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Quality Assurance in Doctoral Education – results of the ARDE project

By Joanne Byrne, Thomas Jørgensen, Tia Loukkola

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Executive summary

The ARDE project aimed at demonstrating how quality assurance for doctoral education has been implemented in European universities. As the Bologna Process has developed, universities have put great effort into professionalising their quality assurance as well as their doctoral education, albeit often in separate processes. However, the two processes are beginning to merge. Doctoral education is being managed more professionally through doctoral schools and institutions are giving more attention to accountability and quality enhancement. This publication describes the developments, outlines recommendations and underlines the differences between quality assurance for doctoral education and quality assurance for the first and second cycle.

Chapter 1 gives an outline of the project, its background and methodology. The ARDE project takes its point of departure in the development of doctorate-specific quality assurance processes that have been developed over the last decade. Through a combination of quantitative methods (a European-wide survey) and qualitative methods (focus group meetings with university representatives and a workshop including non-university stakeholders) the ARDE project gathered a wide body of evidence regarding processes, challenges and good practices in quality assurance in doctoral education.

Chapter 2 describes how European quality assurance has developed around the concepts of accountability, quality enhancement and the aim of creating a quality culture engaging management, staff and students in universities. It also describes how universities have professionalised, in the same time period, the management of doctoral education through doctoral schools – institutional bodies that monitor and develop doctoral education.

Chapter 3 presents the survey results, which give more detail concerning the processes in place within institutions to ensure that the management of doctoral education is carried out in an accountable manner. The survey demonstrates that processes are largely in place, though reforms are very much ongoing. There is also a strong indication that doctoral education is evaluated by many different external stakeholders at the same time.

Chapter 4 gives a detailed view of how doctoral education is monitored through external and internal evaluations. The chapter introduces different models of external evaluations, including programme accreditation and institutional audits as well as examples of the use of national qualification frameworks and learning outcomes. Internal evaluations are described with examples of common practices such as the monitoring of doctoral candidates' progress. The chapter also contains considerations about the specificity of doctoral education and the use of key performance indicators.

Chapter 5 is devoted to the central area of supervision with examples of measures to improve accountability as well as quality enhancement. It outlines a number of good practices in terms of establishing processes to enhance the quality of supervision through the engagement of staff. The chapter also presents different types of supervision rules and guidelines that specify rights, duties and responsibilities of both supervisors and supervisees.

Chapter 6 deals with the issue of career development services and particularly the challenges of creating good feedback mechanisms to develop and improve these services. The chapter contains examples of transferable skills training and the use of career tracking and services on the institutional and national levels. Although quality assurance for career development is less developed and presents considerable challenges, the chapter identifies a number of good practices in the field.

The conclusions underline the common purposes for quality assurance in all three cycles as accountability and quality enhancement, but emphasise that the processes to achieve these purposes often contain different elements when it comes to doctoral education due to its nature as training through research.

Foreword

Europe needs well-trained researchers to meet the challenges that we are facing. In a time of crisis, it is essential that European universities have the capacity to train new researchers who can think innovatively and creatively; researchers who will form an essential element of overcoming our common challenges through new ideas and intellectual leadership.

The importance of training researchers has been recognised as a central part of the development of knowledge societies in the last decade – and even longer. The number of doctorate holders in Europe has risen sharply, and many countries today graduate twice as many as they did just ten years ago. It is an astonishing feat that such growth has been possible in an area as resource-intensive as doctoral education. Europe's universities have been able to do this through extraordinary investments in the management of doctoral education as part of an overall modernisation process.

This modernisation process has also seen the establishment of quality assurance, often as a separate development from the reforms of doctoral education, which is intimately bound to universities' research mission. However, as this report demonstrates, the basic purposes of the two processes are the same: to improve accountability and enhance quality.

This report brings together two areas that have been a high priority of EUA, quality assurance and doctoral education. These are both areas where EUA has been highly active in promoting a Europe-wide dialogue between universities, sharing good practices and confronting challenges together. Since its beginnings, EUA has carried out projects on quality assurance and organised events such as the European Quality Assurance Forum, bringing together institutional leaders and quality managers; and at the same time it has been forming a platform for leaders and administrators responsible for doctoral education by organising numerous workshops and conferences dedicated to the topic. From 2008, these activities were carried forward by the EUA Council for Doctoral Education. Uniting these two areas in the ARDE project has been an exciting and enormously satisfying experience.

We sincerely hope that this report will inform and inspire university leaders, researchers and doctoral candidates alike to engage in developing doctoral education of the highest quality. Moreover, this report will also demonstrate the achievements of Europe's universities to non-university stakeholders and inspire them as well.

Maria Helena Nazaré
President
European University Association

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The ARDE project has been possible through the combined effort of a large group of dedicated persons and institutions that have contributed with ideas, insights, advice and criticism. Throughout the project, it has been a privilege to work with such enthusiastic and knowledgeable colleagues from all over Europe.

Sincere thanks goes to all the participants in the ARDE focus groups and final workshop, who contributed with important examples and ideas about how quality assurance should be managed in doctoral education. Thanks is also due to the respondents to the ARDE survey, who provided extremely valuable material for the project.

In particular, the ARDE project Advisory Board deserves thanks for the crucial part they played in the project: Andrzej Krasniewski from the Conference of Rectors of Academic Schools in Poland (CRASP), Berit Rokne from the University of Bergen in Norway and the EUA-CDE Steering Committee, Elisabeth Westphal and David Baldinger from Universities Austria and Michelle Nelson from University College Cork, Ireland. The Advisory Board has combined a high degree of knowledge in the area with a true collaborative spirit, which has benefitted the project enormously. Many thanks goes also to the partners and other organisations that generously hosted the focus groups, including the University of Warsaw and the Irish Universities Association.

We are also very grateful to Karolinska Institutet and especially Anders Gustafsson for agreeing to host the final workshop as a part of the Doctoral Week in September 2012.

Finally, the project would not have been possible without the support of the European Commission's DG Education and Culture and the Lifelong Learning Programme, whom we would like to thank for the good collaboration throughout the project.

Joanne Byrne, Thomas Jørgensen, Tia Loukkola
European University Association

1 | Introduction

Quality assurance and doctoral education have been elements of the Bologna Process since the 2003 ministerial meeting in Berlin, but until rather recently, they have been developing on two different tracks. The basic principles governing both, the Standards and Guidelines for Quality Assurance in the EHEA (ESG) and the Salzburg Principles for doctoral education, date from 2005, but their development happened in very different contexts. Quality assurance has been mostly related to universities' teaching mission and the main focus has been on the first two cycles, while doctoral education has been closely linked to research. Within institutions, the two have typically been under different governance structures, quality assurance under the vice-rector for academic affairs and doctoral education under the vice-rector for research.

Doctoral education is a core element of the traditional identity of a university. In most countries, only universities can confer the doctoral degree, and they see this as one (if not the) activity that defines them as institutions. University staff are also heavily invested in the area. The close, master-apprentice relation between supervisor and supervisee is the foundation of the traditional view of the doctorate as a rite of passage, an initiation to the scientific community, the *res publica literaria*. Doctoral education was the ground where scholars could plant their ideas and pass them on to the next generation. To this day, academics who have long earned their spurs will still, in some countries, be identified by the supervisor of their doctoral thesis (for example "Professor Smith, a pupil of Jones, thinks ..."), and in German-speaking countries, supervisors would be referred to as the 'doctoral father/mother' *(Doktorvater/-mutter)*. This rather traditionalist element in doctoral education is, as the language describing it indicates, seen as a private relationship. Doctoral education as a rite of passage happens in the private sphere where ideas reign free from interference from institutions. Those faithful to this tradition would be very wary of institutions and lawmakers introducing reforms that potentially endanger this tradition. In this context, quality assurance can almost amount to sacrilege, disturbing a ritual, which for centuries has been a cornerstone of academic identity. This leads to a discussion on one of the key challenges of quality assurance in higher education – how to ensure the participation, acceptance and commitment of academic staff.

Doctoral education is fundamentally different from the teaching-based first and second cycle. It is highly individual; doctoral candidates do not follow a predictable path which is carved out in successive modules, but they follow a hypothesis or an idea leading them to uncharted territory, which they must then learn to navigate. For this purpose, the master-apprentice model of individual research under supervision has been very effective.

This being said, traditions, however venerable, should not be an excuse to evade accountability. Doctoral education is not only important for the supervisor or supervisee; it is a vital activity for universities in developing research and talent. As research has become an increasingly important element in economic development, governments and society at large alike are concerned that investments in doctoral education are appropriately managed, that education is fit for purpose, theses are finished and quality is ensured. Doctoral candidates not least have the right to enjoy transparent structures with clear rights and responsibilities as well as the assurance that they will be part of inclusive and inspiring research environments. Doctoral education has come into focus with several new laws being prepared or implemented across the European continent. If the value of doctoral education is to be upheld, there is no hiding behind traditions, but there must be a thorough reflection on how the good elements of the traditional model can be embedded in an accountable, well-managed institutional framework. As this view has gained ground, the parallel tracks of doctoral education and quality assurance have begun to be connected.[1]

[1] See Bitusikova, A., *et al.,* 2010, *Quality Assurance in Doctoral Education*

During the last decade, universities have been a main driver in the reform of doctoral education. They have established institutional units, doctoral schools, to manage a growing number of doctoral candidates, develop programmes and not least develop doctoral education-specific processes for quality assurance – often not recognised as quality assurance and independent from the quality assurance done for the first and second cycle. In 2010, EUA launched the Salzburg II Recommendations, a product of consultation with European universities to collect the experiences of the reforms, including quality assurance. Here it was stated that:

> It is necessary to develop specific systems for quality assurance in doctoral education based on the diverse institutional missions and, crucially, linked to the institutional research strategy. For this reason, there is a strong link between the assessment of the research of the institution and the assessment of the research environments that form the basis of doctoral education. Assessment of the academic quality of doctoral education should be based on peer review and be sensitive to disciplinary differences.
>
> In order to be accountable for the quality of doctoral programmes, institutions should develop indicators based on institutional priorities such as individual progression, net research time, completion rate, transferable skills, career tracking and dissemination of research results for early stage researchers, taking into consideration the professional development of the researcher as well as the progress of the research project.[2]

As is clear from this quote, the basis for quality assurance in doctoral education should be research; the quality of the research environment is the basis of the whole notion of quality in doctoral education and this will require different approaches from the quality assurance developed for the first and second cycles. However, accountability and enhancement as factors of quality assurance and the demand for transparency are just as relevant for doctoral education as for the first two cycles.

The Accountable Research Environments for Doctoral Education Project

As the Accountable Research Environments for Doctoral Education (ARDE) project was drafted in 2009, during the consultations for Salzburg II, it was obvious that institutional reform was proceeding rapidly in the area of doctoral education and that these developments required reflections about accountability and transparency. In fact, it was clear that these reflections were happening in Europe's universities, and that it was high time to gather experiences in a systematic way.

The ARDE project consortium reflected on the importance that doctoral education had acquired at the systemic level. Although it was important to highlight the developments within universities, it was also apparent that the issue of quality in doctoral education was on the agenda of a number of political stakeholders and of increasing interest to the quality assurance agencies. Laws concerning doctoral education were being passed in Spain and prepared in Poland, while other countries were implementing new legal frameworks for doctoral education. For this reason, the project was of particular interest for National Rectors' Conferences, some of which were active in the ARDE project consortium.

The project methodology combined collecting quantitative evidence through a survey distributed to European universities and, once the survey results had indicated what the major areas of interest were, a consultation process with universities consisting of four focus group meetings covering specific topics and a final workshop to consolidate the findings. The survey and the sample are described in detail in the survey chapter; it had a fairly modest response rate in terms of universities, but since the respondents

[2] European University Association (EUA), 2010, *Salzburg II Recommendations*

were, to a large extent, research-intensive institutions with many doctoral candidates, it covered about 20% of the estimated 600,000 doctoral candidates in the EU. It was not a proper mapping exercise, but rather a snapshot of the situation – not least due to the fact that the reforms were ongoing within the institutions. The survey indicated a number of areas, which seemed of particular relevance to universities: 1) monitoring (including the use of indicators); 2) supervision; 3) career development and 4) evaluation approaches (looking at the interplay between institutions and evaluation systems). These areas were then selected as themes for the focus groups.

The focus groups were established by an open call to EUA members; each group had about 20 to 25 participants and was hosted respectively in Brussels, Dublin, Vienna and Warsaw in the course of autumn 2011 and spring 2012. The format of the focus group meetings consisted of three main parts: 1) a presentation of the project and of the survey results relevant to the topic of the particular focus group. This allowed an introduction of the main issues and allowed for further discussion and verification of the survey results; 2) a short round-table presentation from representatives of each institution about their processes related to the topic of the focus group, as well as the challenges they were facing. These round-table presentations were very valuable in terms of sharing experiences of different practices; 3) a discussion session, a 'gallery walk', where key questions inspired by the previous discussion were written on flip charts and discussed in smaller groups.

As a final activity to collect evidence and to validate the preliminary results of the survey and focus groups, a one-day workshop was held as part of the EUA-CDE Doctoral Week at Karolinska Institutet in Stockholm, Sweden, at the end of September 2012. Here participants engaged in a second round of discussion based on the focus group results. The workshop included a panel debate with representatives of funding organisations, quality assurance agencies, research evaluations and doctoral candidates.

This report provides a short introduction to the developments of quality assurance and doctoral education in the last 10 to15 years and presents the evidence gathered throughout the course of the ARDE project. It gives an overall picture of the situation as seen from the point of view of universities, including discussion about which areas have been reformed, which ones present challenges, who is evaluating doctoral education and what are they looking at. Much of this is well illustrated by the survey results, which are described in detail in a separate chapter. The survey questionnaire can be found in Annex 1. Three chapters will deal in more depth with areas of particular interest: there is a general discussion on quality assurance in doctoral education with particular focus on evaluations and indicators, supervision and career development. These are three areas which are proving to be central to quality assurance in doctoral education, and in which the project has gathered concrete and useable evidence concerning challenges and good practices. It is hoped that the report will serve both as a general overview of the situation as well as a guide for those who are setting up or developing quality assurance systems for doctoral education.

2 | Quality assurance and doctoral education

Quality assurance in the European Higher Education Area

While some countries in Europe have been establishing national quality assurance agencies and developing national quality assurance regimes since the late 1980s and to an increasing extent since the mid 1990s, the real rise of quality assurance has taken place in the last decade. Quality assurance is usually seen as a key accountability measure introduced as a response to the massification of higher education and the increased autonomy of universities. However, in the context of the European Higher Education Area (EHEA), quality assurance has been seen as an essential action line that promotes the attractiveness and improves the quality of European higher education and the bi-annual Ministerial Communiqués have boosted quality assurance developments.

The main steps in relation to the development of a European dimension in quality assurance can be summarised as follows:

- In 2003, the Ministerial meeting in Berlin stated that in line with the principle of institutional autonomy the main responsibility for quality assurance lies within each institution while also defining the main characteristics for national quality assurance systems. The Ministers also invited ENQA, in co-operation with EUA, ESIB and EURASHE (nowadays known as the E4 Group),[3] to develop standards and procedures for quality assurance.

- Two years later, in 2005, in Bergen, the Standards and Guidelines for Quality Assurance in the European Higher Education Area (ESG) were adopted by the Ministers based on a proposal made by the E4 Group. The ESG have become the embodiment of European quality assurance providing the quality assurance agencies and the HEIs with guidance for their own quality assurance activities.

- In 2006, the E4 Group organised the first European Quality Assurance Forum (EQAF) so as to gather all stakeholders together at European level to discuss the future of quality assurance, exchange experiences and discuss the latest policy developments. The idea of having such a Forum had been included in the E4 report on the ESG to the Ministers the year before.

- In the 2007 meeting, the Ministers for higher education endorsed the creation of the European Quality Assurance Register for Higher Education (EQAR). The Register was another idea that had been introduced in the ESG report two years earlier and in the intervening two years; the 'E4 Group' had elaborated the concept further.

