IKE Self-Assessment Report

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# Executive summary of the self-assessment and reflections

The IKE-group focuses on understanding economic and industrial dynamics at different levels of aggregation with special attention to the economics and management of knowledge and innovation. In particular, IKE has contributed to both empirical and conceptual understanding of innovation processes, e.g. introducing the ‘National Innovation System’ concept and –analyses.

Established in 1977, IKE is the oldest research group at Aalborg University. The fact that IKE has been long-lived indicates the capacity of the IKE group to develop and make contributions to changing research agendas. Throughout this forty-year period IKE has been successful in several respects: The group has been highly productive in terms of publication outputs in high quality outlets and publications from IKE are generally well-cited. In the evaluation period 82 journal papers, 6 books, and 68 book chapters were registered in VBN. The number of BFI points per FTE is above the Department average. Systematic bibliometric studies indicate that IKE is recognized as a top-ten in the world research group in innovation studies.

IKE has established a conducive environment for PhD training and the PhDs coming out of IKE have pursued impressive academic careers. Among peers IKE is recognized also for our active participation in international networks, notably DRUID and Globelics. The high quality and relevance of the research has enabled IKE to attract external funding to a degree which is substantially higher than the department average. In the evaluation period 2012-2016, 41 % of granted funds for the entire Department came from IKE-projects. External funds per full time research staff amounts to close to tDKK 600 in 2016. For the total Department this figure was tDKK 171. Hence, the externally funded projects made up a substantial part of IKE research funding.

The self-assessment demonstrates IKE’s academic impact but it also demonstrates the societal impact that IKE has had both in a Danish and international context, including its contribution to research capacity building in developing countries.

IKE research, while having in common a focus on the economics and management of innovation and knowledge, draws upon several different research perspectives and inspirations. Moreover, the timeline in page 5 indicates that the research emphasis has changed over time. This is considered one of the most important strengths of the group, and because of the growth of activities and members of the group it naturally also rendered more diversity within the group, which in turn enhances the groups’ capacity to engage in a broader variety of research and teaching themes. Such a process could potentially turn into a weakness if focus becomes too dispersed, diversity too big, and internal coherence too weak. One measure to counter-act this is to maintain and enhance the interaction between sub-groups. Another is to keep pursuing joint activities. Another challenge of the group is to define a strong identity and research agenda for the next 5-10 years.

The IKE group has 27 academic staff and 4 admin staff. This includes 6 PhD students. Over the past few years a number of senior people down-scaled or ended activities in IKE. Recently three assistant professors, two new associate professors, three PhD students, and a Post-Doc entered the group, but there are many externally funded projects in the pipe-line, and a question remains if there are enough senior researchers to maintain the position of the group and sustain many of the ambitions and activities pursued by the group. Consequently, there is an open question regarding whether there is a need to still increase capacity through internal upgrading of existing IKE staff, and/or additional staff. Related, it should be considered carefully which type of staff is needed in the future. The number and work load of the external projects already in the pipe-line could potentially call for more post-doc / research assistance work. On the admin side it is assessed that current coverage suffices for servicing the activities now in operation.

In sum, the self-evaluation report finds that IKE is a thriving and well-performing research group, but also point out dilemmas where IKE is reflecting on what directions to follow. One issue is to establish a good match between the research directions that the group wants to follow and the opportunities for fund-raising and staff development. Another question is how to combine the formation of sub-groups with a certain autonomy with a common research agenda for the group as a whole. It is considered of utmost importance to maintain activities that contribute to the coherence of the IKE-group. The report highlight some of these common activities, such as IKE seminars, joint research project etc. Specifically, a new research project on inclusive innovation could potentially become an important common activity. Other possible measures to tackle these challenges are elaborated in section 5.

# The research profile of the group

## The IKE research group

IKE is a research group focusing on studies of innovation, knowledge and economic dynamics at different levels of aggregation. The broad foundation of the group is the interdisciplinary field of innovation studies. IKE researchers agree that economic development and change is knowledge driven, and knowledge creation and innovations are seen as reflecting processes of interactive learning within systemic frameworks. Interactions between actors at and between different levels of aggregation; organizational, regional, national, super-national, are regarded as fundamental driving forces in the creation, implementation, and diffusion of new technologies, products, processes, and organizational structures. Such processes of change are bounded and facilitated by the formal and informal political and institutional configuration of the system/context in which they unfold.

The IKE group had its’ 40 years anniversary in May 2017, and is the oldest existing research group at Aalborg University. IKE has made major contributions to the progression towards understanding of innovation dynamics, often by combining analysis of micro- and macro-aspects of economic evolution. Below is an overview of major changes in the history of IKE.

