

CHANGING INSTITUTIONS OF KNOWING – CLIMATE MITIGATION, CRAFT COMPETENCES AND VOCATIONAL TRAINING IN DENMARK

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In order to reach the EU 2020 goals for the climate, Danish vocational training units are currently in a process of institutional change triggered by the need of providing energy, and new process competences for the skilled and semiskilled workforce active in construction. The aim of the present paper is to analyze enablers and barriers for this institutional change. The vocational education system in Denmark is strongly institutionalised with unions, employer's associations and the schools in central roles. Drawing on institutional theory contributions on labour market -, educational - and professional institutions, the paper presents a study of institutional work inside and across schools and craft disciplines working in SMEs involved in new building and renovation with an energy aspect. Collaboration between four education committees for carpenters, masons, electricians and plumbers and interviews with seven companies come to focus on competences of interdisciplinary collaboration and sustainable innovation in SME. The anticipation of future building regulation of 2015 and 2020 creates an institutional pressure in education for change including handling differentiated demands of customers and contractors, not always just following regulation but occasionally ahead of it. At a time this needs to be balanced with customer needs with a comfort orientation and issues of cost and financing. The committees act in a contradictory, sometimes conservative manner in this change of institutions of knowing. In the future specialization will be supplemented by horizontal and vertical interdisciplinary and innovative competences integrating the complex process industrialized construction sector. Schools, teachers and digital teaching materials need be developed to support this change supported by front running companies and results from innovative building projects. The education committees in Denmark can have a leading role in this development and set high and motivational standards for the improvements. The analysis sees however a lot more barriers than enablers.

Keywords: competences, craft, vocational training, energy, climate, industrialization.

INTRODUCTION

The societal task of renovating the existing building stock in Europe to meet the commissions climate targets for 2020 is tantamount (Næss-Schmidt *et al.*, 2012) and it is recognized that the development requires not only financial investment and technology, but also competences (Forsingdal *et al* 2012). In August 2013 the Danish government decided to reduce emissions of greenhouse gases by 40 % from 1990 to

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2020. The government expects this ambitious Danish climate plan can be combined with successful economic development and a conducive framework for industry. For new buildings The Danish Building Regulative 2020 will require maximum gross energy consumption at 20-25 kWh/m² per year (an implementation of the EU near zero carbon directive). One of the energy renovation initiatives is conversion of oil and natural gas boilers in existing buildings to renewable energy. Another is to reduce energy consumption in the building stock. Forsingdal *et al* (2012) calculate the need for labour to meet these new demands at 6-13,000 workers compared to the total employment in construction at around 150,000. Moreover Bertelsen *et al* (2013) pointed at the need to meet the requirement from new process industrialization changing the construction process in Denmark.

The aim of the present paper is to analyze enablers and barriers for this institutional change of energy and new process industrialization. Two main institutional processes are discerned; from within the vocational training system itself and from the companies working in the emerging energy renovation market.

The vocational education system in Denmark is strongly institutionalised with unions, employer's associations and the schools in central roles (Koch 2013). Drawing on institutional theory contributions on labour market -, educational - and professional institutions the paper presents a study of institutional work (Lawrence *et al* 2009) inside and across schools and craft disciplines as well as in energy oriented craft. Interviews with seven companies performed by the four committees for carpenters, masons, electricians and plumbers come to focus on competences of specialization, interdisciplinary collaboration and of doing sustainable innovation.

The paper is structured as follows. It opens with an overall method, followed by a framework of understanding of the institutional dynamics. The general description of the Danish vocational education and training system, followed by the empirical material first focusing on four selected education committees and second on seven selected enterprises. This is then analysed in the discussion section followed by a conclusion.

METHOD

The overall research approach is interpretive sociology, drawing on institutional theory and method (Suddaby and Greenwood 2009). The paper built on the report on the project 'Analyses of the development of new or changed energy education in cooperation between construction and installation sector' (Bertelsen *et al* 2013). The data material and analysis of this project is subsequent revisited in a sequential manner for reinterpretation (Lewis and Grimes 1999) as (micro)processes of institutional work (Lawrence *et al* 2009).