Various studies show that these agreements reached at European level have had a significant impact on national and institutional quality assurance systems: new quality assurance agencies have been established in many countries, external quality assurance processes have been revised, which has also resulted in the development of internal quality assurance processes at universities as they respond to the requirements

[3] The European Association for Quality Assurance in Higher Education (ENQA), the European Students' Union (ESU, formerly known as ESIB), the European University Association (EUA) and the European Association of Institutions in Higher Education (EURASHE).

set by the agencies.[4] Consequently, the respondents to the survey in EUA's Trends 2010 reported that the single most significant change to have taken place in the first decade of 2000 was the improved internal quality assurance processes within HEIs.[5]

The developments described above have been characterised by their focus on the higher education institutions' teaching and learning mission. Very few quality assurance agencies, such as AERES in France and FINHEEC in Finland, delve into quality or quality assurance of other missions, such as research. Furthermore, the procedures have mainly addressed the two first cycles as outlined in the Bologna Process (Bachelor and Master) despite the ESG stating that they "cover three cycles of higher education described in the Bologna Declaration",[6] i.e. also doctoral studies.

It should be noted that the ESG are standards and guidelines for quality assurance, they present generic principles for quality assurance – whether internal or external – processes rather than rules about how quality assurance should be carried out. In this respect, they value the diversity of European quality assurance, both in terms of purposes as well as methods, and underline the importance of developing quality assurance processes that are context-sensitive and fit for purpose.

Furthermore, the ESG do not present criteria for quality and it is noteworthy that they do not define what quality in higher education is. To a certain extent, one may argue that they implicitly describe some characteristics of a good quality study programme by highlighting some procedural aspects such as transparency in terms of study curriculum and student assessment, the need to offer adequate student support services etc. In that respect, the ESG reflect the understanding of quality as fitness for purpose and leave the purpose to be defined by each country, institution or programme. In practice this is still usually done by or in co-operation with the academic community.

Quality assurance and quality culture

Before going into further detail on recent quality assurance developments in doctoral education in particular, it is worth taking a moment to reflect on the purposes of quality assurance and some of the specificities of quality assurance in higher education.

As discussed above, the ESG acknowledge the diversity of quality assurance, which includes the fact that quality assurance can serve different purposes depending on the context. In the literature there exists a variety of different kinds of purposes identified for quality assurance, but they can basically be grouped under two main headings: enhancement and accountability. On the one hand, quality assurance aims to demonstrate the accountability of higher education institutions to the stakeholders, and on the other hand, it usually aims to improve the quality of higher education. These are normally seen as two sides of the same coin and most quality assurance processes balance between the two. Even those national systems that previously put emphasis on accountability and ensuring minimum standards have recently introduced more enhancement elements into their systems.

EUA's policy in this regard has been that the "ultimate goal of all quality assurance – both internal and external – is to enhance quality thus promoting trust among stakeholders".[7] Therefore, while there has been a rapid increase in quality assurance procedures in Europe in the last decade, it is important to understand that having quality assurance processes in place is never the end goal. The challenge is to use

[4] See for instance Eurydice, 2010, *Focus on Higher Education in Europe 2010. The Impact of the Bologna Process* http://eacea.ec.europa.eu/education/eurydice/documents/thematic_reports/122EN.pdf; European Association for Quality Assurance in Higher Education (ENQA), 2011a, *Evaluation of the reports on agency reviews (2005-2009)* http://www.enqa.eu/files/ENQA_Occasional%20paper_16.pdf; Loukkola, T., & Zhang, T., 2010, *Examining Quality Culture: Part 1 – Quality Assurance Processes in Higher Education Institutions* (EUA)

[5] Sursock, A., & Smidt, H., 2010, *Trends 2010: A decade of change in European Higher Education*

[6] European Association for Quality Assurance in Higher Education (ENQA), 2005, *European Standards and Guidelines for Quality Assurance in the European Higher Education Area*, p. 12 http://www.enqa.eu/pubs_esg.lasso

[7] European University Association (EUA), 2010, *EUA policy document on quality and quality assurance in the European Higher Education Area*, http://www.eua.be/Libraries/Publications_homepage_list/EUA-QA-Policy-2010.sflb.ashx

quality assurance to improve the quality levels, considering the particular nature of universities as expert organisations, which rely heavily on the expertise and professionalism of the academic staff and promote student-centred learning.

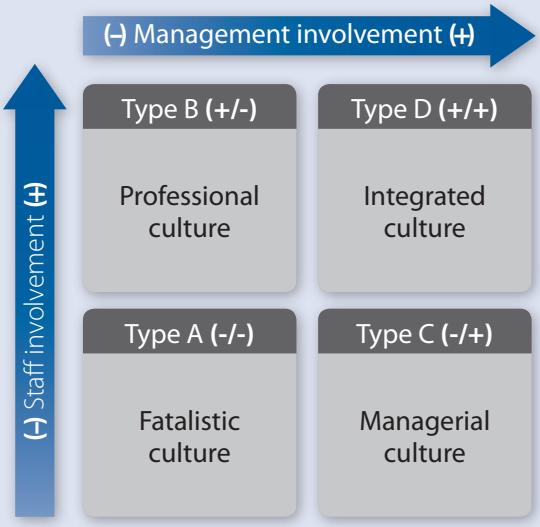
The common response given to this challenge is that universities should support quality culture rather than simply develop quality assurance processes. In a previous project, EUA defined quality culture as:

> an organisational culture that intends to enhance quality permanently and is characterised by two distinct elements: on the one hand, a cultural/psychological element of shared values, beliefs, expectations and commitment towards quality and, on the other hand, a structural/managerial element with defined processes that enhance quality and aim at coordinating individual efforts.[8]

The same project also underlined the importance of the example set by a committed and engaged leadership as well as the importance of engaging the whole university community, including academic and support staff as well as the students, in taking responsibility for the quality.[9]

Andrée Sursock has summarised the relationship between this essential combination of top-down and bottom-up approaches using Figure 1[10], interestingly borrowed from a paper dealing with effective safety processes in industry. She found that these categories also apply to supporting quality culture within universities.

Figure 1: Cultural types



Source: Facteurs humains et organisationnels de la sécurité industrielle : un état de l'art. Les Cahiers de la sécurité industrielle 2009

In terms of the efficiency of the types of quality culture, she listed the following:

- Type A: engagement of management, staff and students is weak, resulting in an ineffective approach where no one really takes responsibility for quality;

- Type B: commitment to quality is implicit and embedded in professional roles, and the engagement of management is weak, as a result there is a certain degree of commitment to quality but no quality culture;

[8] European University Association (EUA), 2006, *Quality Culture in European Universities: A Bottom-up Approach. Report on the Three Rounds of the Quality Culture Project 2002-2006,* p. 10
[9] Ibid. p. 32
[10] Sursock, A., 2011, *Examining Quality Culture – Part II: Processes and Tools – Participation, Ownership and Bureaucracy,* p. 57

- Type C: management involvement is high and staff/student engagement is low and therefore the view of quality is managerial and often focused on procedures for quality assurance;

- Type D: both management and staff/student engagement is high leading to a genuine quality culture.[11]

Through the introduction of formal quality assurance processes in European higher education, quality-related discussion has in recent decades moved from a "fatalistic" or "professional" culture towards an either "integrated" or "managerial" culture. However, the experience has shown that the ideal setting in the higher education context would be to aim at an "integrated" quality culture.

The rise of doctoral schools as a means for developing quality culture

In addition to the quality assurance developments described above, doctoral education has seen considerable reforms in most of Europe. As early as the 1990s, some countries were embarking on changing the managerial framework for doctoral education as well as developing more structured forms of delivery. Doctoral schools were being established in the Netherlands and Denmark, and the German Research Foundation began to fund Research Training Groups with the specific aim of moving away from a highly individualised model of delivery based on the personal master-apprentice relation between supervisor and supervisee. Instead, the goal was to enhance institutional responsibility in order to integrate doctoral candidates in a research environment beyond the activities of their supervisor and to facilitate, for example cross-disciplinary research groups.

In the same period, the provision of doctoral education grew at a fast pace. As the notion of the knowledge economy spread, and the EU launched its Lisbon Strategy to make Europe the "most competitive and dynamic knowledge-based economy in the world", many countries made big investments in doctoral education. In the OECD as a whole, the annual growth rate of doctoral graduations was 5% from 2000 to 2010;[12] in some countries, such as Denmark, Norway and Italy, the number of doctoral graduations doubled within the decade or even less.[13] This rapid growth, combined with increased political attention to investments in research, is important for understanding the context in which the reforms in doctoral education took place.

Particularly with the inclusion of the 'third cycle' in the Bologna Process in 2003, reforms began to be introduced across Europe. Structured programmes with taught elements were established, in some countries copying Bologna elements such as ECTS, and institutions began to develop professional management of doctoral education.

In 2005, EUA published the Salzburg Principles as a response to the Bergen Communiqué of the Bologna Process, which had explicitly called for "basic principles for doctoral programmes".[14] The Salzburg Principles were instrumental in shaping the reforms of doctoral education. They underlined the importance of research, but stated that research should be embedded in institutional strategies and contain room for a diversity of practices and programmes. They were enhanced by the 2010 Salzburg II Recommendations, which further underlined research as the basis of doctoral education and the element that made it

[11] Sursock, A. 2011, *Examining Quality Culture – Part II: Processes and Tools – Participation, Ownership and Bureaucracy,* p. 57, based on Daniellou, F., Simard, M. & Boissières, I. 2009, *Facteurs humains et organisationnels de la sécurité industrielle: un état de l'art*
[12] OECD, 2012, *Education at a Glance,* OECD, p. 64
[13] Eurostat, Education and Training
[14] *The European Higher Education Area - Achieving the Goals*, Communiqué of the Conference of European Ministers Responsible for Higher Education, Bergen, 19-20 May 2005, p. 4

substantially different from the first and second cycle. The Salzburg II Recommendations also outlined a number of 'clues to success', particularly in relation to institutional management.[15]

The vehicle for a more managerial culture has been predominantly the doctoral school. The concept of a doctoral school could originally cover everything from a doctoral programme with a few doctoral candidates to a university-wide management unit. There has, however, been a noticeable change in the common usage of the term towards a unit concerned with overall strategic management rather than an individual programme. Some universities have doctoral schools for each faculty; others have one school to manage all activities in doctoral education (sometimes called the 'umbrella model'). In each case, the establishment of doctoral schools points to an increase in institutional engagement ideally complementing the individual master-apprentice relationship.

The EUA Trends reports illustrate the rapid development well: from the 2005 Trends IV report, respondents have indicated doctoral education as an important area for reform, and the percentage of institutions with at least one doctoral school (regardless of being at the programme or institutional level) roughly doubled from 2007 to 2010, going from 29% to 65%.[16] In the ARDE questionnaire, this number had risen to more than 80% (albeit from a different sample, see the survey chapter in this report). The ARDE survey also shows that doctoral schools exist at many levels and in different forms within one institution, not least due to the fact that sometimes doctoral programmes are named 'doctoral schools'. For the purposes of this project, it is necessary to differentiate doctoral programmes and doctoral schools: doctoral programmes are "an organised set of possible taught courses and research opportunities within one or more disciplines" and a doctoral school is "an institutional structure within a HEI with its own resources dedicated to the management of doctoral education" (see glossary, Annex 2).

Increasing institutional engagement has allowed institutions to develop career services for doctoral candidates and, not least, to establish quality assurance processes, which in many systems had been completely absent. This being said, the move towards a professional management of doctoral education has brought with it a number of processes that are *de facto* quality assurance processes, but without having been defined as such.[17]

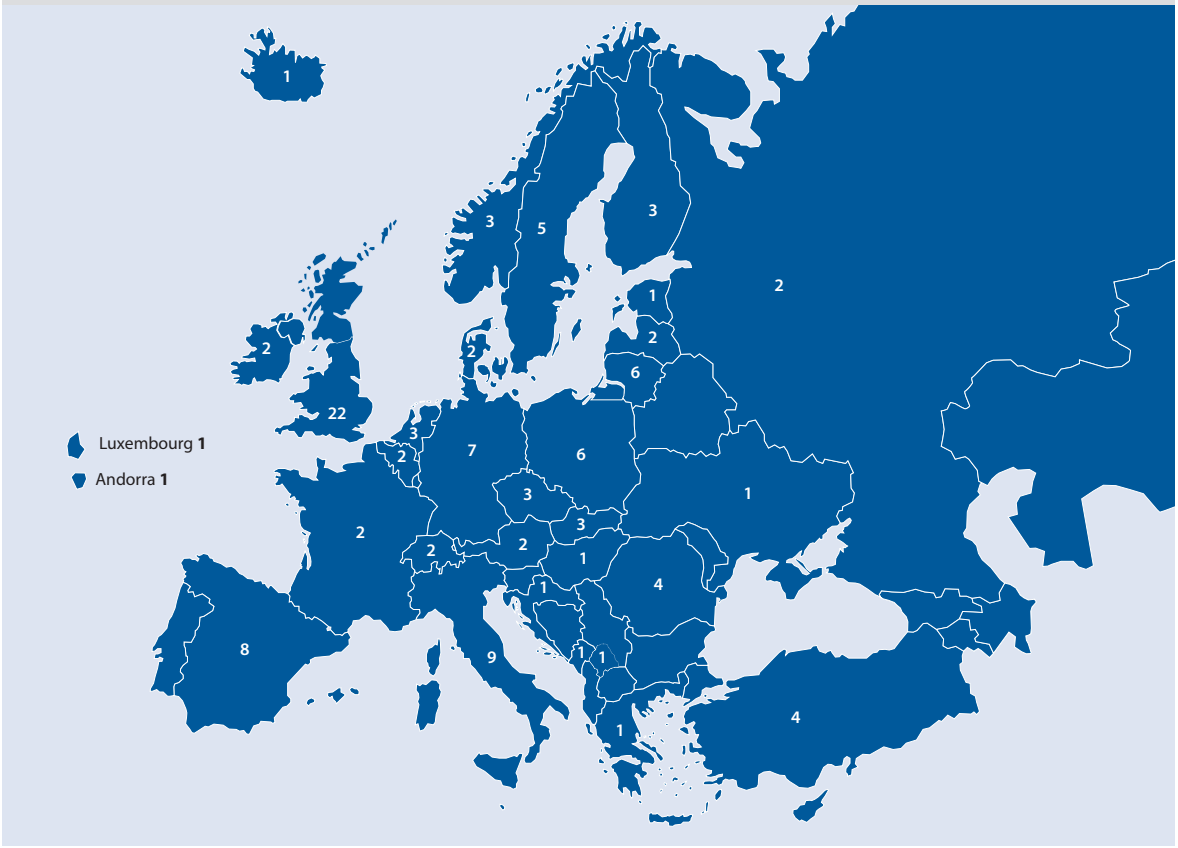
In terms of quality culture, as outlined in Figure 1 above, the shift has been from a professional culture with high staff involvement towards a more managerial culture – and ideally will continue towards an integrated culture with involvement of all parties. Before the reforms, many institutions would not have known, for instance, the number of doctoral candidates nor have a common concept of good supervision; this was all left to the personal discretion of the research staff. After the introduction of reforms, institutions developed enrolment and monitoring procedures, became aware of such issues as completion rates and time to degree and, in many cases, involved staff in discussions about institutional development and quality enhancement.

[15] European University Association (EUA), 2010, *Salzburg II Recommendations*
[16] Crosier, D., *et al.,* 2007, *Trends V,* p. 26, and Sursock, A., & Schmidt, H., 2010, *Trends 2010. A decade of change in European Higher Education,* p. 44
[17] Wilson, L., & Sursock, A., 2010, p. 29-44, "Reform in European Higher Education with a focus on quality assurance and the changing nature of doctoral education", in RIHE International Seminar Reports, No. 14

3 | ARDE survey results: ongoing reforms

The ARDE survey was launched in February 2011 and was effective in setting the context in which the project would operate by providing an overview of the state of, and attitudes to, quality assurance in doctoral education. The survey was distributed to the EUA membership, over 750 universities, with an accompanying glossary to offer explanations of certain terminology (see glossary in Annex 2). 112 institutions replied, with the response rate from the UK being particularly strong with 22 institutions responding. Approximately half of the respondents had between 10,000 and 30,000 first and second level students and almost 15% had more than 30,000 first and second level students. In terms of the number of doctoral candidates covered by the survey, it is estimated that the responding universities host between them approximately 130,000, i.e. around one fifth of the overall number of doctoral candidates in the EU.[18] It is fair to say that most respondents already had formal structures in place and it is clear that those without would have had difficulty responding. The survey results would thus be slightly biased by respondents that have structures in place.