Timeline of major activities/projects and research perspectives

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | 1977-79 | 1980-89 | 1990-99 | 2000-09 | 2010- |
| EventsFunding and major projects | IKE founded as research base for Master in Economics Grant from social science research council. | MIKE-project and Freeman as visiting professorDeveloping the understanding of innovation as interactive processPIKE-Project linking productivity to organizational change and skills | Publications on national innovation systemSUDESCA projectFormation of DRUIDDISKO-projectImpact upon policy agenda | Consolidation and diversification of researchGlobelics adding development issues to the research agendaACE projectNJK-project (CRU) (cross-dept) | Generational shift – founding members of the group withdraw and new members arrive with new ideas, methods and tools.Major projects: GONE, IREK, ReDy (cross-dept), EIS,RUNIN, GINSEC, Africalics |
| Research perspective / main sub-field added | Structural economics and policy studies | Evolutionary economics and management of innovation | Evolutionary economics, business economics | Regional economics, Entreprenurship studies and Development Studies | ManagementOrganisational behavior and changeNetwork analysesSustainability and inclusive innovation. |

As is evident from the research perspectives in the table above, IKE members’ research draws on a broad set of related fields, such as organization studies, economic geography, development studies, economics, entrepreneurship and small firm development. The specific sub-themes in IKE research are included in Figure 1 (see a more elaborate descriptions of sub-themes at the IKE web page).

## IKE research themes

Figure 1: IKE research, core and sub-themes.

IKE has the ambition to maintain and enhance the groups’ position as an internationally recognized innovation research group and to make an impact on academic research as well as in specific societal problem areas such as capability development; industrial dynamics, innovation policies and regional inequalities and development. Moreover, the IKE group will continue to make substantial contributions to PhD training and university teaching in innovation and industrial dynamics and related fields. Teaching and research capacity development activities are considered an important part of influencing society as well in the sense that graduate and post-graduate candidates with a good understanding of innovation, knowledge and economic dynamics in different contexts may contribute to enhanced decision-making and more sustainable and inclusive development.

Among the core values of the IKE group is to be an attractive workplace. We aim at ensuring this by providing a supportive and friendly work environment that allows its members to continuously improve the quality of their administration, research and teaching.

# Organization, Composition and Financing

## Current Staff

**Professors**

Bengt-Åke Lundvall (20 %), Esben Sloth Andersen (10 %), [Poul Houman Andersen](http://vbn.aau.dk/en/persons/poul-houman-andersen%2849d967a4-f257-41f4-b6dd-1b20c5df3923%29.html), IKE as secondary affiliation, [Christian Richter Østergaard](http://vbn.aau.dk/en/persons/christian-richter-oestergaard%2805cf43cf-d70a-4e0a-b229-b55aec58b880%29.html), IKE as main affiliation (from 2017), Jan Fagerberg (10 %), Roberta Rabellotti (20 %), Ned Lorenz (10%) (from 2017)

**Associate Professors**

Jesper Lindgaard Christensen, research group leader, Björn Johnson (20 %), Birgitte Gregersen , [Ina Drejer](http://vbn.aau.dk/en/persons/ina-drejer%28bfc064c1-fc4a-4410-b795-87aa3bdcb522%29.html), Associate professor IKE as secondary affiliation, [Jacob Rubæk Holm](http://vbn.aau.dk/en/persons/jacob-rubaek-holm%28c8a8c5ad-0329-49b6-9858-9e9170b68d3b%29.html), Associate professor, IKE as main affiliation, [Allan Næs Gjerding](http://vbn.aau.dk/en/persons/allan-naes-gjerding%28e519b2a9-a192-46d8-8d28-91d58aedc503%29.html), Associate professor, IKE as secondary affiliation, Yariv Taran, Jørgen Stamhus, Rasmus Lema, Bram Timmermans (10 %), Gert Villumsen, Max Rolfstam (20%), Morten Munksgaard Møller

**Senior Advisor**

Margrethe Holm Andersen

**Assistant Professors**

Daniel Hain, Eun Kyung Park, Roman Jurowetzki, Annemarie Østergaard

**Post Doc**

Jorrit Gosens (from dec. 1st 2017)

**PhD Students**

Cecilia Theresa Gregersen, David Fernández Guerrero, Gerrit Willem Evers, Leticia Antunes Nogueira, Marija Rakas, Shagufta Haneef, Raphael Martins (from 2017), Jesper Eriksen (from 2017), Primoz Konda (from 2017)

## Staff Development

The IKE group currently consists of 27 faculty and 4 support staff. Table 1 shows the staff composition over the years from 2012 until today[[1]](#footnote-1). The university as such has grown during this period and the table also shows a gradual increase especially if counted in heads. The full professor staff appears unchanged but has in fact varied in composition over time. For this and other staff categories, there has been response to when gaps have been foreseen. There is a male dominance (19/8, not displayed here), which is also present throughout the Department. Half of the members are Danes and a third are from other EU countries. Two-thirds graduated with a Masters degree from AAU and of those who obtained a PhD three quarters have their degree from AAU. The average age is stable around 45-46 years. We are conscious about the positive importance of diversity in the group regarding gender distribution and other dimensions. The recruitment policy has aimed to not only secure the smooth integration in the group and a match of competences with existing competences, but also avoiding to make clones of ourselves.

