to function. Mr Guy's presentation showed how investments in research and innovation lead to Return-On-Investment growth in most of the bioeconomy sectors, with a peak of 25% for the chemical sector, thus showing their profitability. However, a clear model for understanding which skills will be needed in the future to perform the tasks required in different value chains is still missing. Such model would allow us to understand how to optimally train or retrain our workforce, design clear career paths both in the industry and in academia, and develop coherent policy frameworks.

Session 2 | Aligning Science and Innovation with Global Challenges and Bioeconomy needs: skills for scientists

Gabriele Rosso Cicogna

During the first session, the panel presented the new skills that scientists need in the bioeconomy and discussed how to better align science and innovation activities, as well as how to foster integrated solutions to address global challenges. In addition, the panel presented the scientific disciplines that need to be developed and integrated further to allow future professionals to act at the interface of different disciplines and to foster collaboration between the sectors. In particular, Mr Ulrich Schurr, Director of the Jülich Institute for Plant Research, stressed the need to move away from the traditional 'faculty' approach to career development and to develop an integrated vision involving economy, society and lifelong learning. In particular, he proposed what he considers to be the three main requirements: to optimise the science base and to integrate this both with the economy and with society. Regarding integration with the economy, the Director of the Jülich Institute explained that a shift to a science-to-business approach is needed. This will involve developing systematic approaches that link new knowledge with integrated production processes. There is also a need to improve scientists' knowledge of markets and the economy, so that they can better define scientific priorities. Regarding the integrated vision involving society, Mr Schurr identified communication with the public at large as a key aspect for debating about risks and benefits as well as for generating global acceptance. In addition, technical training in new technologies should be foreseen not only for scientists but also for farmers, horticulturists and engineers.

Following Mr Schurr, Mr Glößl, Vice-Rector for Research at Vienna University, focused his presentation on the interconnections needed to build a functioning bioeconomy. In particular, he stressed that in order to properly face up to the global challenges the bioeconomy wants to tackle, universities will have to provide their students with a 360° view on those issues, by aligning their curricula towards a multi-disciplinary approach. Rob Henderson, Executive Director at Biotalent Canada, brought the Canadian experience to the audience's attention. He explained how, nowadays, scientists are trained to be scientists, but not to work in business or to understand business and eventually create business. In a nutshell, according to Mr Henderson, young graduates are unemployable owing to a lack of multidisciplinary skills in key industrial areas, such as quality control and assurance or regulatory affairs. To prevent the Canadian labour market from losing these young minds, Biotalent Canada developed a wage subsidy programme that helps SMEs to take the risk of training young graduates on the job. In addition to this, the company is helping scientists enter the bioeconomy job market by supporting the recognition of their competences by Canadian employers.

The round of presentations was concluded by Eva Johansson, Professor at the Swedish University of Agricultural Sciences, who presented the work of her university on the development of a national bioeconomy programme covering all value chains. She stressed the importance of collaborating closely with businesses (both SMEs and large enterprises) to ensure that new curricula – currently being developed – will help students to be successful players in bioeconomy markets.

In the subsequent question-and-answer session, the Chair, Antonio Di Giulio – Acting Director for Biotechnologies, Agriculture, Food at the Directorate-General for Research and Innovation of the European Commission – highlighted that understanding the new skills needed to tackle the complexity of integrated value-added chains is important not only for scientists, but also for practitioners. According to him, the questions to address thus become: how do we integrate old and new disciplines to generate new skills, and how do we match them with local business needs and make sure that territorial know-how is not lost? In addition, he recalled to the audience that if the speakers agreed that all the skills needed are already available, they also argued that we must use a multidisciplinary approach to recombine them and offer them to the market in one coherent package. However, he pointed out that different sets of skills may be needed across different regions: therefore it will be important to adapt the set of recombined skills to local needs and value local know-how. In his conclusions, Mr Di Giulio underlined that in the coming years, while it will be important to make sure that the bioeconomy approach is well understood by the public at large, we will also have to explore ways to recognise skills across bioeconomy sectors to make workers more employable in the different value chains.