Figure 2: Survey respondents by country



At the outset, it is interesting to note that the vast majority of the survey respondents claimed that quality assurance processes within their institution, also included, at some level, doctoral studies. This is an

[18] European Commission, 2011, *Report of Mapping Exercise on Doctoral Training in Europe "Towards a common approach"*, 27 June 2011, p. 5

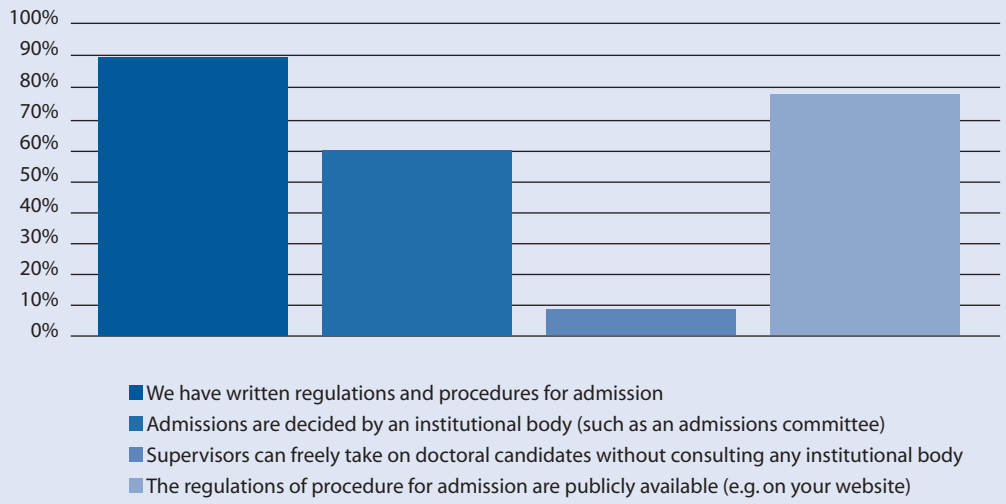
indication of the importance attributed to quality assurance within the sample. Furthermore, 82% of the respondents claimed to have doctoral schools at some level, whether they were at programme, faculty, institutional or inter-institutional level and therefore shared among multiple universities. This finding is markedly higher than the results of the Trends 2010 study where 65% of institutions claimed to have doctoral schools.[19] In the ARDE survey, considerable national differences were noted in terms of where the doctoral school is situated in the institution, although the relevance of this is uncertain due to the fact that there were low numbers of respondents from certain countries.

This chapter will highlight some of the main results of the survey in key areas – admissions, the outcomes of doctoral studies and the methods in place for evaluating the outcomes, the use of indicators, the relationship between doctoral programmes and national research assessment, tracking and career development opportunities, institutions engaged in reform, and monitoring.

Admissions

The admission process is important for the quality assurance of doctoral education and the kind of policies in place regarding selection criteria which impact upon eventual completion rates. For instance, very lenient admission procedures would in all likelihood lead to more doctoral candidates having problems finishing their research.

Figure 3: Admission procedures



The situation varies across Europe but almost 90% of the ARDE survey respondents did claim to have written regulations and procedures for admission of doctoral candidates. Of these, approximately 60% stated that admission procedures for doctoral candidates are decided by an institutional body such as an admissions committee and 79% stated that that their regulations concerning admission procedures are publicly available, on a website for example. A rather small proportion of respondents, 8%, commented that professors in their institutions were permitted to freely take on doctoral candidates as supervisees without consulting any institutional body; six of the seven German respondents stated that this was the case in their institution.

As to the question of whether institutions had the power to change the procedures relating to admissions, 83% of the survey respondents revealed that they do have such power, and, of these, 38% stated that they have concrete plans to implement changes in the admission procedures in their institution.

[19] Sursock, A., & Smidt, H., 2010, *Trends 2010: A decade of change in European Higher Education*

Monitoring

Monitoring the progress of doctoral candidates as well as the quality of several aspects of the doctoral programme in general is an integral part of an effective quality assurance system. The first consideration in this regard should be registration so that institutions are aware of the number of doctoral candidates and their affiliations. 82% of the survey respondents claimed to register doctoral candidates on admission and 64% say that doctoral candidates are registered at regular intervals. 14 respondents did not choose either of these options, but on examining the comments they provided instead, it seemed that some kind of registration process was also in operation in almost all of these institutions except one which did not register doctoral candidates at all and one which registered the candidate on completion of the doctorate.

The vast majority of institutions, 91%, claimed to systematically monitor the progress of doctoral candidates at one or various levels. 96% of these conduct their monitoring through Progress Reports and 58% through Milestones, such as handing in papers at specific times. Approximately half of them monitor doctoral candidates' progress through a combination of both of these and a very limited number of institutions claim to use Seminar Attendance or Exams as monitoring tools. In a case where a candidate was considered to be making inadequate progress, 69% of those who answered the question claimed that expulsion would be the consequence while 21% stated that some kind of remedial action would be engaged in and a further 12% commented that funding or benefits would be withdrawn.

With regard to monitoring the supervision of doctoral candidates, 61% of institutions claimed that supervision of doctoral candidates is systematically monitored although there were large differences between some countries. 20 out of 22 British institutions claimed to monitor supervision while six out of seven German respondents stated that they did not monitor supervision.

The outcomes of doctoral studies and the methods in place for evaluating the outputs

Ensuring that outcomes reach high standards is fundamental to any quality assurance process and consequently the methods in place to determine this should ideally be rigorous. The vast majority of ARDE survey respondents (96%) found that the procedure in place for awarding the doctorate in their institution was adequate and that of those institutions which had the power to change the procedures, 20% intended to do so.

The survey included questions on the thesis and careers of graduates as outcomes of doctoral education. Traditionally, the thesis was regarded as the most important outcome of doctoral education. As stated in Section 6, however, in recent times the emphasis has shifted considerably towards the graduate and this change has been explicitly acknowledged in the Salzburg II Recommendations.[20] Nevertheless, the thesis naturally remains a core element of doctoral education and assuring the quality of this facet is clearly a high priority for institutions. Theses are universally assessed through the use of a thesis committee. For the vast majority of institutions, the committee was composed of a mixture of internal and external members with only five institutions stating that the committee was composed of members from the candidate's institution alone. With regard to selecting the thesis committee, in only five cases was the committee chosen by the supervisor, whilst in over 60% of cases a departmental board or academic council established the committee and in almost a quarter this was the responsibility of the doctoral school.

[20] European University Association (EUA), 2010, *Salzburg II Recommendations*

Tracking and career development opportunities

Only 23% of respondents (26 institutions) answered that they track the careers of PhD graduates. Of these, 21 track within three years, 10 within four to seven years and only two institutions are tracking after more than seven years of graduating. Five institutions claimed to track both within three years and also within four to seven years.

On the other hand, an impressive 79% of the responding institutions offer career development support for doctoral candidates, such as transferable skills training. The UK scores highly in this regard with 21 out of 22 institutions answering positively. Even leaving out UK responses, however, 74% of institutions claimed to offer career development support to doctoral candidates. Germany was also impressive here with all seven German respondents claiming to offer support. There did not seem to be great geographical significance in terms of the countries where support of this kind was not offered, and neither did the size of the institutions appear to play a strong role.

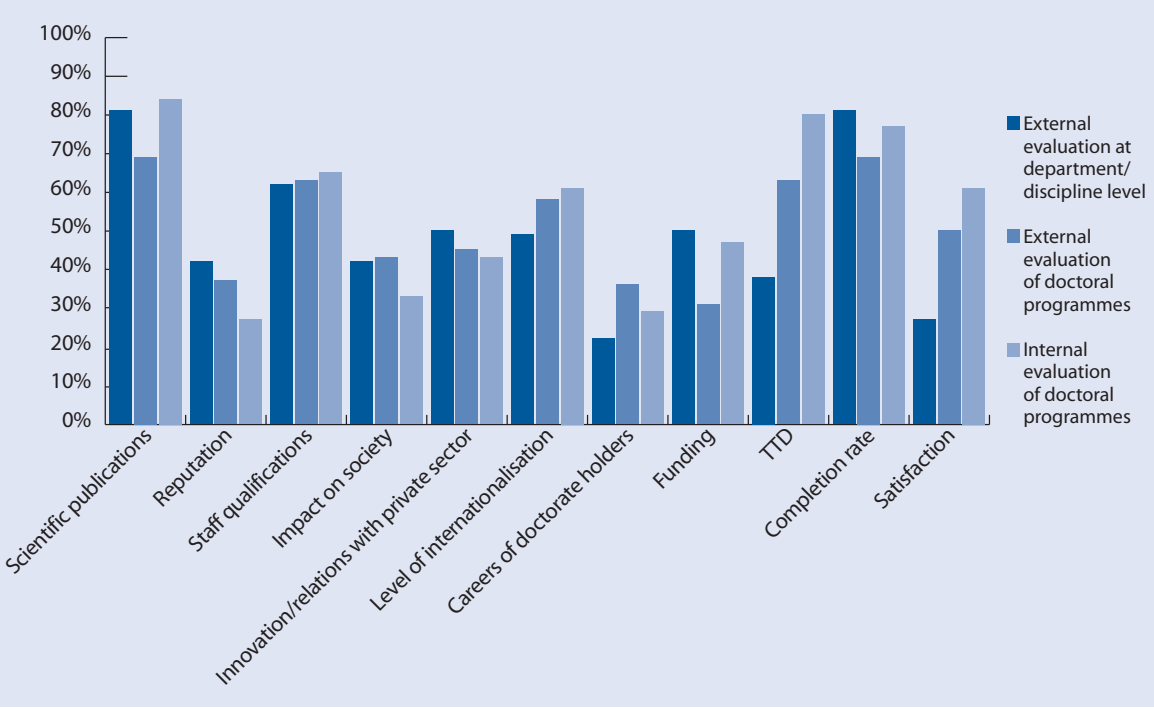
Just over half (52%) of the institutions which offer career development support systematically monitored the quality of the career services. This was apparently done primarily through surveys, although annual reports and activities carried out by the career centres and quality assurance offices were also cited in some cases as useful for this purpose.

The use of indicators

101 institutions answered the question regarding what indicators are used in external evaluations at programme level and department/discipline level. The graph below compares these answers to those given by the 78 institutions which claim that indicators are used for the internal evaluation of doctoral education.

The use of indicators in quality assurance, and in doctoral education in particular, is discussed further in Chapter 4.

Figure 4: Indicators



The relationship between doctoral programmes and external evaluation of doctoral education

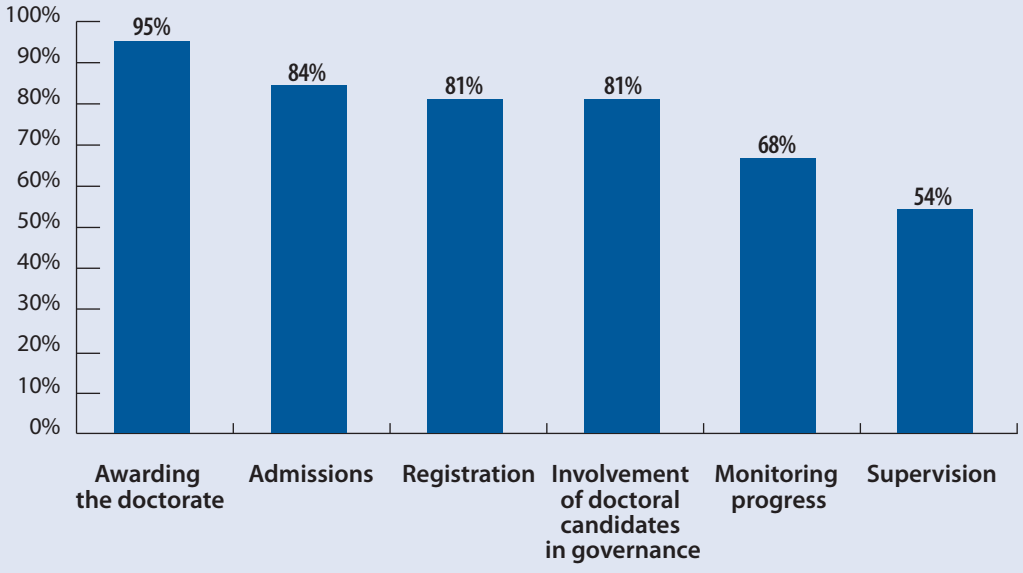
As mentioned in Chapter 4, doctoral education in Europe is subject to many different regulatory contexts and it is, therefore, often evaluated simultaneously by different bodies. With regard to national external quality assurance processes in general, 54% of institutions responded that the dominant process in use was based on institutional accreditation, evaluation or audit. It was surprising to find that 46% of respondents claimed that the main process was that of programme accreditation but, in fact, there was obvious confusion in this regard because in some cases different institutions within the same country provided a different answer. It must thus be assumed that either the question was not well understood or that there is a general lack of awareness regarding the national system in place.

66% of institutions claimed to have national research assessments at the programme/department or discipline level which explicitly refer to doctoral programmes. 74% of these said that there were assessments related to external funding which explicitly refer to doctoral programmes at the programme/department level, while 45% said there were such assessments at institutional level.

Institutions engaged in reform

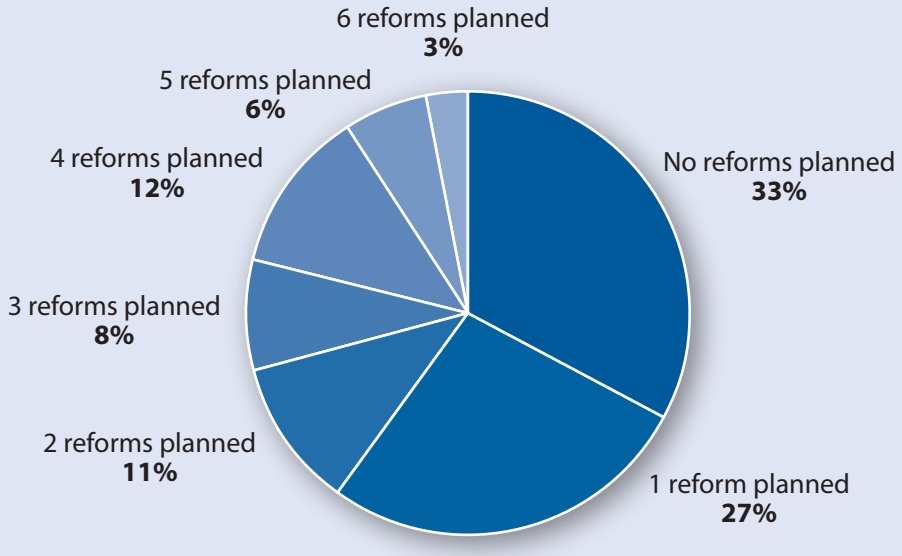
One issue to emerge from the analysis of the survey results was that, despite overall rather high satisfaction rates in six different areas (Figure 5), a high proportion of universities were, nevertheless, planning to engage in reforms related to doctoral education management. As the UK respondents had a satisfaction rate of 100% in each of the areas, we have removed them from the analysis of the rates of satisfaction in Figure 5 in order to gain a more balanced picture of the results from the other countries in the sample. With the UK respondents included, these figures would be somewhat higher.

Figure 5: Satisfaction with existing procedures



Regarding reforms, in the same six areas, if institutions responded positively to having the power to change the procedures in place in their institution, they were subsequently asked if they had concrete plans to change said procedures. Overall, autonomy levels seemed to be quite high (with some national variance) ranging between 82% and 93%, except for Awarding the Doctorate which rated at 63%. The figure below shows an overview of plans for engaging in various reforms in the responding institutions:

Figure 6: Number of planned reforms in the institutions



The area in which most concrete reforms are being planned is in supervision, with 50% of the institutions with power to change supervision practices citing an intention to do so. This correlates well with the finding that supervision was the area in which most respondents seemed least satisfied.