Table 1: Staff Composition (split on FTE and heads)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **2012** | **2013** | **2014** | **2015** | **2016** | **2017** |
|   | FTE | Heads | FTE | Heads | FTE | Heads | FTE | Heads | FTE | Head | FTE | Heads |
| Professors, Professors MSO | 1,64 |  3  | 1,71 |  4  | 2,24 |  4  | 1,94 |  4  | 1,31 |  3  | 1,63 |  4  |
| Affiliated Professors, Professors MSO | 0,17 |  2  | 0,00 |  -  | 0,00 |  -  | 0,00 |  -  | 0,16 |  1  | 0,30 |  2  |
| Assosiate Professors, Senior Advisors | 4,80 |  7  | 6,48 |  11  | 6,74 |  11  | 7,29 |  12  | 7,87 |  13  | 8,92 |  12  |
| Assistant Professors, Post docs | 2,25 |  3  | 2,39 |  2  | 2,30 |  3  | 1,85 |  2  | 2,25 |  3  | 3,00 |  3  |
| PhD Students | 2,09 |  4  | 3,37 |  4  | 3,66 |  4  | 3,72 |  5  | 3,37 |  5  | 5,46 |  6  |
| Research Assistant | 0,54 |  -  | 0,00 |  -  | 0,07 |  -  | 0,85 |  1  | 1,45 |  -  | 0,00 |  -  |
| **Total Research Staff** | **11,5** |  **19**  | **14** |  **21**  | **15** |  **22**  | **15,65** |  **24**  | **16,4** |  **25**  | **19,31** |  **27**  |
| Support Staff |   |   |   |   |   |   |   |   |   |   |   |   |
| Visiting fellows/Adj Prof | 1 |   | 1 |   | 1 |   | 1 |   | 2 |   |   |   |
| **Total Staff** | **12,5** |  **19**  | **15** |  **21**  | **16** |  **22**  | **16,65** |  **24**  | **18,4** |  **25**  | **19,31** |  **27**  |

\* PhD Students and visiting/adjoint: only Heads

\*\* Does not include student assistants

Source: Data is from annual reports with employee data

The IKE-group has established a section at the AAU campus in Copenhagen. None of the other research groups in the department of business and management have done so. This section consists of six IKE-staff and is particularly focused on the Innovation and development research theme in particular projects such as the IREK-project, the GINSEC and Globelics/Africalics.

The overall management of the IKE group is pursued by a coordinator (Associate Professor Jesper Lindgaard Christensen) assisted by a small committee (Christian Østergaard, Rasmus Lema, Poul Houmann Andersen). In addition, there is a yearly two-day strategy seminar for the whole IKE group to discuss progress and challenges related to research and other strategic issues of relevance to the group. Separate meetings are held for the group of staff directly involved in teaching tasks related to MIKE, where Jacob R. Holm is the program coordinator. Professor Christian Richter Østergaard is head of the Innovation Economics PhD programme. Members of the group organize themselves according to interest but IKE strives for maintaining the internal coherence of the group by embarking on a number of common activities. For example, the IKE group organises a series of research seminars, co-publish, and establish common projects (see elaboration later).

# The Research Groups Strategies, Activities, Output and Academic Impact

IKE’s main ambition is to maintain and enhance the position as an internationally recognized research group within the fields of innovation and industrial dynamics, simultaneously making an impact on academic research and on the wider society. IKE will fulfill this mission through

* a continuous focus on producing high quality research publishable in core journals,
* participating in formal and informal international research networks,
* making substantial contributions to PhD training at Aalborg University as well as in the wider, national and international innovation and industrial dynamics community,
* securing adequate staff to the group
* making substantial contributions to current and future teaching in innovation, industrial dynamics and related fields at Aalborg University,
* a conscious effort to attract external funding and secure a funding pipe-line aimed at developing IKEs core research areas
* a continuous attention to interaction with stakeholders/users.

Below these measures are unfolded.

## 3.1. Publication

IKE has a stable and high level of publication output, and IKE researchers are among the most cited researchers at Aalborg University. IKE publications are also highly downloaded from Aalborg University’s research portal VBN. In the evaluation period 82 journal papers, 6 books, and 68 book chapters were registered in VBN. IKE’s publication output includes what we consider a satisfactory production of BFI points. IKE made 25 journal papers in 2016, increasing from 13 in the beginning of the period (2012). Moreover, 40 BFI points were made in 2016, 3.5 per FTE. This is a relatively high number compared to the total Department (2.4). If grouped according to the British ranking of journals table 2 shows that many papers go into good outlets.

Journal publications 2012-2017 split on journal rankings according to the REF categories

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| REF Cat. stars | 1 | 2 | 3 | 4 | N/A |
| No. of papers  | 3 | 27 | 29 | 7 | 39 |

IKE is recognized as a leading research group in innovation studies in Europe and the world. According to a research paper[[2]](#footnote-2) exploring the knowledge base and core of innovation studies the top-ten research groups in the world since 1950 are dominated by US universities. Only SPRU (2nd rank) (the UK) and IKE (9th rank in the world) are non-US core institutions in innovation studies.

The high publishing rate is the result of a decade long focus on publishing in high-quality peer-reviewed outlets. According to a survey among IKE members the journals IKE ideally should publish in includes Research Policy, ICC, Industry and Innovation, and Regional Studies. These journals are also currently among the most frequent outlets of IKE research. IKE continues to work on promoting the research quality of its members by collaborating and commenting on each other’s research. Publication support is also institutionalised in different ways. On-going and valuable IKE activities to stimulate high-quality publishing include the following:

* The IKE seminars, which are an important forum for *a)* presenting work in progress and relating this to the individual publication strategy/paper portfolio; and b) receiving comments on the specific paper presented. IKE seminars are also a forum for visiting scholars to present their work and thereby contribute to enriching IKE research by providing new inputs.
* The ‘Publication Clinique’, which is a forum for going more in depth with different themes in the publishing process. Using cases from individual papers, themes for publication cliniques include how to deal with reviewer responses, how to write a good introduction, and how to find the best outlet for papers.
* A joint information board and door posters, which display publications and how far they are in the pipeline, provide information both for outsiders and colleagues within the research group.
* The yearly IKE-strategy seminar where each individual IKE-members presents a list over completed papers/publications a year back and a paper pipeline for the coming year as input to a discussion on publication strategies on the individual - and group level.