Session 3 | Growing business on new knowledge and skills in the bioeconomy: industry needs

This session was chaired by Ms Fulvia Raffaelli, Deputy Head of the 'Strategic Policy' Unit of the European Commission's Directorate General for Enterprise and Industry. She set the scene by referring to the Commission's recently published follow-up and update of the Industrial Policy Communication at the beginning of October. In that context, and in line with the previous Communication in 2010, the Commission has recognised the need to create conditions in Europe for the manufacturing sector to deliver more growth and new jobs in Europe. For this reason, the Commission set the aspirational target of getting back to a manufacturing sector that generates 20% of GDP by 2020. In this regard, the Commission has defined specific priority areas for action: one of these concerns human capital and skills. In this area, the bioeconomy has a very important role: in the Industrial Policy Communication it is recognised as one of the areas needing concentrated efforts to generate a spin-off effect for industry at large.

The panel presentations were opened by Mr Gernot Klotz – Executive Director for Research and Innovation for the European Chemical Industry Council, CEFIC. Mr Klotz defined two main areas to look at: facing global competition as opposed to looking inwards into Europe; and returning manufacturing to Europe through the 'SusChem' technology platform for sustainable chemistry. Mr Klotz highlighted existing gaps between various sectors and stressed the importance of building bridges between the various value chains in order to create a functioning bioeconomy in Europe and avoid the risks that industry delocalises. In particular, he observed that Europe has 30% of all bio-patents but less than 1% of bio-based products manufacturing, defining this is the 'death valley' challenge. In other words, Europe excels in research and is a good consumer market, but lacks the technologies to scale-up research results into market-ready products. To help fill this gap and become more competitive, Mr Klotz stressed the importance of establishing good links between industry, research and higher education.

Following Mr Klotz, Mr Bisseling, Professor at the Department of Plant Sciences at Wageningen University, introduced the business-interaction model developed in the Netherlands. To make sure that research projects are aligned with industrial needs, he explained that 30% of the national budget for research has to be defined by industry. In this situation, to ensure that they have the right profiles to complete the tasks set by industry, companies have agreed to hire 40 PhD students per year. In this way, those students who wish to pursue an industrial career after their PhD can concentrate on research projects aimed at developing top-level technologies, while those who prefer to become top academic scientists can concentrate their efforts on other projects. The result is that students are either funded to become academic researchers in their field, or to get a job in a company as a PhD student, thus facilitating university-industry interactions.

Mr Giorgio Rosso Cicogna, Alternate Secretary-General of the Central European Initiative (CEI), then presented the CEI's view on the bioeconomy. He stressed the fact that energy is a top priority for CEI countries and that advanced biofuels are one of the key factors for ensuring energy security. To achieve these targets, Mr Rosso Cicogna underlined both the high biomass potential and the highly skilled workforce available in the region. In this regard, his concluding message was that if industry needs more complex employment profiles in the future, it knows how to build them.

Public

Mr Kåre Riis Nielsen – Director of European Affairs at Novozymes– observed that the bioeconomy is a complex, overarching approach that tries to combine different value chains, and he argued that new skills are mostly needed by policy-makers rather than scientists or workers. In particular, he said that these new skills should enable them to increase awareness of the benefits for different stakeholders, to build coherent policies and to help in identifying and deploying what is already available.

Mr Achim Marx, Chairman CLIB2021, took the floor for the last presentation of this session. He focused mainly on what students can be taught about the bioeconomy, insisting on the importance of proposing a holistic approach. In particular, he proposed that at the end of their education path, students should be able to open their minds to different sectors and speak different technical languages to different stakeholders – even though they should be able to stay neutral vis-à-vis the different technologies.

In the questions-and-answers session following the presentations, the discussion concentrated on how to make students aware of the on-going debates on innovation, especially as far as the bioeconomy is concerned. In this regard, university representatives stated that, for example, conferences that touch on this topic in order to raise students' awareness are regularly organized, while representatives from industry said that they often invite students to their labs in order to see innovation in action. However, it was agreed that if efforts to promote research are relatively good, on the innovation side there is still room for improvement. Concluding this session, the Chair stressed that while industry is actively pursuing innovation, universities and academia at large should continue to take action to ensure that skills are adapted to meet new industry requirements to create a good environment for prosperous business.