4 | Evaluating and monitoring as a means for enhancement

As doctoral education has become more structured and programmes have grown due to increasing numbers of doctoral candidates, accountability has become increasingly important. The fact that doctoral education has acquired more significance in education and research policies has only accentuated this trend. The ARDE survey and focus groups demonstrated how external evaluations as well as more robust internal procedures have been – and still are being – implemented across Europe in diverse manners.

External pressures

The regulatory context of doctoral education is highly diverse in Europe, and doctoral education is often evaluated and assessed simultaneously by many different bodies. EUA's Autonomy Scorecard shows that doctoral programmes must be accredited to be introduced in seven countries; some restrictions apply in nine countries, and in 13 countries programmes can be introduced without prior accreditation. This situation shows somewhat more autonomy than is the case for the first and second cycles, where only seven countries could open programmes without accreditation.[21]

In terms of similar accreditation processes to those of Bachelor and Master programmes being introduced to the already existing doctoral programmes, the cases are scarce, but in some countries, such as Sweden, they are being introduced. In Hungary, the Hungarian Accreditation Committee accredits doctoral programmes and collects the results in a national database,[22] and in some other countries, such as Denmark and Norway there have been specific evaluations of doctoral education as a whole.[23] In most countries that rely on institutional level external quality assurance, doctoral education is included in the process, which is the case for example in France and Poland. As stated in the survey chapter, doctoral programmes will often also have external funding subject to evaluation requirements, not to mention being part of national research assessments in some countries.

As a result, there is some concern regarding overregulation due to the existence of many different, often uncoordinated evaluations. In some cases, systems seem to suffer from a lack of coherence in their evaluations of doctoral education and some evaluations are done in an ad-hoc manner. Accordingly, the purpose and aims of the evaluations vary, but in general ARDE discussions testified to improvement-oriented evaluations making the most sense and usually being more easily accepted by the academic community.

Criteria used in the evaluations vary greatly; they range from pure efficiency, such as time to degree or completion rates, over research output to satisfaction of doctoral candidates (see Chapter 3, Figure 4) on the use of key performance indicators). Regardless of the criteria used, participants in the ARDE focus groups found that transparency and clarity were important in order to give credibility to the exercise. Involvement of the academic community in establishing criteria for evaluations also enhanced credibility considerably, thus it was highlighted as good practice for the universities and the evaluation body to cooperate in developing the criteria and processes prior to the exercise.

[21] www.university-autonomy.eu

[22] http://www.doktori.hu/index.php?menuid=109&lang=EN The database uses the term 'doctoral school', but according to the definitions used for this report, these are doctoral programmes

[23] Ministry for Science Technology and Innovation, 2006, *A Public Good. PhD Education in Denmark* and Thune, T., *et al.,* 2012, *PhD education in a knowledge society*

Recent Bologna Process progress reports show that all countries that have established a national qualifications framework (NQF) have included doctoral studies in the framework.[24] Yet, there exist challenges in defining these outcomes and the topic remains controversial to many. However, considering that the NQFs are based on the presumption that the programmes are learning-outcome based, it is not that surprising to note the slight trend for external evaluations of doctoral education to refer more frequently to learning outcomes also in their processes.

In Poland, learning outcomes for doctoral programmes are defined in a ministerial regulation. These are rather general statements, similar to those in the description of level 8 in the European Qualifications Framework. Based on this regulation, a faculty that offers a doctoral programme must define a set of more detailed intended learning outcomes (knowledge, skills and social competences) and establish appropriate mechanisms to prove that these outcomes have been achieved by each PhD graduate. The intended learning outcomes should refer both to the coursework and the research part of the programme; they can also account for unique competencies achieved through various interactions taking place in the research environment and international cooperation. The external evaluation of doctoral programmes takes place in the context of an institutional or departmental accreditation.

With regard to the focus of an external evaluation of doctoral education, participants in the ARDE focus groups recommended that it should primarily be there to check if an institution's own quality assurance system is in place, thus respecting the university's academic autonomy. This approach would also allow for taking into account the diversity of institutions and programmes, where the focus would be on the fitness for purpose of the quality processes in the particular context.

The Finnish institutional audit system[25] is based on this concept: universities are expected to develop quality assurance systems for themselves based on their own needs and goals. The institutional audit evaluates how well the quality system meets these goals and needs – both strategically and operationally – as well as the extent to which it is comprehensive and effective. The system is expected to cover all activities of the university, including research and innovation and doctoral education, which is part of the degree education audit target.

There are legitimate concerns regarding the external evaluations, not least because of the added bureaucracy they may, in the worst case scenario, lead to. However, universities in systems with no evaluations underlined that external evaluations would be extremely useful to the university. They offer a university the opportunity to undergo a 'reality check' through an external view on the state of affairs, and external evaluations have the potential to give incentives for change, such as improving or correcting aspects of the programme or introducing something completely new. Universities operating in systems with weak or non-existing national frameworks for evaluating doctoral education miss out on the possibility of comparing and benchmarking themselves with other institutions.

Internal quality assurance

One key pillar of the European quality assurance is the recognition that the main responsibility for it lies within the institutions themselves. Thus external quality assurance processes are expected to be based on the internal processes.[26] In the recent EUA projects on quality assurance, internal quality assurance has been understood not only "as a specific quality monitoring (such as process descriptions, data collection and analysis) or evaluation processes often carried out by a specific quality unit, but including all activities related to defining, assuring and enhancing the quality of a HEI."[27]

[24] Eurydice, 2012, *The European Higher Education Area in 2012: Bologna Process Implementation Report,* p. 41
[25] *Finnish Higher Evaluation Council, Audit Manual for quality systems of higher education institutions 2011-2017,* http://www.finheec.fi/files/1335/KKA_0311.pdf
[26] European Association for Quality Assurance in Higher Education (ENQA), 2005, *Standards and Guidelines for Quality Assurance in the European Higher Education Area*
[27] European University Association (EUA), 2009, *Improving quality, enhancing creativity: Change processes in European higher education institutions*

This interpretation emphasises the fact that evaluating and monitoring alone is not sufficient for quality enhancement. In addition to collecting information on the programme, it is crucial to ensure that the information is used for actual improvements. In quality assurance terminology this is called "closing the feedback loop", which leads to the planning and implementation of activities (such as teaching), to be equally important parts of quality assurance systems as monitoring and evaluating. In practical terms, in relation to a doctoral programme for instance, this means that internal quality assurance should cover all steps from planning the programme, implementing and evaluating it to correcting and improving it based on the feedback received in previous stages.

In light of this interpretation of quality assurance a lot has been done in recent years with respect to internal quality assurance. The Trends 2010 report and also the results of the ARDE survey demonstrate that institutions have introduced new processes that aim to ensure increased transparency in a systematic way: clearly defined admission procedures and criteria, transversal skills, guidelines and regulations for various aspects of the training, transparent and pre-defined assessment criteria. There are also a number of initiatives that give incentives for the academic community to share and discuss experiences particularly regarding good supervision (see Chapter 5 on supervision). While these processes are often not regarded as quality assurance activities, they are in fact aiming to enhance quality.

With regard to monitoring in particular, it is important to think of the purpose for which the information is used: information should facilitate the quality enhancement of doctoral education and it should be clear and transparent who is responsible for taking action in relation to solving problems and improving procedures. Only in this way can the university be certain that it is "closing the feedback loop" discussed above. The experience has shown that this rather challenging task should be carried out in such a way that those involved, such as the doctoral candidates and staff, are aware of how this information is used, but universities have clearly recognised it as a key success factor and are working on it.[28]

Furthermore, different needs within the institution should also be taken into consideration. Strategic management at the institutional level has different needs to management at the programme level, and should be approached differently to the daily management of the doctoral programmes. For instance, monitoring progress can be divided into the monitoring of the scientific progress of the individual doctoral candidates and the overall trends within the institution as a whole and their relation to strategic aims. Whereas the first responsibility lies within the management of doctoral programmes, the second is an area for an institutional body such as a doctoral school.

Concerning the methods used for monitoring, the ARDE focus groups recommended that they should consist of complementary and context-sensitive methods such as key performance indicators, surveys and peer review. Similar recommendations were made in a recent EUA study that examined the relationship between quality assurance processes and quality cultures:

> There must be a mix of several instruments to ensure good intelligence. These instruments must be related to institutional strategies and – ultimately – to academic values. Their costs and benefits must be reviewed regularly: this includes not only financial costs and benefits but also psychological aspects (e.g., do they lead to unnecessary stress or unreasonable workloads) and whether they really contribute to embedding an effective and shared quality culture, supporting the institutional strategy and providing accountability.[29]

Common practices seemed to also include the use of progress reports to monitor doctoral candidates, and internally developed databases also seemed to be in place. At some institutions, these databases were used also for tracking graduates, or there was a hope that they could be used in the future for this purpose. Overall, there was a sense that the institutions taking part both in the ARDE survey and focus groups were

[28] Loukkola, T., & Zhang, T., 2010, *Examining Quality Culture Part I. Quality Assurance Processes in Higher Education Institutions*
[29] Sursock, A., 2011, *Examining Quality Culture Part II: Processes and Tools – Participation, Ownership and Bureaucracy,* p. 9

those who were already advanced in working on these issues. Structures seemed to be in place, but they were often relatively new.

Specificity of doctoral education

Many of the principles for good practice and the concerns discussed above are familiar to those dealing with quality assurance in higher education: they have been discussed in EUA's previous quality assurance projects and are part of EUA's policy on quality and quality assurance. Moreover, they are included in the ESGs and shared by other stakeholders (such as quality assurance agencies). But what is it then that makes doctoral education different? Following the Salzburg II Recommendations, the crucial difference is the research nature of doctoral education.

It is important to underline that while many institutions aim at providing an element of research in both the first and second cycle, research plays a qualitatively different role in doctoral education. The goal of doctoral education is to bring the doctoral candidate from the level of a talented Master's student capable of understanding and reproducing knowledge to a researcher capable of producing knowledge independently. Whereas new knowledge might be found in very good Master's Theses, it is the very hallmark of the doctorate. A doctorate holder has demonstrated that he or she is independently capable of working at the frontier of knowledge and managing the challenge of being in an unexplored area.

Working on the frontier of knowledge also means that doctoral education is highly individual by definition. An original research project rarely follows an easily predictable path: hypotheses prove wrong, experiments fail or archives turn out to be empty (or to contain different, but more interesting material). It is through these challenges that the doctoral candidate develops the creative and flexible research mindset.

The implication of this focus on research and quality assurance in doctoral education, is the crucial role of ensuring a critical mass of research so that doctoral candidates can be part of a research culture, and a diversity of research so that there is access to different ways of thinking and different methodological approaches. The research mindset develops through exploring challenges and engaging in discussions, which require a vibrant research environment. Salzburg II also states that this is not necessarily synonymous with a large number of researchers, but the issue of critical mass makes institutions look closely at ways to ensure good research environments eventually through collaborations and joint programmes.

There is a tendency in Europe towards a more explicit classification of universities, whereby particularly research-intensive institutions have been very assertive about defining themselves as a special group. Particularly the UK Russell Group has been very vocal, as has the League of European Research Universities (LERU). Funding organisations and governments have supported this development through the so-called excellence initiatives, which give additional funding to universities that have a high research capacity, or through incentives to merge institutions into bigger units.

While these initiatives have a very high profile, other models are just as fit for purpose. In Scotland, the strategy was to create strong incentives for institutions to pool research capacity and create common programmes, which has proven to increase the overall capacity as well as allow more peripheral universities to have access to large and vibrant research environments. In France, universities have incentives to gather common 'poles' of research and teaching where they bring together their research capacity, the PRES (pôle de recherche et d'enseignement supérieur).

The ARDE survey shows that a large majority of universities are evaluating their doctoral education according to research output in terms of publications (see Chapter 3, Figure 4) and that many use staff qualifications and funding, which would indicate that institutions in general are highly aware of the need to have a critical mass of research for doctoral education. The project did not, however, look into the different methods of creating critical mass across different institutions.

The use of indicators

It was evident during the course of the ARDE project that monitoring and evaluation systems have been introduced for doctoral education and there was subsequently a lot of discussion about the indicators to be used in these systems. This is a topic that often raises many questions and perhaps less satisfactory answers: What kind of data should be collected to find out the quality of a programme and to be able to act upon the data as recommended above? This is particularly challenging considering that indicators, even at their best, are always proxies for quality. This was discussed in EUA's Rankings Review that looked into the challenges of combining rankings that are purely indicator-based and do not necessarily include the same kind of qualitative approach as most quality assurance processes. When examining the indicators used by the global rankings, it was concluded that the indicators for research performance, despite their flaws, were still more accurate than those used for teaching, which enjoy only a tenuous link to the quality of teaching at best.[30] Thus, care should be taken when defining and interpreting indicators.

The ARDE survey showed the diversity of the indicators used (see Chapter 3, Figure 4) to monitor doctoral education. In the external evaluations of the departments/disciplines the most commonly examined indicators were scientific publications and completion rates (both with 81%), whereas staff qualifications was of interest in only 62% of the cases and other indicators were of interest only in half or less of the cases.

In the case of the external evaluations of doctoral programmes, the diversity of the indicators used was even greater with completion rate and scientific publication again top of the ranking with 69%, followed by staff qualification and time-to-degree with 63%. Unlike the evaluations of the departments, there was less concern for research-related indicators at the expense of teaching-related indicators, which are perhaps familiar to quality assurance agencies from the first and second cycle. External programme evaluations, which are often, in practice, programme accreditations, showed considerably more uneven use of indicators than other types of evaluations in the ARDE survey. It could possibly be that these accreditations are very different across Europe "and that there is less uniformity in the priorities of the evaluations, giving a less clear-cut picture".[31] This inconsistency in terms of the use of indicators may also be explained by the fact that external quality assurance examines the processes and infrastructure in place in the universities rather than relying on key performance indicators.

In terms of the internal evaluation and monitoring of doctoral programmes, universities seem to pay attention to pretty much the same indicators as the external research evaluations, apart from the fact that universities seem to look more into the level of internationalisation and candidate satisfaction (61%).

The focus groups only confirmed the complexity of the discussion related to indicators. Whilst there was consensus that it is important to choose a good set of indicators, which can be used over a relatively long period of time so as to provide indications of the progress made and areas that should be monitored, there was not always an agreement on what indicators could be used to monitor the progress.

Here are some examples: in terms of what to monitor, it was agreed that the capacity and progress of the doctoral candidates and their projects, supervision and programme components (skills training and course offers) were important. The capacity of the institution, departments and programmes, respectively, to carry out good research and to train doctoral candidates was also regarded as a high priority. In relation to the research environment, the quality of staff, research infrastructure and availability of funding received immediate attention, as did the existence of national and international networks and diversity (including interdisciplinarity) of researchers. Participants in the ARDE focus group also underlined that it was essential to have an inclusive environment which promoted mutual respect and interaction between all members of an institution's research community, including doctoral candidates. But indicators to measure these could not be easily defined and were heavily debated.

[30] Rauhvargers, A., 2011, *Global University Rankings and Their Impact*

[31] Jørgensen, T.E., 2012, p. 16, "Implementing quality assurance in doctoral education – a snapshot" in *Quality and trust: at the heart of what we do - a selection of papers from the 6th European Quality Assurance Forum*. http://www.eua.be/Libraries/Publications_homepage_list/Quality_and_Trust_at_the_heart_of_what_we_do_EQAF2011.sflb.ashx

Sometimes, it is relatively easy to find a suitable indicator to be used (for instance, completion rate, time-to-degree, external funding etc.), but the real question is what does the indicator actually tell us. For instance the completion rate of a programme in Austria (where any person who meets the minimum requirements is free to enrol in a doctoral programme) is bound to be different from that in Sweden (where the university can choose its candidates and only those with secured funding will be admitted).

In conclusion, concerns about over-reliance on key performance indicators were expressed. It is advisable to bear the following issues in mind when evaluating doctoral education:

- While indicators can be useful for monitoring the performance of a programme, they need to be complemented by other sources of information.