The activities for supporting publishing are based on a process view of publication, acknowledging the several steps it takes besides dissemination (writing) of final (journal) papers cf. the Vancouver guidelines on this. The extended and long-standing tradition for collaboration and co-authorship in IKE should be maintained, and preferably also enhanced, since it supports the quality of research and the publication process. The data in Annex 3 shows the co-authorship of IKE members. It is clear that over the evaluation years the share of solo-authored papers has decreased, from 31% in 2012 to 17% in 2015 and 23% in 2016. Moreover, more than half the papers (62% in 2016) were written together with co-authors from outside the IKE group. It is rare that IKE researchers write with people outside academia. It could be considered whether there are untapped potentials in doing more of that.

IKE members have strong networks of collaboration with researches outside the research group, not least as a way to get external feedback and inspiration. Therefore, the IKE group expects that members present papers at international conferences and interact with external researchers in different ways. The continued active involvement in the DRUID network and conferences is a particular important activity (see section 3.4 below). Continued financial support to DRUID and participation in DRUID conferences by the Department has been crucial.

Another often neglected, but important issue, is the dissemination of already published research results or/and drawing attention to ongoing research. IKE intends to enhance efforts regarding making our research accessible and visible e.g. it will be considered if social media should be used. The production of policy briefs based on existing research is another option to be considered.

Active engagement in research projects produces both reports and data that may provide a basis for further publication efforts. The choices and priorities regarding which projects to engage in (elaborated in section 3.3) are made under the consideration that they should in the long-term result in scientific publications.

It is also important to continue IKE members’ active involvement in reviewing for journals, participating in editorial boards, interacting with journal editors and peers, organise conferences and seminars etc. Such activities are vital in the overall positioning of the group in the research community and for opening doors e.g. in relation to invitations to collaborative projects and funding opportunities. However, as research time is under continuous pressure from e.g. administrative duties and networking tasks – since all non-teaching activities have to be carried out during “research time” - the required time for these activities constitutes a barrier to more active involvement, even if we do see untapped potentials in further active participation e.g. in journal editorial boards. Department (or Faculty) allocated compensation in the form of hours deducted from teaching obligations for a specific sample of the part of such activities that are not already compensated for would be very valuable.

## 3.2. Research Training (PhD)

IKE is heavily involved in PhD training and has for many years been successful in educating PhDs. Some of the PhD training was earlier formalised in international collaborations such as ETIC and DOME, but is now, regarding externally embedded PhD training, primarily related to the DRUID Academy. The group strives for at any time to have several PhD students, preferable around 5-6, in order to secure a good working environment for the PhD students and to have a good pipeline of potential future researchers in the group. Currently there are 9 PhD students (of the 35 in the whole Department). The number of PhD students should also be regarded against the potential job market, not only the internal work environment and recruitment.

The PhD students are embedded in the IKE group and participate as regular staff members. The PhD students participate in regular IKE seminars, DRUID activities and international conferences. The PhD students are expected to present their work at IKE seminars and DRUID conferences in order to receive feedback on their work. An important part of the PhD training is that the student becomes a part of an international network and receives comments from other than the supervisor in order to ensure quality. The IKE group also organises pre-defences prior to submission of dissertations.

The PhD students are often financed by externally funded projects, but sometimes with some kind of financing from the Department. Most of the PhD students have a Master from AAU or another Danish university, but currently there are a few PhD students with a degree from a foreign university. Most of the PhD students follow a research career at Aalborg University or other universities after graduation.

In addition to the international DRUID Academy PhD conference important PhD training activity includes the AfricaLics PhD Visiting Fellowship programme sponsored by the Swedish development agency SIDA. 5-6 PhD students from African countries was with IKE for six months in 2015 and 2016. We expect new groups of 4 African PhD students to arrive in 2018, 2019 and 2020 respectively as part of the second phase of SIDA support to AfricaLics. Moreover, members of IKE contributed to the planning and execution of Globelics and AfricaLics PhD academies.

Table : PhD students New and Existing, drop outs, and graduated (not including visiting PhDs)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|   | 2012 | 2013 | 2014 | 2015 | 2016 | 2017\* |
| *IKE* | New | Total | New | Total | New | Total | New | Total | New | Total | New | Total |
| No. of enrolled PhD students | 2 | 9 |   | 5 | 1 | 5 | 2 | 6 | 4 | 8 | 4 | 11 |
| No. of Drop outs/Discontinued |   |   |   |   |   |   |   |   |   |   |   | 1 |
| No. Graduaded |   | 4 |   | 1 |   | 1 |   | 2 |   | 1 |   | 2 |
| **Total pr. Dec. 31** |  | **5** |  | **4** |  | **4** |  | **4** |  | **7** |  | **9** |

## 3.3. External Funding

It is part of University, Faculty and Department strategies to become more focused and engaged in larger projects. IKE has for decades had a high degree of external funding. In 2013, 2015 and 2016 around 50 % of all external funding at the Department of Business and Management came from projects located in IKE, and over the entire period 2012-2016, 41 % of granted funds came from IKE-projects. External funds per full time research staff amounts to close to tDKK 600 in 2016. For the Department as a whole the average figure of external funds per full time staff research was tDKK 171 in 2016.