Ullrik Schurr

Session 4 | Inclusion of primary producers in the knowledge loop in the bioeconomy

Public

The session was opened by the Chair, Ms María Ángeles Benítez Salas - Director for Sustainability and quality of agriculture and rural development, Directorate General Agriculture and Rural Development, European Commission -, who introduced the topic and gave the floor to the first speaker, Mr Pekka Pesonen, Secretary General of Copa-Cogeca. Mr Pesonen focused his presentation on agriculture, the forestry sector and farmers, and the role they have in developing the bioeconomy as important biomass producers. He pointed out that the challenge that European farmers and forest owners face is that they will not only have to keep producing renewable raw materials for safe, high-quality foodstuffs at affordable prices, but also to supply energy and industrial production. Mr Pesonen underlined that this new market environment is challenging, as it offers new market opportunities that farmers, rural entrepreneurs and co-operatives can benefit from – ensuring successful bioeconomy for Europe. At the same time, however, he recalled to the audience the role of European agriculture as a decisive economic factor for rural areas, which must be safeguarded in order to maintain a skilled workforce. Scientific and technical innovation must thus begin with primary production processes to make the bioeconomy an opportunity for European agriculture, forestry and food sectors. Consequently, according to Mr Pesonen, improving productivity while reducing the use of energy, water, plant protection products and fertilisers can only be achieved if farmers are granted easier access to knowledge. In fact, the increasingly positive attitude of the agriculture and forestry sectors towards innovation and the growing acceptance of new technologies and modified processes is an opportunity to boost innovation in the coming years. Mr Davide Viaggi, Professor at Bologna University, presented a case study on the different uses of biowastes. By describing the case study of a biogas plants created by farmers as an alternative source of income, he clearly explained that farmers are to be considered entrepreneurs trying to maximize their incomes by deploying the results of scientific research and innovation. In this respect, to ensure that research-led improvements are deployed in the primary production, policy makers must build on farmers' entrepreneurship and design the right incentives for them. However, he also insisted that a life-cycle approach is needed: the same legal framework and incentives should be ensured throughout the whole project life cycle, and not only in one part of it, or this would jeopardize investments. Finally, Mr Viaggi explained that once a success case of innovation in primary production is registered, it is important to build on the expertise created by making sure that knowledge is transferred to other entrepreneurs, for example by providing incentives to workers mobility.

Following Mr Viaggi, Mr Paveliuc-Olariu – Researcher at Gembloux AgroBioTech – took the floor and reported on how new technologies represent an important tool for sharing information and best practices. However, when applied to the farming community, Mr Paveliuc-Olariu highlighted that only some of the new technologies are used by farmers, and only by younger professionals – who are few. For this reason, according to him, to ensure that farmers are completely involved in the knowledge loop it will become critical to be able to attract young people into farming and effectively replace older generations.

Mr Lorenz Kock – Coordinator of the Pro-grass project – shared with the audience his experiences of coordinating a project of knowledge transfer to farmers. In his presentation, he highlighted that in all the activities we perform, and especially if we plan to foster rural development by including primary producers in the bioeconomy knowledge loop, it is important to achieve a good level of cooperation between farmers to make sure they understand and are aligned on the final objective of knowledge transfer. However, although this is necessary, it is not sufficient. To achieve high levels of social acceptance of innovative bioeconomy projects in primary production, in Mr Kock's experience it is vital that all other stakeholders – including local communities – are fully informed and involved in the project.

Mr Maurice Boland – Professor at the University College Dublin – then took the floor for the last presentation. He spoke on the importance of giving primary producers, especially the farming community, access to relevant information in a timely manner. According to him, this target could be achieved by harnessing new technologies, such as sensor technologies or information already available on the web – on soil analysis, for example - more efficiently than it is done at present. Mr Boland also insisted on the importance of developing economic sustainability studies – on the cost of protein feed, for example – to help primary producers take sounder decisions when asked to make business choices.