- Indicators should always be considered in the context of the programme and institution as a whole. The interpretation of completion rates and time-to-degree should be, for example highly dependent on regulations concerning admission to doctoral education. Moreover, terminology concerning key performance indicators is not uniform. This, as well as the lack of context-sensitive indicators, are hindering comparison between systems and institutions.

- There may be a need to develop indicators to meet different needs. External evaluation bodies may have different needs to strategic management at the institutional level or management at the programme level.

5 | Supervision

Supervision has been a very important theme in the discussions about reforms of doctoral education. Supervision provides the major part of the interaction between doctoral candidate and the university, whether it is in the daily work of a research team or in more or less regular individual meetings. It is not an exaggeration to state that any institutional initiative to enhance the quality of doctoral education will have to recognise the supervisor as the main transmission belt between institutional strategies and their implementation.

Doctoral candidates have the right to expect supervision that will both guide their research and lead them to increasing degrees of independence. However, in the traditional apprenticeship model of doctoral education, there were no formal procedures to concretely ensure fundamental elements of supervision existed such as timely and thorough feedback on doctoral candidates' work or regular meetings. Supervisors could theoretically take on doctoral candidates and not spend any time or effort on training them. In systems where doctoral candidates are not enrolled in the institution, but have a purely personal relationship with their supervisor as the only reference point, there is little that institutions can do to ensure that the quality of supervision is satisfactory. In such systems, doctoral candidates will only be in the institution when registering for the thesis defence; those who fail or struggle for years to finish are in danger of receiving no support.

From the apprenticeship model to institutional responsibility

In the 2000s, as reforms of doctoral education rose on the European higher education agenda, several surveys were carried out to gauge the satisfaction with supervision in the apprenticeship model. In 2005, the Swedish National Agency for Higher Education conducted an international, comparative survey, using methodology developed for national surveys on the situation of Swedish doctoral candidates. Results concerning supervision were quite similar in the countries or regions of the survey (Catalonia, Finland, Ireland and Sweden), with between 20% and 25% of doctoral candidates experiencing shortcomings with supervision.[32] Some of these shortcomings were fairly serious, such as one in ten Swedish doctoral candidates answering that "shortcomings in supervision ... have hampered [my] research" to "a very great extent".[33] In 2010, Eurodoc (the European Council of Doctoral Candidates and Junior Researchers) conducted an extensive survey of doctoral candidates in Europe showing quite similar results: most were satisfied, but between 15% and 20% of respondents did not think that their supervisors fulfilled their roles.[34]

Such numbers might have seemed acceptable in a traditional university culture, but they are certainly problematic in modern institutions with professional management of teaching and research. Universities invest considerably in doctoral candidates – not least through the time of their supervisors – and they have an obligation to ensure that insufficient supervision is not preventing doctoral candidates from graduating in a timely manner – or worse, from graduating at all. Apart from the moral obligation to provide good supervision, universities are under considerable external pressure to ensure that lack of good supervision

[32] Swedish National Agency for Higher Education/Högskolaverket (2006), *International Postgraduate Students Mirror,* p. 72
[33] Ibid. p. 68
[34] Eurodoc, 2011, *The First Eurodoc Survey on Doctoral Candidates in Twelve European Countries,* p. 45

does not hamper the progress of doctoral candidates. As is clear from the ARDE survey, efficiency indicators such as completion rates and time-to-degree are very common in different evaluations.

While ensuring the progress of the doctoral candidates' research projects is certainly an important element of supervision, the central task is to cultivate the research mindset of early stage researchers by involving them in a research environment, which requires the development of an inclusive institutional culture. Fulfilling formal requirements forms a minor part of the supervisor's role as he or she will be far more concerned with the tasks of introducing doctoral candidates to the culture of research, developing their critical thinking and ultimately helping them become truly independent researchers.[35] The two aspects of ensuring compliance with rules as well as cultivating the research mindset gives institutions the double task of ensuring the formal aspect of quality in supervision as well as shaping a sound supervision quality culture.

In January 2009, EUA-CDE hosted a workshop dedicated to supervision at Imperial College, London, attended by representatives from more than 50 institutions from 21 countries. Here, participants pointed to a number of developments that demanded a more professional approach to supervision. Among these developments were increasing formal and informal external pressures such as the proliferation of more demanding evaluations of doctoral education which require more publications, greater numbers of doctoral candidates and increased transparency; the growing number of doctoral candidates through the 2000s was mentioned alongside growing global competition. The result of all of this was calls for better training of supervisors and more stringent assessment of supervision. However, the most important issue was the call for a supervision culture. There was consensus that a 'carrots and sticks' mentality towards supervisors would not suffice to really enhance the quality of supervision. Instead, reforms in supervision should be based on a dialogue with supervisors, "meeting them where they are", as one participant put it, and using forms of professional development suitable for the local institutional and academic culture.[36]

The Salzburg II Recommendations, published in 2010, underlined the institutional responsibility for supervision by stating that "Supervision must be a collective effort with clearly defined and written responsibilities". This statement reflected the change of supervision from a private relationship to one where the university as an institution takes direct action to define rights and responsibilities and to monitor and intervene in the supervisor-supervisee relationship, if necessary. As the results of the ARDE survey indicate, the implementation of these reforms is very much an ongoing endeavour.

Implementation of reforms and engaging staff

The implementation of supervision reforms is generally described as a difficult and potentially slow process. Supervision involves the core of a set of important academic values linked to the master-apprentice relationship, and it is an area which traditionally has been seen as privileged, private territory. We are in a period of transition between what has been called a 'professional' quality culture of high staff but low management involvement to an 'integrated model' (see Chapter 2, Figure 1) where both staff and university management are highly involved in doctoral education, and this transition has an obvious potential to create conflicts.

Academic cultures and institutional approaches vary considerably: in systems with strong university management, institutions have more power to make direct interventions and set formal requirements for supervisors.

In Sweden, it is common to have obligatory courses with exams for staff who wish to supervise at the doctoral level. Here, potential supervisors prove that they have, for instance knowledge of different

[35] For a classification of supervisor approaches see Lee, A., 2009, "Some implications of European initiatives for doctoral supervision", *Bologna Handbook 12*, C 4.4-6, p. 17

[36] See http://www.eua.be/events/past/Past-Events/eua-cde-workshop/presentations.aspx

approaches to supervision or research ethics. In the UK, supervisors are monitored and can lose the right to supervise doctoral candidates if serious and repeated problems are noted. Both of these approaches – exams and monitoring – probably improve the overall satisfaction with supervision in the university, but they are mostly focused on eliminating problems rather than on fostering a culture of enhancement.

Another model can be found in Southern and Eastern Europe, where formal qualifications are important requirements to be able to supervise. In Spain, for example supervisors must have at least six years of research experience before becoming full supervisors. In Poland, supervisors must have earned a 'higher doctorate' or 'habilitation' through a research project beyond the level of the doctorate. Again, these models are not in themselves geared towards creating a supervisory culture within institutions; they guarantee that supervisors have the sufficient research background to be able to supervise doctoral candidates. Such models have a very managerial approach to the quality of doctoral supervision. While they guarantee formal knowledge of supervisors and/or sufficient qualifications, these approaches need to be complemented by initiatives that promote the more central aspect of supervision which is the acculturation of supervisees to the research mindset.

In strongly hierarchical systems, which have traditionally given power to the individual professors – typically in German-speaking countries, and partly also in Central European countries – university leadership will not have the direct power to intervene systematically in doctoral education. As the model of supervision is very entrenched in the professional type (see Figure 1) with high staff involvement, increased institutional responsibility can be seen as an intrusion on academic freedom. Germany has a two-stringed system of 'structured' doctoral education in research training groups and in graduate schools on the one hand, and 'individual' doctoral education with little or no institutional involvement on the other. In such a system, universities will have to implement reforms by making professionalisation attractive to supervisors through incentives as they will often have the choice to engage only in individual supervision out of the reach of institutional 'meddling' by formal rules. In such cases, one path to implementation of quality enhancement in supervision is to engage in pilot projects with those, typically younger, supervisors who see institutional engagement in supervision as a positive way to further their personal and professional development rather than a threat to academic freedom. This step-by-step approach looks for where there is genuine interest among supervisors to engage in professional development and expand that interest to develop a sound supervision culture across the institution.

One way to mediate the top-down formalistic approach with voluntary bottom-up engagement is to involve staff deeply in the development of regulations concerning supervision. Ireland is an example of a system that went through an extensive process of defining good practices concerning the organisation of doctoral programmes from 2003 to 2005 through a consultation with the universities.[37] This process was repeated internally in some universities, for example NUI Galway, which involved staff and doctoral candidates in developing a very extensive document defining guidelines for doctoral programmes. These guidelines explicitly underline their function as promoting "the sense of a 'community of scholars' which is a hallmark of a high-quality university."[38] From 2008 to 2012, several Irish universities developed a comprehensive guide for institutions on how to set up frameworks for the professional development of supervisors.[39]

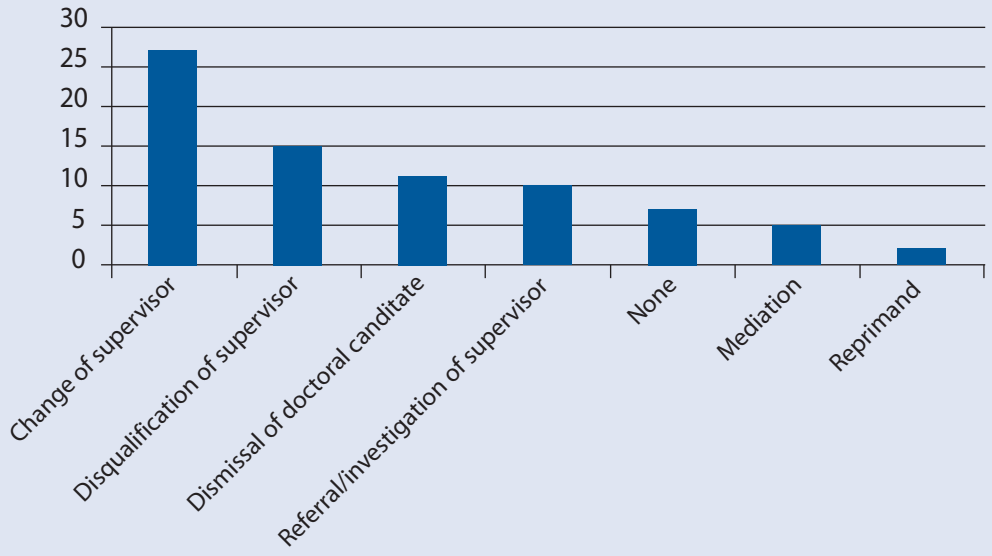
Many institutions support supervisory teams as an alternative to the one-on-one relation in the traditional apprenticeship-model. In the ARDE survey, 61% of written regulations or guidelines either required or recommended supervisory teams. Such arrangements also figure prominently in national guidelines or recommendations. The German Council of Science and Humanities (Wissenschaftsrat) even recommends a doctoral committee, which entails both the function of research guidance as well as a mediating body in the case of conflicts between the main supervisor and the doctoral candidate.[40] As early as 2004, the

[37] Irish Universities Quality Board, 2005, *Good Practice in the Organisation of PhD Programmes in Irish Universities*
[38] NUI Galway, 2007, *University Guidelines for Research Degree Programmes,* p. iv
[39] NAIRTL, 2012, *Developing an institutional framework for supporting supervisors of research students*
[40] Wissenschaftsrat, 2011, *Anförderungen an die Qualitätssicherung der Promotion,* p. 16

Quality Assurance Agency for Education in the UK (QAA UK) strongly recommended supervisory teams as a means to provide doctoral candidates with a wider network and access to expertise.[41] While the German recommendations are somewhat beyond the normal practice of team supervision, the advantage of having more than one supervisor goes further than pure supervision of the thesis. Co-supervisors can, for example focus more on pastoral care and mentoring, and the main supervisor generally gives advice on research-related questions. Supervision teams can also be a way for junior staff to become acquainted with supervision by being part of the team together with experienced supervisors. There is strong consensus, however, that there should always be one main supervisor who holds overall responsibility and acts as the main contact point for the doctoral candidates.

Some universities or even national systems use incentives to promote and reward good supervision. Prizes for good supervision, such as choosing a 'supervisor of the year' are a good and simple way to show appreciation and give prestige to supervision activities. In the Netherlands, rewards are more concrete: each supervisor receives a considerable bonus per successful PhD graduation as part of the overall budget model. Other practices rely more on sanctions than this type of positive incentive. The ARDE survey results point to different types of sanctions in the case of a breach of supervision regulations, with a change of supervisor and dismissal being most common (Figure 7). Mediation, which could be considered more constructive in terms of developing a supervision culture, was only mentioned in five responses.

Figure 7: Consequences of breach of supervision regulations



The ARDE project only comes across a few examples of supervision being an important element in the overall career of researchers. University researchers are first and foremost judged on their performance in terms of publications, with different degrees of advanced bibliometrics in different disciplines. In a highly competitive field like research, researchers would rationally use their resources on activities that give concrete merit, and if supervision is not among these activities, it will not receive priority compared to publishing, for example. Here, there are obvious disciplinary differences: in team-based disciplines, doctoral candidates will often contribute directly to the quality of results and to publications (and should be duly credited). However, in more solitary fields, supervisors will not receive much merit for putting effort into supervision, and the quality of the research of doctoral candidates will have little impact on the publication record of the supervisor.

Making supervision an official part of the promotion process for research staff would certainly further good supervision, as well as the engagement of research staff in complying with regulations, engaging actively

[41] QAA, 2004, *Code of practice for the assurance of academic quality and standards in higher education – Section 1: Postgraduate research programmes,* p. 14-15

in developing their skills as supervisors and generally ensuring that doctoral candidates were receiving the best possible support for their research project. It would also reward the efforts of the many supervisors who are dedicated to supporting doctoral candidates and today receive little merit for this.

Regulations and Guidelines

75% of respondents had written regulations and/or guidelines for supervision. Since supervision is such an important issue for the quality of doctoral education, this could be regarded as a fairly low number. Again, this is a sensitive field where institutions are moving from one distinct model of behaviour to another, which could explain the somewhat slower implementation and the smaller degree of satisfaction (see Chapter 3, Figure 5) with the present situation regarding supervision.

The situation, however, is very different according to geographical location. Some countries, particularly Ireland and the UK, have a long track record of developing common, national guidelines, which are then further developed at the individual universities. In other countries, universities have developed institutional guidelines without much central coordination, and in some countries such guidelines are still to be developed.

In addition, some discipline-based networks have issued statements on quality in their fields, which include sections on the supervision of doctoral candidates. The ORPHEUS network for biomedicine and health sciences, for instance, has developed a basic standard for supervision, which underlines both the importance of the scientific qualifications of the supervisor as well as the importance of "planned and shared responsibility" between the supervisor and the doctoral candidate.[42] Even though there are considerable differences between disciplines in terms of supervision, it is interesting to see how discipline-based guidelines contain a number of common principles with only slight variations. Recommendations for developing "a protocol defining the contribution to the hypotheses, data and research findings of each individual [research group] member"[43] would apply to chemistry, but hardly to literature studies, but the need to have a clear framework of rights and responsibilities and aim for transparency is a common concern.

As an example of how to manage the balance between discipline-specific concerns and common principles, the University of Copenhagen in Denmark has specific rules for supervision in the different disciplines, but a common set of guidelines for the institution as a whole to ensure a minimum of common procedures as well as compliance with national legislation.[44] The Irish guide mentioned above goes as far as directly recommending bringing disciplines together to discuss supervision in order to enhance the experience of doctoral candidates and supervisors alike.[45]

When developing a supervision framework, there are differing views regarding whether this should be in the form of binding regulations or rather voluntary guidelines. Binding regulations has the advantage of protecting the doctoral candidate, which is undeniably the weaker part of the relationship, against arbitrary behaviour from the supervisor. Binding regulations strengthen transparency and go further to ensure fair treatment of all doctoral candidates. As national legislation concerning doctoral education is becoming more explicit and detailed, university regulation also ensures legal compliance. Binding regulations can, however, be seen as top-down intrusion, which does not give motivation to deliver a sound quality culture – although they can be the product of a constructive dialogue involving all partners. Thus, there is a risk that binding regulations develop a pure compliance culture, where the letter but not the spirit of the rules is followed.