The original project was carried out in close dialog with the four main Danish education committees for carpenters, masons, electricians and plumbers. There was also an element of action research in project, as the committees supported by the author were trained to perform the analyze themselves in the following four steps: A desk research on needed competences, interviews of seven growth companies on experiences and opportunities, cooperation between the four committees on interdisciplinary competences and last how to formulate recommendations for future developments. This can thus be seen as a part of the institutional change (Dover and Lawrence 2010)

To enable and conceptualise the development process a framework of understanding of competences was presented in the beginning, drawing on the authors previous work on autonomy and innovation in construction teams in Denmark (Bertelsen 2007) and on development of construction processes in an industrialized perspective (Bertelsen *et al* 2014). The works show needs for energy specialization and new interdisciplinary and innovative competences in process industrialization, related to prefabrication. Interviews were executed with seven companies operating in the energy construction and renovation market. The interviews are executed by the four education committees guided by the author. The seven companies encompasses two carpenter's companies with around ten employees, one masons company with twenty employees, two electricians companies with 95 and 65 employees respectively and two plumbers enterprises with 62 and 85 employees. Below is selected one company for each category only. Common for the internal discussions between the four committees and the seven interviews of growth companies were applied an open questionnaire on:

- Professional competence and specialization in energy performance
- Interdisciplinary competence in horizontal cooperation and vertical controlling
- Innovation, learning and evaluation competences
- Teachers' competences, education materials and the education system as such
- Development directions on energy and industrialization trends in the market.

The limitations of the research are related to its character as action research, where the author tried to bring the four education committees in interdisciplinary interaction to inspire schools, pupils and enterprises. This involving close encounters with labour market organisation representatives, for whom the project was a political instrument.

THEORETICAL FRAMEWORK

Institutional theory is a contemporary grand theory (Thornton *et al* 2012, Lawrence *et al* 2009, Lounsbury and Boxenbaum 2013a and 2013b). Thornton *et al* (2012) is thus outlining how society from micro processes to macro structures can be understood through series of interlinked institutions and institutional logics, labelled an institutional system. Here we are especially interested in contributions on labour market -, educational - and professional institutions (Cort 2011, Lieshout 2008, Koch 2013).

Institutionalist theory advocates non-rational, cultural socially constructed explanations of societal order and change. Scott (2001: 48) defines institutions as: "Social structures that have attained a high degree of resilience... [institutions] provide stability and meaning to social life... Institutions are transmitted by various types of carriers, including symbolic systems, relational systems, routines, and artifacts. Institutions operate at different levels of jurisdiction, from the world system to localized interpersonal relationships. Institutions by definition connote stability but are subject to change processes, both incremental and discontinuous..." Scott (2001) and Thornton *et al.* (2012) conceptualise institutions as consisting of three types of elements: cultural cognitive, normative, and regulative. Recent institutionalist theory departs from explaining organisational homogeneity and stability (DiMaggio 1983), and most recent contributions are interested in institutional change, and complexity understood as relations between multiple institutions. Central concepts are institutional work (Lawrence *et al* 2009, institutional logics (Thornton *et al* 2012) and institutional complexity (Greenwood *et al* 2011).

Education of skilled workers can be understood in several ways reflecting different basic institutions. Education can be viewed as a societal task and part of the basic rights of a citizen (Cort 2011). And/or it can be seen as a market demand for human

resources. Historically, education and apprenticeship was even part of a social order of the crafts, the guilds. Over the last 150 years the education of skilled workers/craftsmen has been institutionalised in multiple ways (Cort 2011, Lieshout 2008). Lieshout finds several different ways in which vocational training can be institutionalised. He points to instances of market driven training, of school driven and of "associational governance" driven pointing to a close alliance between the state, the unions, and the companies. As a particular case in point of associational governance the Scandinavian setting sees the institutionalist set up evolved into a mature field with very close and tight collaboration between the state and the labour market parties, known as corporatism (Cort 2011, Koch 2013). In these context institutions of knowing involves education system actors, craftsmen, apprentices, crafts companies and more. Institutions of knowing involve formal and informal forms of knowledge and competences within and across crafts. Koch (2013) suggests that these labour market institutions in Scandinavia have been remarkably resilient to continual undermining by US and global management and production concepts tainted by liberal and individual institutions of production and knowledge.

The vocational education and training institutions (VET) have not only survived but maintained their position seen over long time spans even if operating in a complex and multiple institutional contexts. Lieshout (2008) on the other hand suggests that these labour market institutions risk stagnation if not continually renewed in a manner responding to the contradictory demands of state (EU), building industry, citizens, youngsters and other interests. Koch (2013) posits that part of the institutions resilience lies with their ability to span from micro to macro in the labour market set up. Lieshout (2008) similarly explains the German and Dutch system like that, yet point out at the state of Wisconsin is an exception as a vocational education system has been maintained and developed over long time without the macro governance frame provided in Scandinavia, Germany and Holland.