During the final debate, the main topic for discussion was whether, in the future, primary producers will directly enter the biorefineries market. To answer this question, the panellists agreed that primary production, especially the farming community, is not a static sector. More and more people are becoming farmers without having any experience in the sector, bringing a willingness to take up innovations and test them. Therefore, depending on available biomass volumes, the panellists concluded that farmers may well enter other markets – including the bio-refinery one – if they see a potential for profitability. To end this session, the Chair acknowledged that the bioeconomy is already a reality across the different value chains and that innovation has a critical role in its further development. In this respect, as far as primary production is concerned, the Chair explained that innovation will be supported not only by Horizon 2020, but also by the proposal for the new Common Agricultural Policy.

Session 5 | How to improve academia/industry dialogue?

This session was opened by the Chair, Mr Christian Paterman – Bioeconomy advisor of the German Land North Rhine Westphalia. He recalled the main characteristics of the bioeconomy that emerged during the previous sessions. In particular, he stressed that it is multidisciplinary by nature, it is knowledge-led, it acts along value chains and exploits them, and it has a public-private dimension, but also regional specificities. In this framework, having a skilled workforce is the basis for a successful bioeconomy. He then gave the floor to Mr Christian Jorquin – Honorary Chairman of the executive Committee, Solvay Group - who reported on the difficulty industry has to recruit good young graduates able to master the complexity of the bioeconomy approach. In particular, he observed that young graduates are often not educated in science and are attracted more by services than by industry as a future sector of employment. To rebalance this situation, from an industry perspective, he proposed that students should be given the opportunity at university to broaden their experiences across different faculties, thus getting access to wider programmes combining generic teaching with more specific fields. In addition, he also proposed that senior professionals should be given the opportunity to put their knowledge at the disposal of younger generations by teaching – thus making sure that their competences and know-how are not lost when they retire and that young generations are immediately employable. Following Mr Jorquin, Ms Katrien Maes – Chief Policy Officer at the League of European Research Universities – took the floor. She also stressed that, for a fully functioning European bioeconomy, interdisciplinarity is important not just for students and teachers, but also for researchers. However, she claimed, such interdisciplinarity should not be built only by the universities, but should also involve industry in the process, in order to ensure that any knowledge and innovation created by academia may be made immediately available to industry.

Mr Mark Van Maes - Director of the Bio Base Europe Training Centre - illustrated a practical example of good school-industry dialogue in the field of technical training for biorefineries operators. He insisted on the importance of creating a close collaboration with industry in order to develop programmes that suit their needs and, in addition, he also stressed the importance of widening the student base. In particular, Mr Van Maes highlighted the importance of raising interest in younger generations and of recruiting good students in other European countries, where unemployment is higher, and retrain them to work in bio-refineries.

Finally, Mr Manuel Pérez-Alonso – President of Bioval – took the floor to explain how scientific knowledge combined with entrepreneurial skills can lead to successful companies. In particular, he presented Bioval, the scientific park he runs which hosts 60 companies doing business based on scientific research – the number of companies is still growing both in number and in their size. What Pérez-Alonso considered most important in the Bioval experience is that the park offers young scientists the opportunity to promote and refine their entrepreneurial skills while ensuring that transparency and ethical issues are constantly dealt with. In this regard, he called for universities to focus not only on scientific knowledge, but also to teach young students also entrepreneurial competences they will need after they are done with their studies.

In the final debate, Mr Paterman pointed out that, due to the growing number of actors and sectors in the bioeconomy, a constant industry-university dialogue is more necessary than ever. This dialogue may follow several paths, but it will have a strong impact on training and education, which will be multi-level, multifaceted, more complex and aligned to regional/local priorities, as well as built on strong entrepreneurship and policy awareness skills.