[42] ORPHEUS, 2012, *Standards for PhD Education and Health Sciences in Europe,* p. 12
[43] Chemistry Doctorate Eurolabel, 2011, *Quality Assurance and Accreditation for Third Cycle Quality Labels in Chemistry,* p. 56
[44] Københavns Universitet, 2008, *Fælles ph.d.-regler og retningslinjer*
[45] NAIRTL, 2012, *Developing an institutional framework for supporting supervisors of research students,* Chapter 2

For these reasons, many universities choose to develop non-binding guidelines and rely on these being integrated in the professional culture of the institution. Such guidelines serve as a basis for developing an integrated understanding of good supervision among supervisors and doctoral candidates alike. They can contain examples of good practices and make the expected outcomes of doctoral education explicit. In this way, such guidelines can be a valuable tool for the professional development of supervisors.

Voluntary guidelines, however, will not necessarily be enough to resolve cases of serious conflicts between a supervisor and supervisee. The possibility to change supervisor should for instance be inscribed in binding regulations so as to not enchain the supervisee to the whims of the supervisor and his or her willingness to follow voluntary guidelines.

Universities will typically have to ensure both transparency and compliance as well as develop a culture of supervision. These needs can be reconciled by having institutional-level rules to ensure a minimum of formal procedures and reference to national legislation, and at the same time having guidelines for supervision within the individual fields of research, which can be used to develop supervision in the research communities in different faculties or departments.

The concrete regulations and guidelines can take a number of forms both physically and in terms of content. In the ARDE focus group, examples were given of both very long and detailed regulations and short overviews, which limited themselves to basic requirements. As described above, some universities have separate regulations on different institutional levels. They might also combine regulations to make a short document directly concerning supervision, and refer to other documents such as staff or ethical regulations.

The University of Bergen in Norway, for example, has a relatively short regulation document for supervision and a longer comprehensive 'Handbook' that refers to binding regulations and national legislation while outlining in detail what a doctoral candidate at the university can expect, and what is expected from him or her.[46] University College Cork in Ireland has chosen a different strategy and has published several documents on different aspects of supervision. For example there is one Code of Practice for supervision and another policy guideline for team supervision, which form parts of a Postgraduate Research Resource Kit.

For the content of the regulations or guidelines, it seems common to have a set of explicit responsibilities of the supervisor, the doctoral candidate and the institution. These responsibilities usually cover good conduct of research, knowledge of university regulations, a prescribed minimum amount of communication between supervisors and supervisee and – at times – responsibilities concerning the financing of the doctoral candidates.

These responsibilities are often overlapping so that both the supervisor and supervisee are expected to act. For instance in the case of communication between supervisor and doctoral candidate, institutions would underline the responsibility of the doctoral candidate to inform the supervisor about problems that influence the progress of the research project. At the same time, it would be the responsibility of the supervisor to monitor the work of the doctoral candidate on a regular basis to identify problems, and there would typically be a requirement for a minimum number of meetings. Similarly, concerning research ethics, the supervisor (using an example from Aalto University in Finland) has the duty to ensure "that the doctoral candidate is aware of good scientific practice and research ethics", while it is the duty of the doctoral candidate to act according to this knowledge.[47]

Typically, the responsibilities of the supervisor would be more linked to formal compliance and ensuring that the doctoral candidate has the necessary basis to carry out research in accordance with the norms of the institution and the discipline. It is then the responsibility of the doctoral candidate to carry out the

[46] University of Bergen, 2009, *Handbook for doctoral education (PhD) – University of Bergen*
[47] Aalto University, 2011, *Supervision of Doctoral Candidates at Aalto University*

research and provide the necessary information to the supervisor to enable him or her to give advice on the basis of this information. Such overlapping or shared responsibilities are not necessarily a weak point in the internal guidelines; rather they demonstrate the dynamic and close relationship which characterises doctoral supervision.

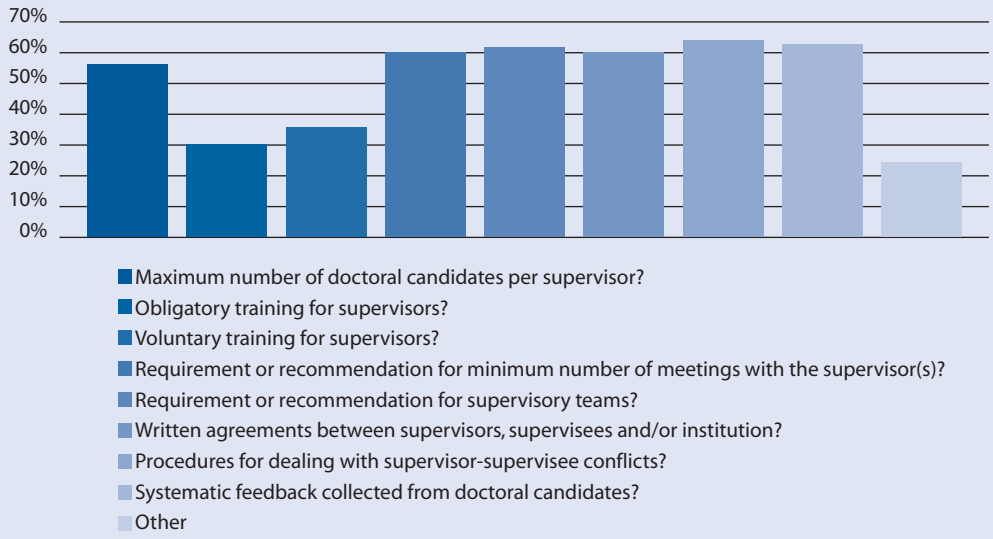
The rights and responsibilities of supervisors and supervisees can be defined through individual agreements, 'supervision contracts', which should ideally be developed at the beginning of the relationship. Such agreements serve to prevent conflicts stemming from differences in expectations. These differences might not be clear until they produce a conflict, which could have been avoided if expectations had been articulated from the beginning. Agreements or contracts should also prevent one of the parties neglecting the doctoral project. The German handbook, Shaping a Doctorate Together, delicately states:

> In our view, it would be ideal if the candidate and supervisor could clarify their reciprocal expectations at the start of the supervisory relationship, and even better if they could put it in writing. [...]
>
> In practice, things will not always be organized this way, and this way of proceeding can also give rise to problems when a more pragmatic kind of doctorate is the goal. Nevertheless, in such cases you as candidate should be aware that for equally pragmatic reasons the supervisor will not supervise your project as closely as might otherwise be the case.[48]

Approximately half of the ARDE survey respondents said that they had agreements or contracts like this.

According to the ARDE survey results, the content of supervision rules or guidelines varies considerably. A majority of respondents had documents that covered key issues such as maximum number of supervisees per supervisor, requirements for a minimum number of meetings or for written agreements (see Figure 8). However, none of the main examples for procedures were done by more than two thirds of the respondents. This would mean that there is no single topic which is covered in all rules and guidelines, making them surprisingly eclectic in their approach. The 'other' category is nevertheless quite small, indicating that the issues in Figure 8 are fairly comprehensive in terms of the content of regulations or guidelines for supervision.

Figure 8: Content of supervision rules or guidelines



[48] Qualitätszirkel Promotion, 2012, *Shaping a Doctorate Together. Guidelines for Doctoral Candidates,* p. 16

Feedback from the ARDE focus group related to supervision underlined that complaints procedures were an important element in supervision guidelines. This corresponds well to 'Procedures for dealing with supervisor-supervisee conflicts' being a reasonably widespread component of supervision guidelines. Another element, which could lead to real quality enhancement, would be the inclusion of concrete examples of good practices in documents relating to supervision. Such examples would probably belong mostly to informal guides aimed at staff development rather than to more formal documents aiming at compliance with institutional rules or national legislation.

Professional development of supervisors

Many institutions have introduced measures to improve the quality of supervision by offering (or demanding) training of supervisors. Again, there is much diversity among practices. Obligatory courses for supervisors are part of regulations in a little less than a third of the ARDE survey responses, but they exist only for about a fifth of the whole sample, including those that do not have regulations. Considering the difficulty that many universities report in engaging professors in training, this is not such a low number. A slightly higher proportion of respondents have voluntary training for supervisors so that the proportion of respondents with training (obligatory or voluntary) is roughly 60% of those with regulation.

However, as was clear from the focus group discussion on supervision, there are multiple ways of preparing new supervisors as well as improving the skills of senior staff. In institutions where the attitude is not positive towards university management establishing formal training programmes, informal peer-learning groups can be established as a forum for active supervisors to exchange experiences without any training in the strict sense being involved. These groups would probably not appear in the official rules, as their function is to make supervisors interact with minimal formality. Some of these initiatives would also grow organically, beginning from meetings for new or less experienced supervisors, who would generally be more open to engage in peer-learning, and then becoming more firmly established in the institution.

Even though the informal setting has advantages, participants in the ARDE project underlined that it was essential to secure support from the university leadership in order to engage in supervisor training. Clear messages from the leadership will contribute considerably to legitimising new initiatives that can enhance the quality of supervision over the longer term.

As with rules and guidelines, formal and informal training serves purposes both of compliance and quality enhancement: Introductory courses to supervision would often establish a common ground of knowledge about the formal rules, rights and duties related to supervision. It can, in the worst case, be reduced to a formal 'tick-the-box-exercise' or as a means to ensure minimum standards without elements of continuous development. However, obligatory training ensures that every supervisor is informed and has been part of an institutional discussion about supervision. There is a risk that voluntary measures will only reach those who are already positive about professional development instead of more problematic cases.

Informal training through, for example peer-learning exercises, will ideally allow for continuous development of a common supervision culture based on good practices. However, such training would not necessarily ensure, for instance that supervisors were all familiar with regulations and policies at the institution.

6 | Career Development

It has long been known that many doctorate holders do not go into the academic jobs that doctoral education was traditionally designed for. However, with the steep rise in the number of graduations in the last decades, preparing doctorate holders for the non-academic labour market has become increasingly important; only a very small percentage of doctorate holders will have a life-long career in 'classic' positions such as university professors, and most will leave the university career track for other sectors.[49] The realisation that the large majority of doctoral candidates is not going to remain in academia and that 'alternative careers' are the norm, in fact, has been a major driver in establishing more structured doctoral programmes with a career development component. At the same time, this realisation has demonstrated that training through research happens to be an excellent preparation for a number of careers, and particularly for management positions.

The value of a doctorate in terms of careers in both academia and the private sector is well documented by a number of quantitative studies as well as more qualitative investigations. Even if doctorate holders' first job is at the same level of those who hold other degrees, they progress faster than others, to the point where some companies see as much as 80% of doctorate holders taking up management positions.[50] However, many universities are very aware that the transition from the academic to the non-academic labour market could be made easier and that doctoral candidates should be prepared for this transition from an early point onwards.

The UK has probably been the most striking example of emphasising career development. The 2002 report Set for Success,[51] also known as the 'Roberts Report' after its author Sir Gareth Roberts, underlined that doctoral candidates needed to receive training in skills that, besides their research skills, would be needed in non-academic careers, i.e. transferable skills. These conclusions resulted in ear-marked funding for transferable skills training and career development. This funding stream was very well received by universities; when the 'Roberts Funding' was cut in 2011, many institutions decided to continue to fund these activities themselves, as they had become a key part of career development for researchers.

While the UK developed extensive career development services for researchers, other countries followed with mostly less ambitious programmes. Some governments have made quite sustainable investments in these types of initiatives, and many career development programmes were initiated by individual universities that wanted to enhance their doctoral training. The Salzburg Principles from 2005 specifically mention that institutions have the responsibility to provide – among other things – "career development opportunities".[52]

The change in focus in doctoral education from the research output, the thesis, to the doctorate holder has been vital to the development of career services. The 2010 Salzburg Recommendations underlines this by clearly stating that the "The main outcome of doctoral education [is] the early-stage researchers".[53] The outcome is no longer the research results to be defended in front of an expert panel, but a doctorate holder with specific research and transferable skills and experiences, which can be used in a wide range of careers. For this reason, universities are working to enhance the awareness of doctoral candidates about the unique profile that they are acquiring through their experiences of doing a research project.

[49] ESF, 2009, *Research Careers in Europe. Landscape and Horizons,* p.17-18
[50] Borrell-Damian, L., 2008, *Collaborative Doctoral Education,* p. 87
[51] Roberts, G., 2002, *Set for Success: the supply of people with science, technology, engineering and mathematics skills*
[52] European University Association (EUA), 2005, *Conclusions from the Bologna Seminar on 'Doctoral Programmes for the European Knowledge Society',* p. ii
[53] European University Association (EUA), 2010, *Salzburg II Recommendations*

The impact of this change in terms of quality assurance can be considered akin to the shift from teacher-centred learning to student-centred learning in the first and second cycle. Also, it has moved universities to be more proactive in communicating the value of research training to a range of potential employers.

Transferable skills and professional development

A large majority of the ARDE survey respondents answered that they had career development support for doctoral candidates. However, when assessing the outcomes of doctoral education in terms of the careers of graduates, processes are markedly less developed than in other areas of the ARDE survey with only 29% of respondents claiming to use the careers of doctorate holders as an indicator for the evaluation of the quality of their doctoral programmes. Only 23% of institutions claim to engage in tracking the careers of PhD graduates.

In the focus group meeting dedicated to the topic of career development it became clear, however, that career development was understood and carried out in widely different ways at different institutions. Some institutions had a central career office with services for the first, second and third cycle. Others had particular offices or staff dedicated to doctoral candidates, while in other institutions some programmes included transferable skills training, yet doctoral candidates who were not affiliated with a programme would not have access to such career services. The ARDE survey does not allow for a detailed analysis of the different models on offer, but it does show that universities have given thought to how to support the careers of their doctoral candidates.

Transferable skills have received much attention in relation to career development. One study done by the European Science Foundation offers the following definition:

> Transferable skills are skills learned in one context (for example research) that are useful in another (for example future employment whether that is in research, business etc). They enable subject- and research-related skills to be applied and developed effectively. Transferable skills may be acquired through training or through work experience.[54]

Many institutions will, however, focus on formal training as a hands-on approach to helping doctoral candidates.

A noteworthy example is Ghent University in Belgium, which has developed a comprehensive set of skills training in four clusters: Communication, Career Management, Research and Valorisation, and Leadership and Efficiency. Each of these clusters contains a number of specific skills such as 'Popular scientific writing' (Communication) or 'Negotiating' (Leadership and Efficiency). The university has categorised different skills according to different purposes in order to attain a more holistic training of doctoral candidates.[55]

Other universities have chosen a less systematic approach with a wide range of courses being offered to doctoral candidates without any institutional ambition to instil a particular range of skills. Instead doctoral candidates pick and choose from an array of areas in which they might need skills training.

Generally, transferable skills training is offered either as a part of a specific curriculum in a doctoral programme, or through a central unit at the university. In Germany, for example, where there is still a considerable divide between 'structured' doctoral education based in programmes and doctoral schools, and 'individual' doctoral education, following the classic apprenticeship model, transferable skills will typically be part of 'structured' doctoral education, but not necessarily available to doctoral candidates following the 'individual' model. In places with no central management of doctoral education, there can be

[54] ESF, 2009, *Research Careers in Europe Landscape and Horizons,* p. 47
[55] See http://www.ugent.be/doctoralschools/en/doctoraltraining/programme/transferableskills

a considerable gap in the level of support for those –often a minority – enrolled in programmes and those who have a purely individual relation with their supervisor. In an effort to avoid this situation, institutional-level doctoral schools can be a means to provide training and career guidance to doctoral candidates who are not in a programme, as is the case at the Ruhr University in Germany, where all doctoral candidates are part of the central doctoral school and have access to the career services.