There is therefore a resonance between the challenges of the institutional set up of VET and the development of institutional theory and the change in activities and performance in the construction industry. Here we are in particular interested in the interplay between bottom up and top down dynamics, which usually keeps the institutions of knowing together and also put them under pressure. More specifically the institutional work approach (Lawrence *et al* 2009) have proposed to appreciate the micro processes of maintaining, destabilising, developing new institutions, which here lead to looking at how small enterprise development might contribute to the development of VET or differs from larger enterprises in development strategy.

INSTITUTIONAL WORK IN VOCATIONAL TRAINING

The vocational education system in Denmark is as mentioned a mature field, strongly institutionalised with unions, employer's associations and the schools in central roles (Koch 2013). The Danish continuing vocational education (C-VET) (in Danish "AMU") are well-functioning systems serving a triple purpose according to the Ministry of Education:

- To improve competence according with the needs of the labour market
 - To contribute to solving market restructuring problems in short- and long-term
- To give adults the possibility to upgrade competences for the labour market.

The C-VET programme in Denmark is funded almost entirely by the state. As indication at present the Danish building sector employs some 92,000 skilled workers educated in the C-VET system and 41,000 unskilled workers compared to the total

employment at 157,000 (Forsingdal *et al* 2012). There are at present 11 educations within building and construction, encompassing plumbing, masonry, carpenters, electricians and more. In-company training in Denmark takes up 60-75 percent of the training period, compared with only 15 percent in Sweden (Cort 2011). Moreover when it comes to vocational training for employees, the enterprises get a wage refund as a participation incentive from both state funds and competence funds financed from the labour market agreements. Hence there should be the best circumstances for C-VET in the building industry. Despite this - the building industry does not use the system sufficiently bearing in mind the needed energy skills and future market demands. Especially the industries occupied with insulation and building envelope lack participation whereas plumbers and electricians have more enrolment in C-VET due to certification requirements. Furthermore it is a basic assumption in the recent 'Status Quo 2012' (Forsingdal *et al* 2012) that the Danish C-VET needs modernization, if competencies in the building sector are to fill the necessary role with regard to the individual specialist workers and craftsman and the performance of the system itself. In relation to the growing specialization of the workforce and the quantity of prefabricated building parts the need of interdisciplinary competence is growing. If this modernization fails it will constitute a fatal barrier to fulfilment of the Danish 2020 climate plan. Forsingdal *et al* (2012) highlights central points of weakness:

- There is a lack of cross sectorial understanding between the different specialist areas
- The contractors have a tendency to approach building projects in a fragmented way and not in a holistic way as clients and users typically do
- There is often a lack of understanding between architects, engineering consultants and contractors, and this compromise the expected energy savings.

Education institutions and labour market parties

Despite Forsingdal *et al* (2012)'s well-placed problematization of the VET system, their result also shows that there is more focus on energy efficiency in the courses of the vocational training institutions than previously, reflecting a gradual reform from within the system (Bertelsen *et al* 2013). Also training of craftsmen in occupation has evolved in this direction. The competence framework of understanding by Bertelsen *et al* (2013) encompasses professional competences (growing specialization), interdisciplinary -horizontal and vertical- competences, innovation competences, teachers' competences and understanding of building cultures, sustainability and industrial building. The analysis involved co-contributions and dialogues with representatives from the education committees set up nationally to enable the associative governance (Lieshout 2008). Below the position taken by each committee is summarized following the competence typology.

Carpenters committee

Carpenters' professional competences will in the future probably need to have more focus on building physics and knowledge on materials and their interplay. It is likely that the craftsmen need interdisciplinary competences but increased cooperation could also be realised through management. Leading carpenter enterprises are today able to build according to the energy demands for 2020 and handle the changed processes that it involves. Innovation competences should therefore support that. The vocational school should prepare for new types of cooperation and processes and the teachers' competences need continual development.

Masons committee

The masons' education committee found that the masonry craft already possessed the professional competences. Moreover the committee found that interdisciplinary competences would be very dependent of other crafts conservatism. The innovation competences were understood as more of a need for the common institutions put in place such as information councils, to be better at communicating. Teachers' competences would need the schools management to act in a sanctioning manner, as teaching material on energy renovation within masonry is already in place. The understanding of building cultures tend to be a nostalgic notion on the previously more important role of brick wall, yet new regulation actually enables a new way of making brick walls.