The external funding has in particular helped boosting the research area focused on innovation and development in IKE and the IKE-hub in Copenhagen, with Globelics, AfricaLics and IREK as the main projects. The grants for these activities are main drivers behind the high numbers mentioned above. The strong focus on training PhD students is maintained through the Marie Currie funded RUNIN project. IKE has also during the period 2011-2016 benefitted from a large grant from the Obel Family Foundation aimed at supporting the development of a new generation of IKE scholars. In October 2017, IKE was successful with a cross-disciplinary application for funding of studies regional dynamics to the Obel Family Foundation. The application was prepared in collaboration with colleagues from Aalborg University’s Department of Political Science and the Danish Building Research Institute, and is related to a new collaborate initiative on Regional Dynamics and Disparities.

Some of the larger grants terminated in 2016, and accordingly, if IKE embarks on new areas of research it should be considered if new funding opportunities need to be pursued. Still, the value of current applications exceeds Mkr 6. Naturally, not all of these will succeed and over the years several attempts have failed, e.g. a Eurolics H2020 application and a Smart City H2020 application. See general considerations on strategies for external funding in section 5.

## 3.4. Research collaboration and outreach

The IKE group has a long tradition of interaction with leading universities from all over the world. Every year several scholars visit the IKE group for shorter or longer research stays and members of the IKE group are often invited to stay at foreign universities. This is regarded an important asset but the popularity of having a research stay with the IKE group has also pushed the group to make priorities and a separate policy for such visits.

IKE is heavily engaged in international and national networks. IKE and Scholars from Copenhagen Business School (CBS) and University of Southern Denmark (SDU) are core partners in the Danish Research Unit of Industrial Dynamics ([DRUID](http://www.druid.dk/)), which was established in 1995 with the aid of generous funding from the Danish Social Science Research Council (SSF) and the Danish Ministry of Industry. DRUID organizes two major conferences: i) the DRUID Academy, a leading European PhD conference on management and innovation that attracts students from Europe and beyond; ii) a leading academic conference in innovation and industrial dynamics. The DRUID network is a primary strategic alliance for IKE.

IKE is part of the worldwide research network on Learning, Innovation and Competence building Systems (Globelics), which members of IKE, in particular Bengt-Åke Lundvall, has been instrumental in establishing and developing. The IKE group has served as secretariat for the network since its inception in 2002. Although the Globelics secretariat moved to Rio de Janeiro in 2017, members of the IKE group will remain engaged in the Globelics network activities. Members of the IKE group will continue to play an advisory role in relation to organisation of Globelics conferences in an interim period. The members of IKE will continue their collaboration with other regional ‘lics’, in particular AfricaLics and Eurolics. For example, the IKE group will continue to host the Africalics PhD Visiting Fellowship Programmed developed in 2014-2016, and members of the group will also continue to support efforts to build up research capacity in the field of innovation and development in African countries, e.g. through the development of a pilot programme for Early Career Development targeting young African researchers, and through providing strategic advice to the AfricaLics secretariat on e.g. conference organisation, organisation of PhD academies and strategic outreach. Contrary to Africalics, Eurolics is in the early development phase, and IKE has committed to contribute to building up this new network.

The RUNIN project mentioned under Section 3.3 also constitutes a core, current research collaboration with external partners, including Stavanger University, Linköping University, University of Twente, The Autonomous University of Barcelona, University of Aveiro, and Lincoln University. Except the latter university, all RUNIN partner universities are members of the European Consortium of Innovative Universities. In January 2017, IKE joined the Regional Innovation Policies (RIP) Network, a European network, which has arranged yearly research conferences for more than a decade. IKE has entered an agreement with RIP to host the international RIP conference in 2020.

In addition to formal collaborative relations as those mentioned above, IKE also has a strong informal network within the international community of researchers in innovation and industrial dynamics. In addition to e.g. participation in academic conferences, activities such as the Lundvall Symposium, a recurring research event that took place in the years 2012, 2013, 2014 and 2016 (supported by the grant from the Obel Family Foundation), contributed to maintain this network with researchers from e.g. SPRU, Manchester University, Lund University, MERIT, Cardiff University, University of Pennsylvania and Scuola Superiore Sant'Anna in Pisa. The strong international collaboration orientation of IKE is documented in the number of publications co-authored with external partners: in 2016 approximately 30 % of registered IKE publications were co-authored with researchers from organisations outside Denmark.

Internally at Aalborg University, IKE collaborates with researchers from other research groups both within and outside the Department of Business and Management. Within the department, core collaboration partners are IMPAKT (where there is a large overlap in members), FIRM, IBC, BDC, and the macroeconomics group MAMTEP (collaboration e.g. involves a joint 4+4 PhD candidate). IKE is also involved in research collaborations with partners from other departments and faculties at Aalborg University, most notably the Department of Political Science (e.g. the Regional Dynamics project mentioned in Section 3.3), Department of Civil Engineering (joint projects and publications), Department of Planning (joint projects and applications), and the Department of Culture and Global Studies (joint projects and publications).