The UK and Ireland have skills statements that define what skills doctorate holders can be expected to possess. These statements aim at both the development of doctoral programmes as well as doctoral candidates. Institutions can use them as a basis for structuring their career development services, and doctoral candidates gain awareness of the skills they attain through their research projects and what additional skills they might want to attain through other means. The British organisation Vitae, which is dedicated to the promotion and management of research careers, has taken the original joint skills statement further and developed a Researcher Development Framework, identifying skills in different areas, including an electronic tool for individuals to assess their skills and plan further development.[56]

The overall situation with regard to career services is thus somewhat irregular. Most universities have taken initiatives to offer career development to their doctoral candidates, but the content and management of these services varies widely and they are not always available to all doctoral candidates. The trend towards institutional doctoral schools is, however, a way for universities to expand what is on offer and possibly also to engage in more in-depth management of the quality of career services.

Collecting feedback on career development

While a sizeable majority of respondents to the ARDE survey did offer career development services to their doctoral candidates, only about half of these systematically monitor the quality of this support. These respondents very often relied on feedback from doctoral candidates to assess the quality of career services. In the UK, the Postgraduate Research Experience Survey (PRES)[57] collects data on satisfaction for all doctoral candidates in the country, and this was mentioned in the ARDE survey results as a resource for universities. Most respondents, however, used course evaluations or similar methods of obtaining feedback within their institution.

National surveys such as PRES are undoubtedly very useful tools for benchmarking purposes. However, satisfaction surveys do have well-known drawbacks when it comes to assessing quality.[58] Mostly, such exercises measure satisfaction in relation to expectations. A typical PRES question would thus be to agree or not agree (on a five-point scale) to statements such as "There are adequate opportunities available for me to further develop my transferable skills" or "I am encouraged to reflect on my professional development needs".[59] The answers, however, risk being fairly subjective and are connected to the personal expectations of the respondent. These expectations would also be influenced by the local institutional culture. If a supervisor generally refers to transferable skills training as a potential threat to research activity or as an irritating distraction, and if the institution does not invest or value such training particularly, even mediocre courses could be a positive surprise considering the low expectations. Conversely, an institution where transferable skills are highly valued and referred to as cornerstones of career development would create overly high expectations, which could lead to disappointment with the actual courses offered. For this reason, feedback from questionnaires should be combined with other methods to ensure and enhance the quality of career development.

Vitae also conducts other types of surveys among doctoral candidates and holders: What do researchers want to do? and What do researchers do? These surveys provide very detailed information on the national

[56] Irish Universities Association (IUA), 2008, *Irish Universities' PhD Graduate Skills;* UK GRAD Programme, 2001, *Joint Statement of the UK Research Councils' Training Requirements for Research Students;* the Researcher Development Framework can be found at www.vitae.ac.uk/rdf
[57] http://www.heacademy.ac.uk/pres
[58] Sursock, A., 2011, *Examining Quality Culture Part II: Processes and Tools -Participation, Ownership and Bureaucracy,* p. 37-39
[59] Hodson, L., & Buckley, A., 2011, *Postgraduate Research Experience Survey. 2011 results*

level about doctoral candidates' career wishes, their plans to fulfil these wishes and how they perceive the support received from their institutions. The second survey (What do researchers do?) tracks research careers according to disciplines over 42 months.[60] Such feedback from doctoral candidates and graduates is highly valuable, but naturally very difficult to obtain for universities as individual institutions (see below).

A small number of respondents to the ARDE survey used employer feedback, which was mentioned again as a good practice in the focus group on career development. Many institutions cultivate close relations with private sector partners through job fairs, internships or through collaborative university-private sector programmes. This type of programme has been used for decades in a number of countries and has separate, national funding schemes, for instance, but not exclusively, in France (the CIFRE programme), the UK (CASE) and Denmark (Industrial Doctorate). These programmes, according to the DOC-CAREERS projects carried out by EUA, often involve a long-term relationship between universities and companies, and give priority to the common development of human resources.[61] DOC-CAREERS also importantly demonstrated that particularly large companies were mostly interested in the technical proficiency and knowledge of doctorate holders while the more commonly taught transferable skills, such as communication or teamwork, were not regarded as such a high priority.[62] Continued dialogue with future employers would seem to be a constructive way to adjust and improve career development services, not least to raise awareness among doctoral candidates about the applicability of research skills and the research mindset in the private sector, as well as for the development of specific skills training.

Tracking

Career tracking has been widely discussed as a means to collect data for improving career development in universities as well as in funding institutions. In 2012, EUA published the report Tracking Learners' and Graduates' Progression Paths[63] about practices on tracking in the university sector, while the European Science Foundation shortly afterwards published a report mostly from the point of view of funding organisations.[64] Both reports also looked at national tracking exercises. At the European level Eurostat and the OECD have devoted considerable effort to tracking doctoral holders' careers.[65]

The interest in tracking doctoral holders, in particular, is undoubtedly connected to the widespread concern that with an increasing number of graduates and the limited positions in the academic sector, doctorate holders will not be able to find work at a level corresponding to their skills.[66] Tracking the careers of doctoral graduates enables universities to show that doctorate holders find work, and if their tracking is detailed enough that they find work that corresponds to their level of training. This allows universities to see if their career development support is fit for purpose, or if they need to improve it.

According to the ARDE survey, 29% of respondents used "Careers of doctorate holders" as an indicator in internal evaluations, and 36% of the respondents indicated that the same indicator was used in the external evaluations of doctoral programmes. When concretely asked about systematic tracking, only 23% of the survey respondents claimed to do this and only 12 universities tracked graduates for more than four years after graduation. Taking into account that the benefits of a doctorate will often be evident through a longer career path, these results would not be satisfactory in terms of demonstrating the full value of the doctorate.

In the focus group discussions regarding career development, it was clear that systematic tracking is a challenging, costly and time-consuming exercise. Many of those who carry out systematic tracking were

[60] Vitae, 2012, *What do researchers want to do 2012?* and Vitae, 2011, *What do researchers do?* The surveys are updated yearly, http://www.vitae.ac.uk/policy-practice/513201/What-do-researchers-do.html
[61] Borrell-Damian, L., 2008, *Collaborative Doctoral Education,* p. 26
[62] Ibid.
[63] Gaebel, M., *et al.,* 2012, *Tracking Learners' and Graduates' Progression Paths: TRACKIT*
[64] ESF, 2012, *How to Track Researchers' Careers*
[65] www.oecd.org/sti/cdh
[66] For example "The PhD Factory", *Nature 472*, 21 April 2011, and "The Disposable Academic", *The Economist,* 16 December 2010

relying on social networks such as LinkedIn to keep in contact with alumni. Others had dedicated staff who were in charge of finding and keeping in contact with alumni; one used a system of encouraging alumni to find each other and then inform the university about their current jobs. Generally, these methods were reasonably effective, but would not reach out to everyone. Only in countries such as Sweden where universities can access government data, could universities track almost all graduates over long periods of time.

However, using tracking results as a key performance indicator can be a risky undertaking for individual universities. Since the number of doctoral graduations is very small in most institutions (usually a few hundred except for the largest universities, which may graduate about 1 000 in a year), it is difficult to attain statistically significant results in terms of employment rates. However, tracking systems that would give information about the seniority of graduates within their companies or organisations would be somewhat more useful, although seniority in the formal sense would differ widely in different contexts from 'flat' organisations with ever-changing teams and responsibilities to traditionally hierarchical universities with a set system of titles and progression paths. The European Commission has established a "European Framework for Research Careers" with distinct levels of seniority to increase transparency, but it is at the time of writing almost exclusively used for more academic research positions.[67]

Though many participants in the ARDE project identified various challenges related to using tracking results as a key performance indicator, they were positive towards tracking as a feedback mechanism. This echoes the findings of the TRACKIT project, which found tracking to be used more as evidence for strategic decisions than as an indicator of efficiency.[68] Tracking graduates in terms of sectors (different types of business, public sector or NGOs, for example) seems particularly useful, as this gives an idea of organisations and companies that find the graduates attractive, which could in turn be used to enhance the quality of career development services. Knowing the typical careers that graduates from the same institution embark on can also be valuable for doctoral candidates in order to obtain a better awareness of career possibilities and work towards developing their skills to fit the needs of the career path they choose. It is also useful as information for supervisors to know where their supervisees go after graduation in order to advise future candidates in a more appropriate manner. Not least, knowing the sectors and perhaps even companies or organisations that employ graduates would allow institutions to engage with future employers to get more detailed feedback.

Managing quality of career development

Managing the quality of career development in doctoral education can potentially be challenging for a number of reasons. Whereas supervision, for example, is an activity largely confined to the university itself, the results of career development are mostly to be seen outside the institution, on the labour market, and with a considerable time lag. Moreover, many external factors on the labour market as a whole influence the careers of doctoral holders. As the majority of doctoral candidates do not have much first-hand experience with the labour market, and rarely with the labour market for researchers, they will themselves not be able to assess the quality of services until a considerable time after they have left the institution. These conditions make it very resource-intensive for institutions to gather evidence about the results and fitness for purpose of the services they develop, as they will have to gather information from outside the institution and over time. Moreover, the low number of graduates from individual institutions makes it difficult to make assessments based on quantitative evidence.

While many institutions are developing ways to overcome some of these difficulties, for instance by using social media to track alumni, it is clear from the ARDE project that such initiatives are mostly under development and often not fully implemented. When establishing frameworks for managing the quality

[67] European Commission, 2011, *Towards a European Framework for Research Careers*
[68] Gaebel, M., *et al.,* 2012, *Tracking Learners' and Graduates' Progression Paths TRACKIT,* p. 51-52

of career development, it would seem recommendable to focus more on a sustained dialogue with future employers such as engaging in collaborative programmes and with the regional community as such. Establishing contacts to private and public-sector employers will raise the awareness of the qualities of training by research for both parties: non-university employers will learn to appreciate doctorate holders while universities will understand where they can add or re-focus parts of their doctoral education to meet the need of employers. Universities that engage with the private sector have benefits such as exposure to wider research environments and access to funding, not to mention entering a virtuous cycle of feedback to improve the quality of their doctoral education.[69] Moreover, employers that have recruited doctorate holders, and thus know what to expect, tend to be more positive towards employing more.[70]

Regarding the challenges associated with data collection, system-level surveys carried out by organisations specialised in the field have proven to be helpful. The most advanced organisation in this respect is Vitae in the UK, whose surveys have been mentioned above. While Vitae has been funded through the UK Research Council, the Flemish universities have established a consortium (Expertisecentrum Onderzoek & Ontwikkelingsmonitoring – ECOOM) to look at research indicators, including data on doctoral candidates and doctoral careers,[71] ECOOM, and several countries have carried out one-off national surveys.[72] While such surveys do not address individual institutions, they nevertheless provide important feedback regarding the system as a whole and therefore give institutions an overview of the situation and perhaps a means of benchmarking. In the UK, initiatives also exist to bridge the national surveys and institutional quality management by using data collection as an opportunity to raise awareness within institutions about the importance of career development.[73]

[69] Borrell-Damian, L., 2008, *Collaborative Doctoral Education,* p. 35
[70] Decross, L., & Rossem, R. V., 2009, 'Ervaring en visie van de sociale partners', in Rossen, R. V., Vandevelde, K., & De Grande, H. (Eds.), *Kennis in Wording,* p. 129-130 and Vitae, 2010, *Recruiting researchers: survey of employer practice 2009,* p. 7
[71] Derycke, H., *et al.,* forthcoming, "Ph.D. Graduates in the Humanities and Social Sciences: What do they do?" in *International Journal for Education Law and Policy*
[72] For example Finland: Academy of Finland, 2003, *PhDs in Finland: Employment, Placement and Demand,* or Denmark: Dansk Center for Forskningsanalyse, 2007, *Ph.d.-uddannedes karrierevalg og -veje*
[73] Vitae, 2012, *Using PRES to enhance the experience of postgraduate researchers*

7 | Conclusions

As has been stated in the introduction, quality assurance and doctoral education have been developing on two parallel tracks, which until recently have rarely converged. However, the move towards professional management of doctoral education, particularly the establishment of doctoral schools, has seen the development of processes that both assure and enhance quality. Many of these may not have been established under the quality assurance 'label', but they stem from the same basic demand for accountability and transparency as quality assurance developed for the first and the second cycle. Moreover, doctoral education might be more heavily monitored by different stakeholders than the two other cycles due to its particular situation as education by research. However, doctoral education differs qualitatively from the two other cycles through its research element, which requires particular attention to be paid to the fitness for purpose aspect of the processes, as they need to take point of departure in the nature of research.

The ARDE project demonstrated that internal quality assurance processes at doctoral level have been set up, or that they are being developed, across Europe. Institutions have established processes for monitoring such things as time-to-degree and completion rates as well as the quality of the research environment; many have rules or guidelines for admission, supervision and the final thesis, and they are engaged in developing a quality culture that engages all stakeholders. The reasons for setting up quality assurance in doctoral education have been largely similar to the first and second cycle: to ensure accountability and transparency as well as to engage in a process of continued quality enhancement.

In terms of accountability and, in particular, external quality assurance, several external stakeholders monitor doctoral education. In many countries, doctoral education is included in the national quality assurance systems. In some countries, doctoral education is part of national research assessments, and since many external funders also have funding streams for doctoral programmes, these are also evaluating doctoral education. In addition, institutions will often have evaluations as part of internal quality assurance. Institutions have become more accountable towards doctoral candidates as they develop rules or guidelines that clearly delineate the rights and responsibilities of supervisors, institutions and doctoral candidates. Such rules or guidelines add to transparency as a key element of accountability. Institutions have for example established processes that make admission to doctoral education more transparent through public rules and requirements and institutional admission committees. In the key area of supervision, there is a notable trend towards establishing rules or guidelines as well as using individual contract-type agreements between supervisor and supervisee. In comparison to the traditional, personal master-apprentice relationship, this is an important step forward in terms of transparency.

Quality enhancement processes are also prominent in doctoral education. Supervision is one of the areas where the ARDE project has shown how priority is given to quality enhancement and the creation of a quality culture. Institutions in many countries across Europe are establishing training for supervisors as well as creating institutional spaces for exchanging experiences and good practices between supervisors. Career development is another area where much work has been done to create feedback loops that enable institutions to enhance the quality of, for example transferable skills training.

While accountability and quality enhancement are purposes that all three cycles in higher education share, doctoral education is qualitatively different from the first and the second cycle. For this reason, quality assurance in doctoral education must use processes that take point of departure in the specific needs of doctoral education. These processes must ensure that the necessary research capacity is at hand, that the research environment is inclusive and inspiring and that supervision is adequate.

A research environment must have a high degree of academic quality or critical mass of research. This means that doctoral candidates are integrated in an environment where original knowledge is produced to the point where they are working as an independent part of this environment, producing original knowledge themselves. Formal criteria such as staff requirements or publications are fairly widely used, and the initiatives in many countries to pool research capacity demonstrates innovative paths to ensure that there is a critical mass of research as the foundation for doctoral education. It is important to underline that ensuring quality of the research environment is different from ensuring quality in teaching environments, even in institutions that emphasise research-based education. Enabling a doctoral candidate to produce original knowledge requires a different kind of environment to the environments that enable students to understand and apply knowledge.

Quality in supervision is the key factor for making the doctoral candidate develop and grow as a researcher. Again, supervision is different from teaching. It does not follow a curriculum, but should consist of advice to a developing researcher, enabling him or her to avoid pitfalls on the path to completing the research project and ensure that results are obtained in a methodologically sound way. As the doctoral candidate produces original knowledge, the supervisor, ideally, will have little more to give in terms of concrete knowledge of the specific area, and the doctoral candidate will become more of a colleague than an apprentice. This particular relationship is often highly personal and very delicate, and processes to ensure quality in supervision should reflect this. Enhancing quality in supervision through sharing of experiences and practices goes beyond developing didactics and relates to the much more intimate relationship between supervisor and supervisee, which can be inspirational as well as conflict-ridden.

These two examples demonstrate the different processes that are needed to fulfil the common purposes of quality assurance. Institutions are still in the process of developing these, and there are many good practices already in place. As legislation concerning doctoral education is being drafted, passed and implemented across Europe, it is important for all stakeholders to keep in mind the research base of the doctorate and its highly individual nature in order to establish a quality assurance framework with common purposes for all cycles, but taking account of the particular nature of doctoral education.