Electricians committee

Electricians' professional competences are today specialised over a wide set of topics, while at a time there is a new tendency to group contracts on related areas into bulk contracts. This might lead to new demands for interdisciplinary competences. The electricians' education committee found that innovation competences should be built at the vocational schools, and that teachers competences should be develop to support that. Indirectly that approach disregards the innovation challenges electricity contracting enterprises face also related to issues of sustainability and new industrialization.

Plumbers committee

Like the electricians' the plumbers' education is today split in a larger number of specializations also in the plumbers areas one can witness large HVAC companies doing broader contracts leading to new kinds of coordination. This could lead to demands for new interdisciplinary competences. The plumbers committee is in line with the electricians in their view on innovation and teachers competences etc.

Energy renovation growth enterprises

The other central institutional dynamic is the market development of new energy renovation solutions and services. These generate demands for new competences which in a Danish context should be articulated as demands for education and training in the VET run by the state and given the institutional logic that education is a right for the citizen. Small and medium sized companies are very important parts of the Danish building sector, which is much more fragmented than for example the Swedish. Below is given illustrative examples from the interviews of the seven companies. We do not cover all dimensions of competences i.e. professional competences, interdisciplinary competences, innovation competences, teachers' competences and understanding of building cultures, sustainability and industrial building.

Carpenters

Enterprise no 1 has recently shifted main emphasis from new built to renovation, which in 2013 was roughly 70 % of their turnover. They sense ambivalence among the customer and act accordingly.

"We typically built according to the 2015 regulatory demands but off course we have begun looking forward towards 2020. But this is not part of running operations. We know 2020 is coming and that one should be ready. But it is at present not what we strive at with regards to generating turnover. This is also based on our experiences with what the customers will pay for at present. Our experience is that the customers' intentions are really, really good and everybody asks in detail about it. Two years ago

we did not hear the word energy in the same way, as we do now. When the customers' comes to us today, then we hear the word energy every other time. But when the offer comes.... Then there is a tendency that people decline... they have to invest a lot of money now. In some areas it is not only 7-10 years of pay back but considerably longer. So it is an act of balance." (Bertelsen *et al* 2013)

In terms of innovation they see themselves as "not inventing the wheel." Again a middle of the road positioning, with not too radical insulations demands, education and training of employees are an internal process, and they do not draw on the C-VET system. As the interviewee comments: "I wouldn't even call it courses." (Bertelsen *et al* 2013)

Masons

Enterprise no 3 a masonry company interviewed are repudiated as being innovative and growing. At present they have sixteen employees. They cannot at present compete with prefabricated detached houses, which are considered lower prices (and can be low energy consumption compliant). On the local energy renovation market of detached houses the company has been able to sell a series of outer add on insulation with cladding. The company is participating in several projects on energy renovation, but is not using the VET system for competence development.

Plumbers

Enterprise no 4 put emphasis on a joint identity. To develop that they use a particular organisation of groups "around" a first line manager. Internal training is used to support the development of common identity. Energy renovation and other innovation do not play a large role in this company. When competence needs emerge, they would usually turn to the supplier, for example in the case of heat pumps. Moreover C-VET courses are used to a limited extent.

Electricians

Enterprise no 7 has been able recently to sell systems for monitoring of energy to their regular customers, on which their business is completely based. Enterprise no 7 views themselves as relatively connected to tradition, *yet also* have expertise in KNX, IHC and LON (standards for communication). They also emphasise interdisciplinary skills. Use of C-VET does not get mentioned at the interview.

DISCUSSION

The process of setting the institutions of knowing in motion is complex and feature institutional work in a kind of top down - bottom up fashion as one main axis. The top down institutional process involves inside and across schools and representatives of craft disciplines whereas the bottom up derives from energy oriented craft based SMEs involved in new building and renovation with an energy aspect. The top down element occurred through the education committees' position in the issues of energy competences. It is interesting to note that even within the committees put in place to enable a continual reform of the vocational training, there is clear examples of conservatism. In this case it is played out especially with the electricians and plumbers committee, but the other committees' also encompasses elements of preservative forces contributing to maintaining the existing institution. Moreover the proposals appear routine like and does not reflect much incorporation of contemporary trends in the building sector. The interviews with the SME companies show that they operate pragmatically within and outside the energy renovation market. The anticipation of future regulation of 2015, 2020 creates an institutional pressure (and legitimation) in

education for change on the company which they clearly sense. This includes handling differentiated demands of customers, not always just following regulation but occasionally ahead of it. At a time this needs to be balanced with customer needs of comfort, convenience cost control and financing. Moreover technical aspects such as airtightness are also proliferated, pointing at orchestrated competences rather than merely isolated innovation, commercial or technical competences. The direction of this institutional work is therefore ambiguous and used in a political manner both for advocating change/disruptions of the institutions of knowing and for maintaining them.