## 3.5. Research and teaching coherence

Members of IKE have various teaching obligations and work on developing the current and new educations. Most importantly, IKE in 2003 established a master education in Innovation, Knowledge, and Entrepreneurial/Economic dynamics (MIKE), which spans both business studies and economics. The MIKE program has been important in defining core teaching activities, and the content and structure of the program is regularly considered and updated to reflect the advances in the field, and to leverage the research competencies within the group. IKE puts high emphasis on marketing of MIKE and the number of MIKE students increased in the past couple of years. Many MIKE students come to AAU from abroad and IKE members make an extra effort in getting more local undergraduates to enrol. Members of IKE also collaborate with the Sino Danish Center (SDC) delivering courses in the innovation management program in Beijing, China. Similar, IKE members teach at the BA and MSc. program in economics, the MBA programme, the BA in Business Administration and Economics plus other programs outside the department.

A joint Nordic Master Program on the economics of innovation is currently being developed, together with Lund University (Sweden), Tampere University of Technology (Finland) and Oslo University (Norway). IKE’s contribution to the joint Nordic program is the intersection of development economics and the economics of innovation.

As shown in section 3.2, IKE researchers are also highly active in PhD training and have organised PhD academies and courses in national and international networks such as ETIC, DRUID academy, and DOME/FIOL for decades. This has included support to the organisation of and training during Globelics PhD academies, AfricaLics PhD academies and academies organised by other regional LICS.

Generally, IKE members regard it as important to both have teaching obligations close to members’ research profiles and do ‘basic’ teaching of economics and business at the undergraduate level. This helps them keep up to date with a broader academic field, and allows them to make IKE research immediately relevant to a broader range of students.

## 3.6. Third Mission Activities and collaboration outside research

The members of IKE are very active in ‘third mission’ activities, including dissemination of knowledge outside traditional academic channels. Such activities include e.g. workshops and seminars for policy makers and other “users” of IKE research, presentations for private and public organisations, contract research and consultancy, representation in commissions and boards, and participation in “Forskningens Døgn” (an annual popular Danish Science Festival arranged by the Ministry of Higher Education and Science with the aim of establishing a meeting place between researchers and the general public).

A formal framework for third mission activities is CRU, the Centre for Regional Development, which is coordinated by IKE’s research group leader. CRU was established in 2006 as a forum for bringing together, further developing and communicating research-based knowledge related to regional development. IKE has a close collaboration with the North Denmark Region, who, in addition to its representation in the steering committee of CRU, is also a partner in the RUNIN project.

The engagement in third mission activities also has an international dimension. The research around national innovation systems has inspired international organisations such as the European Commission, OECD and the World Bank and it has led to the involvement of IKE-members as advisors to these organisations as well as to consultations with national governments in the Nordic Countries on innovation policy. The leader of the IKE-group 1976-2010 served as deputy director at OECD 1992-95. During the period that the IKE-group hosted the Secretariat for the research network Globelics (2002-2016) IKE-scholars from the secretariat have given policy advice in countries in Asia (China, India and Indonesia), Latin America (Brasil, Argentina, Mexico and Cuba) as well as in Africa (South Africa, Senegal, Ethiopia). In connection with research training in Africa (Algeria, Kenya and Tunisia) organized by Globelics, members of the Secretariat have interacted with local policy makers.

The Globelics annual thematic reports (published during the period 2012-2016) on respectively inclusive development, health, natural resource-based development and environment were designed to reach outside the academic community and have reached policy makers all over the world. The IKE-group’s work on innovation and development is well-known abroad. To illustrate, recently members of the IKE-group were invited to assist the UN Economic Commission of Europe to assist in developing country studies related to innovation policy for economies in transition.

# Societal Impact

## General introduction to case descriptions and impact

Due to a general and still more pervasive trend it has become a discipline in itself to demonstrate and measure impact of research (cf. the genesis and rationale of the IMPAKT-group). The majority of societal impact from academic work is (apart naturally from impact on education) of an indirect character and is therefore difficult to provide documentation for. A number of other factors complicate a comprehensive assessment of impact. One example is the fact that timing and context plays a key role in determining whether research has an impact. Hence it may fit an ongoing policy debate or be particular useful in one particular year. Another example is the impact on the counter-factual. Preventing things from happening due to results from research is equally important in terms of impact, but difficult to demonstrate with evidence. Due to the nature of what IKE does the impact IKE research has had is perhaps primarily on the public policy. Here IKE research has inspired the conceptual and basic understanding of the dynamics of innovation, which in turn has provided a basis for more specific policies.

In the following we present a ‘meta-description’ of the general impact IKE research has had. In addition, a separate web-page at the IKE web for demonstrating societal impact will be established.