Public

Session 6 | How to foster the development of necessary skills: gearing up education and training for the bioeconomy

Public

The last session of the first day was opened by an introductory remark by the Chair, Alessandra Lucchetti - Head of Unit for Marie Curie Actions at the European Commission's Directorate General for Education and Culture -, who stressed the importance of developing skills that are transferable across different sectors. In this regard, Mr David Castle – Director of the MSc in Management of the Bioeconomy at the University of Edinburgh, High School Yards – underlined how the soft vs hard skills dichotomy is an unfortunate one. In the MSc he directs, students are already excellent scientists, but they are also expected to think and understand how entrepreneurship works, because the university's ambition is to develop durable skills that prepare students for the job market. To achieve this target, they consider it important to liaise with business when selecting the competences to focus on during the Master programme - although they also teach students the necessary competences to set up their own business.

After Mr Castle, Mr Antonio Ranieri – senior expert, Area Research and Policy Analysis – presented CEDEFOP's view on the topic. In particular, he highlighted the importance of taking into consideration all the stakeholders' needs when designing a strategy for education and training to support the bioeconomy. In particular, he gave the example of vocational training, showing how important information must be gathered at micro- (entrepreneurs), macro- (skills forecasting agencies and bodies) and meso- (sector) levels.
Mr Tpani Pöykkö - Research and Development Director for the Bioeconomy HAMK at the Finnish University of Applied Science - then took the floor. He stressed the importance of having a better definition of the bioeconomy, especially to make a clear distinction with a general 'green economy'. Once this process has been completed, he remarked that any specific training programme will then have to be built around one specific point, which is breaking the silo mentality between traditional sectors. According to Mr Pöykkö, only this result would allow achieving an overarching view on the bioeconomy and thus enable education experts to properly recombine existing skills.

Following Mr Pöykkö, Mr Talat Ciftci – Professor at the Faculty of Arts and Sciences at Bahcesehir University – presented specific actions that could ensure that our education systems are ready to develop the critical skills for a functioning bioeconomy. In particular, he proposed that additional courses for life science students organised in collaboration with the industry – on sustainability and bioinformatics, for example –, as well as e-learning programmes for the public at large, should be organised to explain, for example, how to reduce waste in the food-supply chain. Other important points he mentioned included: training public officials on the bioeconomy; designing advanced training for unemployed life science professionals; as well as starting to build community awareness using existing standards and new media because public awareness will be critical for making the bioeconomy a success.

The session was concluded by Ms Cristina Silva who reported on the main results of the Trackfast Project she manages. In particular, she insisted on the importance of establishing a certification process to ensure skills developed by professionals operating in all bioeconomy sectors are recognised in all European Union Member States. She also highlighted the importance of not focusing only on traditional hard, technical skills, but also taking into consideration the so-called soft skills, such as communication.

Session 7 | The challenge of skills in the bioeconomy: active role for policies

The second day of the conference was opened by the Chair, Mr Rogier Van Der Sande - Member of the Committee of Regions for NL/ALDE -, who made a quick summary of the main issues raised the previous day and launched the debate on which actions policy-makers could implement in order to stimulate the development of innovative skills in the bioeconomy.

Mr Pascal Bergeret – Deputy Director for Innovation at the French Ministry of Food, Agriculture and Fisheries – started the series of presentations on this topic, focusing on the importance of public goods. In particular, he reminded the audience that a mutual knowledge and understanding has to be created among all the actors participating in the development of skills for the bioeconomy to establish dense relations in all the networks they form – in this regard, KICs seem to be a very good tool. After a dense stakeholders network is built, the next important step is to align agendas to ensure that all the policies (research, industrial, agricultural, to name but a few) address the same problems. In this respect, he pointed out that a bottom-up approach is probably not the most appropriate one, while a top-down approach is to be preferred. According to Mr Bergeret, in this way policy-makers can set the social challenges affecting all the stakeholders and all the agendas can be aligned around them.

The issue of how to create a better coordination mechanism and aligned education agendas was also raised by the second speaker, Mr Francesco Lescai - Senior Research Associate in Genome Analysis at University College London and Member of the Executive Board and Chair of the Task Group on Education, Mobility and Professional Qualifications at the European Federation of Biotechnology. He noted that a legal basis for joint degrees/multidisciplinary curricula is missing, and that while some other initiatives, such as the European Industrial Doctorate, are a very good starting point, organisers should have more freedom to organise it according to their specific needs. In addition, Mr Lescai said that new professions, such as those emerging in the bioeconomy, are not debated in the various pieces of legislation currently being analysed by the European Parliament, with the risk of creating a legal framework not aligned with a quickly evolving reality.