Table 1: The education committees' evaluation of needed competences

Competences:	Committees:			
	Carpenter	Mason	Plumbers	Electricity
Professional competences:				
1. Knowledge of building physics, materials and the interaction	+			
2. Sustainable construction, energy efficiency and renewable energy			+	+
3. Competitive construction methods and new energy solutions	+	+	+	
4. Competence in integrated and total construction solutions			+	+
Interdisciplinary competences:				
5. Horizontal cooperation and responsibility for the final building	+	+		
6. Energy solutions guided by customer needs and open boundaries			+	+
Innovation competences:				
7. Information on innovative and use of digital teaching materials		+		
8. Develop new and more effective processes and constructions	+			
9. Innovation a central part of the pedagogical model and education			+	+
10. Competence in optimization, resource reduction and efficiencies			+	+
Teachers competence and teaching materials:				
11. Teaching in interdisciplinary competences and development	+			
12. Teaching in new energy competence in progress but too slow		+		
13. Problem-based learning and complex innovative solutions			+	+
Competences in new process industrialization:				
14. Sustainable building requires reinvented skills and educations	+			
15. Total energy reduction, architecture and producer cooperation		+		
16. More fitting, smart houses and consumer linked via Smart Grid			+	+

The findings thus come to focus on competences of cross disciplinary collaboration (point 5, 11) and of doing sustainable innovation (point 2, 3, 6, 10, 14). Even if considered as growth companies the interviewed SMEs also run into barriers. Renovation tasks by customers might be "convenience renovation", meaning punctual renovation, only initiated by the owner or real estate administrator where absolutely needed (Koch *et al* 2014). Moreover many craft enterprises appear to prefer status quo in their way of operating, which is surfacing in other investigations (Koch and Buser 2009). It appears that both the vocational training system and the enterprises are

exercising a type of combined ambivalent supplication (Parkin 2010). Parkin (2010) in her conceptualisation of business and organisational sustainable leadership describes a point of departure for companies from traditional ways of doing business, which continues observing sustainability in a very reactive manner, exercising “ambivalent supplication” where sustainability is still an external factor that has to be justified and different from core business strategy (Parkin 2010). Here neither the enterprises nor the vocational training system are entering revolutionary change. Rather the two processes of institutional work largely resonate with each other in a slow precarious reform moving the institutions of knowing into sharing the supplication.

This leads to the observation that there is a risk of vocational education institutions stagnation if they are not able to respond appropriately to the new competence demands of the energy renovation transformation and new industrialization of construction processes. As the multinational companies such as Schneider Electric by now operate business models on energy renovation making alliances and networks with SME electricians that encompass energy training and competence development it is not unlikely to envisage a fundamental jolt of the corporative vocational training system. It is a composite set of institutional logics that is in play impacting on the development of the vocational training, encompassing the state (EU), building industry, citizens, youngsters and other interests. Daudigeos *et al* (2013) finds an equal composite picture of institutional logics at health and safety in construction, also leading to a near deadlock.

CONCLUSIONS

This paper set out to discuss enablers and barriers for an institutional development of the vocational training system in Denmark responding to the need for competences in energy renovation of the existing building stock. Even if renewal of courses and educations do occur from inside the vocational education and training system, an institutional maintenance seems to be the main agenda for the education committees. They are reluctant in their engagement with the energy question. Similarly the enterprises operating in energy renovation do this in a pragmatic and relatively slow fashion. Together these top down and bottom up institutional work processes that the education committee, the crafts and the enterprises engage in appear to practice ambivalent supplication to the future zero energy regimes, thus largely maintaining the institutions of knowing. We interpreted this status as risky and possibly leading to stagnation of the vocational education and training system. A series of initiatives within the institutions in the future might mitigate this risk.