Moreover, much could be achieved by establishing a higher degree of coherence between the many different evaluations that doctoral programmes are submitted to. The ARDE project has shown that there is no lack of evaluation of doctoral education, rather a risk of uncoordinated over-evaluation. Much work remains to be done in the area, but it should not be done without looking carefully at the many examples where universities have given thorough thought to achieving quality in doctoral education on the particular terms of a higher education cycle based on original research.

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Annexes

Annex 1 | ARDE Questionnaire

Q1 Name of the institution (in English)

Q2 Country where the institution is located

Q3 Name and position of person filling in questionnaire

- Name
- Position

Q4 How many first and second cycle students does your institution have in total (fulltime equivalent)? Please choose one.

- Up to 1 000
- Between 1 000 and 5 000
- Between 5 000 and 10,000
- Between 10,000 and 30,000
- More than 30,000 (please give an approximate figure)

Q5 How many doctoral candidates are in your institution? Please choose one.

- Don't know
- Up to 50
- Between 50 and 250
- Between 250 and 700
- Between 700 and 1 500
- More than 1 500 (please give an approximate figure)

Q6 Would you describe your national external QA processes for higher education as mainly consisting of (please choose one):

- Institutional accreditation, evaluation or audit?
- Programme accreditation?

Q7 If your national external QA processes for higher education mainly consist of programme accreditation, does this apply to (please choose one):

- Only Bachelor and/or Master level programmes?
- Only doctoral level programmes?
- Both Bachelor/Master and doctoral level programmes?

Q8 Are there national research assessments at the programme/department or discipline level which explicitly refer to doctoral programmes? Please choose one.

- Yes
- No
- Other (please specify)

Q9 Are there assessments related to external funding which explicitly refer to doctoral programmes: Please choose all applicable options.

- At programme/department level (such as national funding schemes, Marie Curie Networks or Erasmus Mundus Joint Doctorates)?
- At institutional level (such as excellence initiatives, 'grand emprunt' or similar)?
- Other (please specify)

Q10 What indicators are used in external evaluations at department/discipline level and in external evaluations of doctoral programmes? Please choose all applicable options.

	Department/discipline level	Doctoral programmes
Scientific publications		
Reputation		
Formal staff qualifications		
Impact on society		
Innovation/relations with private sector (for example industrial partnerships)		
Level of internationalisation (percentage of PhD candidates, international collaborations or similar)		
Careers of doctorate holders		
Level of competitive funding		
Time to degree		
Completion rate		
Satisfaction of doctoral candidates		
Other		

Comments

Q11 Does your institution have doctoral/graduate/research school(s)? Please choose all applicable options:

- At programme level (for example a doctoral school in contemporary history, comparative literature or high energy physics)?
- At faculty level (such as humanities, life sciences etc.)?
- One for the whole institution?
- Inter-institutional doctoral schools between several universities?
- Other?

Comment _____

_____

_____

Q12 Do quality assurance processes within your institution include doctoral studies? Please choose all applicable options.

- Yes, at the level of the institution as a whole
- Yes, for the doctoral/graduate/research school
- Yes, for the individual doctoral programme
- Yes, as part of QA for teaching
- Yes, as part of research assessment
- No

Q13 Which of the following statements apply to the admission procedures for doctoral candidates in your institution? Please choose all applicable options.

- We have written regulations and procedures for admission
- Admissions are decided by an institutional body (such as an admissions committee)
- Supervisors can freely take on doctoral candidates without consulting any institutional body
- The regulations of procedure for admission are publicly available (e.g. on your website)

Q13 (i) Do you find your institution's admission procedures adequate?

- Yes
- No

Q13 (i)(a) Is it within your institution's power to change the admission procedures?

- Yes
- No

Q13 (i)(b) Does your institution have concrete plans to change the admission procedures for doctoral candidates?

- Yes
- No

Q14 Does your institution register all doctoral candidates (Please choose all applicable options):

- At admission?
- No
- At regular intervals (e.g. at the beginning of each academic year)?
- Other (please specify)

Q14 (i) Do you find your institution's registration procedures for doctoral candidates adequate?

- Yes
- No

Q14 (i)(a) Is it within your institution's power to change the registration procedures for doctoral candidates?

- Yes
- No

Q14 (i)(b) Does your institution have concrete plans to change the registration procedures for doctoral candidates?

- Yes
- No

Q15 Do you have written regulations and/or guidelines for PhD supervision (at institutional, faculty, departmental level or other)?

- Yes
- No

Q15 (a)(i) Do your institution's written regulations and/or guidelines for PhD supervision include the following elements: Please choose all applicable options.

- Maximum number of doctoral candidates per supervisor?
- Obligatory training for supervisors?
- Voluntary training for supervisors?
- Requirement or recommendation for minimum number of meetings with the supervisor(s)?
- Requirement or recommendation for supervisory teams?

- Written agreements between supervisors, supervisees and/or institution?
- Procedures for dealing with supervisorsupervisee conflicts?
- Systematic feedback collected from doctoral candidates?
- Other (please specify)

Q15 (a)(ii) Are your institution's regulations and/or guidelines for PhD supervision publicly available (e.g. on your website)?

- Yes
- No

Q15 (b)(i) Is supervision of doctoral candidates systematically monitored in your institution?

- Yes
- No

Q15 (b)(ii) Who systematically monitors the supervision of doctoral candidates in your institution and how?

Q15 (c) What are the consequences of a breach of the regulations and procedures relating to supervision of doctoral candidates in your institution?

Q15 (d) Do you find your institutional policies and procedures relating to supervision of doctoral candidates to be adequate?

- Yes
- No

Q15 (d)(i) Is it within your institution's power to change the procedures in place for the supervision of doctoral candidates?

- Yes
- No

Q15 (d)(ii) Does your institution have concrete plans to change the procedures in place relating to the supervision of doctoral candidates?

- Yes
- No

Q16 (a) Do you systematically monitor the progress of doctoral candidates (at institutional, faculty, departmental level or other)?

- Yes
- No

Q16 (a)(i) How is the progress of doctoral candidates systematically monitored within your institution? Please choose all applicable options.

- Progress reports
- Milestones (e.g. handing in papers at specific times)
- Other (please specify)

Q16 (b) What are the consequences for a doctoral candidate who is considered to be making inadequate progress in your institution?

Q16 (c) Do you find the procedures in place for monitoring the progress of doctoral candidates in your institution to be adequate?

- Yes
- No

Q16 (c)(i) Is it within your institution's power to change the procedures in place for monitoring the progress of doctoral candidates?

- Yes
- No

Q16 c)(ii) Does your institution have concrete plans to change the procedures for monitoring the progress of doctoral candidates?

- Yes
- No

Q17 (a) What rights/representation are doctoral candidates entitled to in your institution? Please choose all applicable options.

- Formal representation (with voting right) in decision-making bodies
- Formal consultation (but no representation or voting right)
- Direct participation in establishing procedures
- Formal complaint procedures relating to supervision
- Right to appeal academic decisions (for example the right to appeal decisions of the thesis committee)
- Other (please specify)

Q17 (b) Do you find your institution's policy on the involvement of doctoral candidates in governance adequate?

- Yes
- No

Q17 (b)(i) Is it within your institution's power to change the procedures on the involvement of doctoral candidates in governance?

- Yes
- No

Q17 (b)(ii) Does your institution have concrete plans to change the procedures concerning doctoral candidates' involvement in governance?

- Yes
- No

Q18 (a) Do doctoral candidates in your institution have a thesis committee?

- Yes
- No

Q18 (a)(i) The thesis committee is composed of (please choose one):

- Members from the institution of the doctoral candidate
- Members from outside the institution of the doctoral candidate
- A mix of the above
- Other (please specify)

Q18 (a)(ii) The thesis committee is established by (please choose one):

- The supervisor
- The doctoral/graduate/research school
- Academic body (departmental board/academic council)
- Other (please specify)

Q18 (a)(iii) If doctoral candidates do not have a thesis committee, how is the thesis evaluated?

Q18 (b) Do you find the procedures in place for awarding the doctorate in your institution to be adequate?

- Yes
- No

Q18 (b)(i) Is it within your institution's power to change the procedures in place for awarding the doctorate?

- Yes
- No

Q18 (b)(ii) Does your institution have concrete plans to change the procedures in place for awarding the doctorate?

- Yes
- No

Q19 (a) Does your institution offer career development support for doctoral candidates, such as transferable skills training?

- Yes
- No

Q19 (b) Does your institution systematically monitor the quality of career development support for doctoral candidates?

- Yes
- No

Q19 (b)(i) How does your institution systematically monitor the quality of career development support for doctoral candidates?

Q19 (c) Does your institution systematically track the careers of PhD graduates?

- Yes
- No

Q19 (c)(i) After how many years does your institution systematically track the careers of PhD graduates? Please choose all applicable options.

- Within 3 years of completion/graduation
- After 4-7 years
- After more than 7 years

Q20 Does your institution use indicators to assess/monitor the quality of doctoral programmes?

- Yes
- No

Q20 (a) Which indicators does your institution use to assess/monitor the quality of doctoral programmes? Please choose all applicable options.

- Scientific publications
- Reputation
- Formal staff qualifications (for example habilitations)
- Impact on society

- Innovation
- Level of internationalisation (percentage of international PhD candidates, international collaborations or similar)
- Careers of doctorate holders
- Level of competitive funding
- Time to degree
- Completion rate
- Satisfaction of doctoral candidates
- Net time spent on research by doctoral candidates
- Other (please specify)

Q21 Did you find that this questionnaire adequately covered the relevant issues?

- Yes
- No

Q22 Are there any additional issues which you would have liked to have seen covered?

Annex 2 | Glossary

Audit: a process carried out by an external quality assurance agency which examines if internal quality assurance procedures are in place and functioning effectively

Doctoral candidate: a person conducting research and/or aiming to submit a thesis with the goal of acquiring a doctoral degree

Doctoral school: an institutional structure within a HEI with its own resources dedicated to the management of graduate/doctoral education

Doctoral programme: an organised set of possible taught courses and research opportunities within one or more disciplines (for example an inter-disciplinary doctoral programme in computer linguistics or a single-discipline programme in early modern literature, or 'Kolleg' in Germany, Switzerland and Austria ...)

Faculty: an entity within a higher education institution comprising one subject area, or a number of related subject areas

Indicator: data for measuring activity and performance

Institutional level: refers to the level of the higher education institution as a whole, beyond and including all its constituent parts (faculties, departments, institutes, etc.)

Internal procedures for quality assurance: quality assurance processes and structures that are managed within an institution

National Quality Assurance system: a structure which defines principles and processes designed to monitor and evaluate standards and systems in place and use the outcomes to lead to improvement

Programme accreditation: the approval of a higher education programme by an external authorised body, often given for a limited duration of time

Supervision: interaction between the responsible supervisor(s) and the doctoral candidate on the thesis as opposed to taught courses or tasks of a technical nature

Thesis committee: a group of experts who are responsible for the examination of the thesis and awarding the doctorate

Time-to-degree: the length of time taken from beginning a doctoral programme to the award of the final degree

Transferable skills: skills one can use beyond the specific field of research – such as presentation skills, project management and similar

Annex 3 | ARDE project partners

European University Association (EUA, project coordinator)

The European University Association (EUA) represents and supports higher education institutions in 47 countries, providing them with a unique forum to cooperate and keep abreast of the latest trends in higher education and research policies. Members of the association are European universities involved in teaching and research, national associations of rectors and other organisations active in higher education and research.

EUA plays an essential role in shaping tomorrow's European higher education and research landscape, thanks to its unique knowledge of the sector and the diversity of its members. The association's mandate in the Bologna Process, as well as its contribution to EU research policy making and relations with inter-governmental organisations, European institutions and international associations, enable it to debate issues that are crucial for universities in relation to higher education, research and innovation.

EUA is the result of a merger between the Association of European Universities (CRE) and the Confederation of European Union Rectors' Conferences, which took place in Salamanca, Spain, on 31 March 2001.

The EUA-CDE, a membership service of the European University Association, was launched in 2008 and currently consists of more than 190 European member universities. Building on the considerable work EUA carried out in promoting reform in doctoral education over the last decade, the EUA-CDE specifically aims to contribute to the development of doctoral programmes and the training of young researchers in universities across Europe.

University College Cork (UCC)

University College Cork (UCC), National University of Ireland, Cork, was established in 1845 and is one of seven Universities in Ireland. Situated in Ireland's second city, UCC is the comprehensive globally-oriented research-led university of the south of Ireland providing the full range of disciplines.

The university offers degree programmes across the Humanities, Social Sciences, Business, Law, Engineering, Science, Food Science, Medicine and Health. There are 18,000 full-time students at the university with 4 000 students engaged in postgraduate study and research. Of these close to 1 200 are undertaking doctoral studies.

Over the past number of years UCC has transformed the nature of its graduate education with more than 220 doctoral students graduating annually, more than double the number in 2003. With the establishment of four graduate schools across UCC, all doctoral students can now avail of a wide range of training modules to develop research skills and improve employability. Students receive credits for training completed and can earn up to 30 credits as part of a three-year programme or 90 credits if they undertake a four-year one. A number of the structured PhD programmes are offered on a collaborative basis with other Irish Higher Education Institutions.

A wide range of supports have been put in place for postgraduate research students, including an annual doctoral showcase and research journal. Such initiatives encourage students to disseminate their research to a non-specialist audience and help in developing presentation and communication skills. In 2012 a PhD peer mentor support group was set up to support incoming PhD students and the Graduate Studies Office works with the Postgraduate Society on networking and support events for students.

UCC has also led a national project on the development of a new framework of support and professional development for research supervisors and this programme is currently in its third year of implementation.

Universities Austria (UNIKO)

Universities Austria, founded in 1911, is the national umbrella association of the 21 Austrian state universities and is located in Vienna. Its purpose is to assist the universities in the fulfilment of their tasks and responsibilities and thus to foster scholarship and research. Universities Austria supports the national and internal coordination of the 21 universities, represents them in national and international committees and is the public voice of the universities. Furthermore, it provides administrative and organisational support for the National University Federation (Dachverband der Universitäten), which is responsible for collective bargaining. The universities fund their umbrella organisation through membership fees, which are graded according to the size of the institution.

Conference of Rectors of Academic Schools in Poland (CRASP)

The Conference of Rectors of Academic Schools in Poland (CRASP) is a voluntary association of rectors representing those Polish institutions of higher education which have the right to award the doctoral degree in at least two scientific disciplines. The Conference was founded in 1997 as a "confederation" of conferences of rectors of the various types of HEIs: comprehensive universities, universities of technology, medical universities, etc. Currently, CRASP has 107 members, including 11 non-public HEIs. In addition, nine HEIs have the status of an associate member, and the Conference of Rectors of Public Vocational Schools – representing 36 HEIs – has the status of an associated conference. CRASP members account for ca. 70% of student population in Poland – nearly 1.3 million students.

In the preamble to the CRASP Statutes it is said, *inter alia,* that CRASP safeguards traditional academic values, including the constitutional principle of higher education institutions' autonomy which guarantees the right of these institutions to present their positions on all issues of interest to the academic community.

The formal status of CRASP is determined in the Law on Higher Education. CRASP is a self-financed, non-profit organisation, registered as a legal entity under the Polish law. The costs of its operation are covered with annual fees contributed by its members. The annual budget accounts for ca. 150,000 euro.

CRASP was a driving force in the development of the Law on Higher Education of 2005 and the strategic plan for higher education in Poland for 2010-2020. It also adopted, among other documents, "The Code of Good Practices in Universities" that, unlike many other codes developed by the academic community, deals primarily with actions and behaviour of HEI authorities.

Besides its involvement in ARDE, in recent years CRASP has participated – as a partner of EUA – in two other projects: Autonomy Scorecard and ALFA PUENTES.

The European University Association (EUA) is the representative organisation of universities and national rectors' conferences in 47 European countries. EUA plays a crucial role in the Bologna Process and in influencing EU policies on higher education, research and innovation. Thanks to its interaction with a range of other European and international organisations EUA ensures that the independent voice of European universities is heard wherever decisions are being taken that will impact on their activities.

The Association provides a unique expertise in higher education and research as well as a forum for exchange of ideas and good practice among universities. The results of EUA's work are made available to members and stakeholders through conferences, seminars, website and publications.

EUA
European University Association

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