Following Mr Lescai, Mr Luca Polizzi - Senior Executive at Scotland House - took the floor to report on the various initiatives currently being implemented by the Scottish Government to establish an efficient renewable-energy sector. Mr Polizzi said that the process began only recently, but it is already clear that one of the most urgent issues to tackle is the skills shortage that companies operating in the sector are complaining about. In this regard, the government has appointed a chancellor to analyse the specific skills needed and the actions to take.

The last panellist to take the floor was Ms Erja Ämmälahti - Senior Advisor of Forest and Chemical industries at Tekes, the Finnish Funding Agency for Technology and Innovation. She reported on the actions Finland is currently developing to support the launch of a national bioeconomy strategy. Ms Ämmälahti stressed the importance of the systemic approach the bioeconomy has on all the value chains. In this regard, she pointed out that the ability to adopt a systemic view, to reason in terms of long-term sustainability and to see opportunities across sectors and value chains will be the most critical skills to develop. On the other hand, she also reminded that, to ensure a functioning labour market for professionals operating in the bioeconomy, it is important not to think only in terms of recognising new professions as such, but rather to recognise the skills developed in those new professions.

The debate was closed by a question-and-answer session with the public, which focused on the importance of mixing a top-down approach with a bottom-up one when designing policies aimed at supporting the bioeconomy. In particular, it was agreed that a top-down approach is mostly needed to bring all the stakeholders together and show the way forward towards a common policy goal. Subsequently, a bottom-up approach will be needed to hear the stakeholders' feedback and understand whether some adjustments are needed.

CLOSING SESSION

The conference was closed by Ms Patricia Reilly – Member of Commissioner Máire Geoghegan-Quinn's Cabinet – and Mr Richard Howell – Senior Inspector and Head of the Research & Codex Division at the Irish Department of Agriculture, Food and the Marine, representing the Irish Presidency of the EU. Ms Reilly thanked the participants on the European Commission's behalf and, taking into account the discussions of the past two days, she suggested some important issues that need to be addressed to advance skills as part of the bioeconomy agenda, as well as to make it easier to innovate, adopt new technologies, attract investment, and compete in new markets with job creation and growth:

- Better match supply and demand of skills and adapt higher education curricula and vocational training - also taking into account primary and secondary education.
- Help workers and enterprises adjust to change through re-skilling, skills upgrading and lifelong learning support.
- Take a long-term perspective in order to ensure that skills-development policies and actions prepare economies for future skills requirements.

Mr Howell's final remarks summarised the bioeconomy initiatives that Ireland is currently undertaking. Ireland is developing a bioeconomy strategy through a working group which is reporting directly to a government sub-committee chaired by the Prime Minister. The strategy will help align along one strategic agenda all the different initiatives taken so far at ministerial level, such as, for example, the Agro Food Graduate Development Programme. This programme embeds those soft skills already identified as important during the conference into the training of PhD students working on projects funded by the Irish government, to ensure they can grasp the complexity of the agro-food value chain and be employable by the industry. Mr Howell concluded by announcing the next Bioeconomy Stakeholders Conference, which will be organised in Dublin on 14-15 February 2013 under the aegis of the Irish Presidency of the Council of the European Union.

Finally, Mr Antonio Di Giulio took the floor to close the event. He highlighted that during one and a half days the discussions had demonstrated the emergence of some common objectives to start working on:

- First, in line with the objectives set by Europe 2020, the bioeconomy has been identified throughout the conference as an important source of growth and employment.
- Second, the sustainable management of our resources and our ecosystems needs to be reflected in the development of new skills.
- Finally, there is a strong need to co-operate on the development of new skills. In particular, the development of career paths for professionals operating in the bioeconomy need to be taken into due consideration when designing new programmes and policies.

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