REFERENCES

- Bertelsen, N. B. (2007). Autonomy and innovation in construction teams in Denmark. 4th Nordic Conference in Construction Economics and Organisation, Luleå, Sweden.
- Bertelsen N. H., Thrane L., Bertelsen H., Vad J., Svendsen K. H., Larsen E. F., Jørgensen T. (2013). Energikompeterer i byggesektorens erhvervsuddannelser - EUD. Analyserapport om udvikling af nye og reviderede energiuddannelser i samarbejde mellem bygge- og installationsfagene. SBi, Aalborg University, Copenhagen.
- Bertelsen N. H., Landin A., Orlander S., Sørensen N. L., Widén K., Gottlieb S. C., Aulin R., Øien T. B., Ågren R., and Vogelius P. (2014 in progress). Development of construction processes in the Oresund region - Coordination of information technology, productivity, quality and sustainable building in an industrialized perspective (in Danish). SBi, Aalborg University Copenhagen.

- Cort P. (2011). Taking the Copenhagen process apart. Aarhus University, Copenhagen.
- Daudigeos T., Boutinot A., Jaumier S. (2013). Taking Stock of Institutional Complexity: Anchoring A Pool of Institutional Logics into the Interinstitutional System with a Descendent Hierarchical Analysis, in Lounsbury M, Boxenbaum E. (ed.) *Institutional Logics in Action, Part B* Emerald, London, pp. 319-350.
- Dover, G. and Lawrence, T. (2010). A gap year for institutional theory: Integrating the study of institutional work and participatory action research. *Journal of Management Inquiry*, 19(4) 305– 316.
- Forsingdal C.V., Kragh J., Aggerholm S., Hougaard C. F., Bergmann K., Lauridsen V. H., Borggreen K., Bodal P., Albertsen U. R. (2012). *Status Quo 2012. Build Up Skills. Intelligent Energy Europe – IEE.*
- Greenwood R., Raynard M., Kodeih F., Micellota E. and Lounsbury M. (2011). Institutional complexity and organizational responses. *The Academy of Management Annals* 5(1).
- Koch C. (2013). When blues meets blue eyes. *Danish Management, Technology and Work between Democracy and Globalisation*. In Sandberg (ed) (2013): *Northern Lights. Work Management and Welfare*. SNS Förlag. Stockholm, pp. 257-276.
- Koch C., Carlson V. and Buser M. (2014). Convenience renovation and non transition. Paper for the 5th International Sustainability Transitions Conference. Utrecht.
- Koch C. and Buser M. (2009). Small and local until it hurts? –Architects and Engineers development in a Professional knowledge industry. Ceric A. & Radujkovic M. (eds) *Proceedings Joint International Symposium W055 & W065*. CIB, Dubrovnik.
- Lawrence T.B., R. Suddaby, and B. Leca, eds. (2009). *Institutional Work: Actors and Agency in Institutional Studies of Organizations*. Cambridge: Cambridge University Press.
- Lewis M.W. & Grimes A. J. (1999). Metatriangulation: Building Theory from Multiple Paradigms. *The Academy of Management Review*, Vol. 24, No. 4, pp. 672-690.
- Lieshout H. v. (2008). An actor-centered institutionalist approach to flexicurity: the example of vocational education and training. Congress paper *Social Security in a Changing World of Work, 2008*, Kenniscentrum Arbeid Hanzehogeschool Groningen.
- Lounsbury M., and Boxenbaum E.(ed.) (2013a). *Institutional Logics in Action, Part A (Research in the Sociology of Organizations, Volume 39)*, Emerald, London.
- Lounsbury M., and Boxenbaum E. (ed.) (2013b). *Institutional Logics in Action, Part B (Research in the Sociology of Organizations, Volume 40)*, Emerald, London.
- Næss-Schmidt H. S., Hansen M. B. Danielsson C. U. (2012). Multiple benefits of investing in energy efficient renovation of buildings. *Copenhagen Economics.. Copenhagen.*
- Scott, W. R. (2001). *Institutions and Organizations*. 2nd ed. Thousand Oaks, C.A.: Sage
- Suddaby, R., and Greenwood R. (2009). Methodological issues in Researching Institutional change. In Bryman A. and Buchanan D. (eds). *Handbook of Organizational Research Methods*. Sage. London. 176-195.
- Thornton P. H., Ocasio W., and Lounsbury M. (2012). *The Institutional Logics Perspective - A New Approach to Culture, Structure and Process*. Oxford University Press. Oxford.
- Wittchen K. B. (2009). *Potentielle energibesparelser i det eksisterende byggeri*. SBi 2009:05. Hørsholm (potential for energy savings in existing buildings).