## A “meta impact case”: IKE’s contribution to innovation policy in Denmark

Since the early 1990’s, IKE’s research has made important contributions to the design of Danish innovation policy[[3]](#footnote-3). In particular the DISKO[[4]](#footnote-4) project, initiated in 1995, has made a lasting impact. The project was inspired by a project from the late 1980’s, the PIKE project, which was aimed at explaining the Danish productivity paradox from 1986 and onwards. One of the most important insights from that project, which was a used as input to DISKO, was that promoting technology without developing human capabilities and new forms of organization results in less than optimal solutions. In addition to influencing Danish innovation policy (further elaborated below), the DISKO project paved the way for an empirically based research path which is still discernible in IKE’s work today.

The DISKO project met the demand for a genuine innovation policy in Denmark, which became increasingly pronounced up through the 1990s and was gradually operationalized and implemented. In 1994, Denmark asked the OECD to evaluate its research, technology and innovation policies. In this evaluation, OECD emphasized the importance of an innovation policy and called for the coordination of growth stimulating policy areas[[5]](#footnote-5). The DISKO project, and the underlying national innovation system framework developed in Lundvall (1992), synthesized the fragmented jurisdictional innovation policy areas “which, from a business point of view needed an innovation policy that merged and coordinated all national policies that affected Danish competitiveness and implicitly welfare in a global world, among them research, industrial, labor market, education, regional and sector policy”[[6]](#footnote-6).

The DISKO project was funded by – and carried out in close collaboration with – the Danish Agency for Trade and Industry, which took the responsibility of developing a systematic clarification of Danish innovation policy and culture. And the results of the DISKO project, which was finalized in the late 1990s, contributed significantly to elevating innovation policy as a systemic instrument for national growth and competitiveness in Denmark[[7]](#footnote-7).

Accordingly, the DISKO project played a role in the processes that led to the establishment of the Danish Council for Technology and Innovation in 2002. The purpose of the council, which operated until it was replaced by Innovation Fund Denmark in 2014, was to promote innovation in Danish industry through various innovation support programmes, several of which focused on promoting interactions between actors in the innovation system.

The impact on policy activities abroad is perhaps even more important than the impact in Denmark. It is generally recognized that the IKE-group in collaboration with Christopher Freeman, who was guest professor in the first half of the 1980’s, played a key role in developing the concept national innovation system. This concept has been used as framework for shaping innovation policy in all parts of the world[[8]](#footnote-8). Early high income users of the concept were governments in Canada and Finland and they were inspired by OECD that adopted the concept already in the beginning of 1990s with direct inspiration from the IKE-group.

Middle income countries such as Mexico and South Africa were early adopters of the concept. Today the concept is used by policy makers in all parts of the world, perhaps most prominently in China, where the long term plans on science and technology are presented with the explicit objective to build a strong national innovation system with Chinese characteristics.

# Future plans

IKE researchers agree that economic development and change is knowledge driven, and knowledge creation and innovations should be seen as reflecting processes of interactive learning within systemic frameworks. One major future challenge is to apply this perspective on local, national and global issues related to inclusive and sustainable innovation and development. The rationale for this is explained above; a survey among members of IKE regarding where the IKE research should develop pointed in this direction. The first steps in pursuing such a research agenda has already been taken in the form of the new common project on inclusive innovation, as mentioned in this report. There are other plans for future directions of research, some of which already has a trajectory in on-going research activities. One prominent example is the strong interest in economic geography among several IKE members. This is reflected in current and planned research activities in university-industry interaction, in research in factors behind regional disparities, regional entrepreneurship, and several other research areas within economic geography. These two research avenues are among the most important and pervasive in IKE. It should, though, be emphasized that additionally there are within the sub-themes depicted in figure 1 several ideas and plans for developing research.

Closely related to this explanation of future research plans, it is clear that IKE research emphasis has evolved over time and there has been an increase in activities and members of the group. This can be considered one of the strengths of the group, as it naturally render more diversity within the group, which in turn enhances the groups’ capacity to engage in a broader variety of research and teaching themes. The timeline of IKE history (section 1) illustrates that indeed that has been the case. The potential backdrop of this process is if focus becomes too dispersed, diversity too big, and internal coherence too weak. One measure to counter-act this is to keep pursuing joint activities. Consequently, the joint activities outlined above will be continued and enhanced. The ‘inclusive innovation’ project mentioned in the report is regarded as one important future IKE-activity in this connection, but other measures should be taken to fulfill this objective of maintaining internal coherence.

This goes not only for research areas of IKE but also for the functions that the research group pursue.

Regarding external funding some of the larger grants terminated in 2016, and accordingly, when IKE embarks on new areas of research it should be considered if new funding opportunities need to be tried out, in particular funding for the ‘inclusive innovation’ project. IKE will be alert to any openings regarding possible external funding from both international and national funding sources. Generally, the strategic decisions on which funding applications will be made are taken under the considerations that the research should result in publications and/or strategic network relations and/or new data that may be used in other settings. Furthermore, it is an important criterion that collaboration partners should be strong research groups within industrial dynamics and innovation studies. Ideally, the externally funded projects should render synergies to other, planned or already existing activities of the group. The engagement in future externally funded projects will be assessed against these criteria.

Collaboration with external partners is another strategic issue. IKE members already have strong networks of collaboration with researches outside the research group, which is an important means to get external funding, to get feedback and inspiration, and is important for publishing. When publishing it is rare that IKE researchers write with people outside academia. It could be considered whether there are untapped potentials in doing more of that. It is a strategic priority of both the Social Science Faculty and IKE to spur publishing in the best journals, and IKE has embarked on discussions and seminars on how to do so. In order to increase the likelihood of publishing in high-ranked journals enhanced efforts to engage with editors and participate in editorial work, reviews etc. is important, however, is subject to constraints regarding how much time for the individual that can be allocated to this.

The continued active involvement in the DRUID network and conferences is a particular important activity. Continued financial support to DRUID and participation in DRUID conferences by the Department has historically been crucial, and will be so in the future. The DRUID summer conference is considered the most important European conference on innovation (possible in the world) and Aalborg University and IKE being associated with this is a major asset. Related, PhD training is close to the heart of IKE. The group has for many years organised the international DRUID Academy PhD conference. This renders important reputation and visibility effects and it is important in relation to creating networks both between PhD students, and between PhD students and seniors, and between seniors. The DRUID Academy started last year to include a PhD course. IKE has currently limited contribution to this course, but intends to engage more in this, and to consider bidding for again be the coordinator of the DRUID Academy conference. Moreover, in the longer term, a newly developed Social Science Data master course may be developed into a PhD course. The group will also continue to host the AfricaLics PhD Visiting Fellowship Programme during the period 2017-2020 and will continue to support planning and executive of AfricaLics PhD academies during the same period.

Third mission activities are natural parts of dissemination of knowledge and can render synergies to research and teaching. Hence, we consider these activities important because they contribute to increased public interest in our research and teaching programs. This can have an impact on funding possibilities, intake of students, recruitment. Regarding how, and how much to engage in such activities there is, though, a question around the balance of use of resources on these activities and the core activities. More specifically, IKE researchers make their research visible and available through the research platform VBN, as well as external platforms such as Google Scholar and Research Gate. Efforts for making publications visible through social media such as Twitter and Facebook are still in their infancy but it is a relevant debate if IKE should devote resources to engage with social media visibility. In terms of media visibility, IKEs’ appearance in press cuttings is strongly concentrated on one person, who is a recognised expert in labour market issues. Accordingly, there are possibilities in making more researchers in IKE aware of relevant occasions to become more visible in the media. This effort should continue to be driven by considerations of research relevance/evidence. Generally, because of the future importance of demonstrating impact, e.g. for funding possibilities, it is of strategic importance to IKE to enhance internal competences in demonstrating impact and to raise the awareness of the importance of doing so.

One last note with the future perspective regards staff composition. Over the past few years a number of senior people down-scaled or ended activities in IKE. Recently three assistant professors, two new associate professors, three PhD students, and a Post-Doc entered the group, but there are many externally funded projects in the pipe-line, and a question remains if there are enough senior researchers to maintain the position of the group and sustain many of the ambitions and activities pursued by the group. Consequently, there is an open question regarding whether there is a need to still increase capacity through internal upgrading of existing IKE staff, and/or additional staff. Related, it should be considered carefully which type of staff is needed in the future. The number and workload of the external projects already in the pipe-line could potentially call for more post-doc / research assistance work. On the other hand, to exploit possibilities for external funding staffs with strong CVs are needed.

1. Some of the variation may be ascribed to whether members of the EOB research group, established in 2012, is counted in or not. Some members have had dual memberships during the evaluation period. [↑](#footnote-ref-1)
2. Pp. 1137 – 38 in Fagerberg, J., Fosaas, M., & Sapprasert, K. (2012a). Innovation: exploring the knowledge base. Research Policy, 41(7), 1132–1153. [↑](#footnote-ref-2)
3. Some of the core IKE publications used for analysing the impact includes:

Lundvall, BÅ. 1999. Det danske innovationssystem – et forskningsbaseret debatoplæg om innovationspolitiske udfordringer og handlemuligheder. Erhvervsfremmestyrelsen, Erhvervsministeriet.

Lundvall, B.Å. (Ed.), 1992. National Systems of Innovation: Towards a Theory of Innovation and Interactive Learning. Pinter Publishers, London.

Lundvall, B.Å, 2002. Innovation, Growth and Social Cohesion: The Danish Model. Elgar Publishers, London.

Christensen, J.L., Lundvall, B.Å . (Eds.), 2004. Product Innovation, Interactive Learning and Economic Performance. Elsevier Ltd. [↑](#footnote-ref-3)
4. A comprehensive analysis of the Danish innovation system in a comparative perspective. The project addresses the innovation system from different levels and angles, and a total of nine reports (in Danish) were produced as an output. The insights from these reports were synthesized in the 2002 book “Growth, Innovation and Social Cohesion: the Danish Model” by Bengt-Åke Lundvall. [↑](#footnote-ref-4)
5. Graversen, E.K. 2017. From tendencies to genuine innovation policy - the Danish case. [↑](#footnote-ref-5)
6. P.2 in Graversen, E.K. 2017. From tendencies to genuine innovation policy - the Danish case. [↑](#footnote-ref-6)
7. P.10 in Graversen, E.K. 2017. From tendencies to genuine innovation policy - the Danish case. [↑](#footnote-ref-7)
8. Edler, J., & Fagerberg, J. 2017. Innovation Policy: What, Why, and How. Oxford Review of Economic Policy, 33(1): 2–23. [↑](#footnote-ref-8)