Working Hard or Hardly Working?
How the Swedish Building Trade Magazines Mediate Issues Regarding Energy Efficiency

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1.0 Abstract

The building sector accounts for 40% of the energy usage, and to be able to reach the energy reduction goals set within the EU and Sweden, the building sector needs to change toward energy efficiency. The building sector has a lot of energy saving potential, and within the sector, the HVAC- and plumbing section has the greatest saving potential. Since building trade magazines are directed to practitioners within the building sector, and also their main channel for information regarding projects and developments, this study has used qualitative content analysis on articles, regarding energy efficiency, between the years of 2002-2014. Two building magazines and one HVAC- and plumbing magazine were used to cover the field of what issues regarding energy efficiency were mediated to the readers. The study found out that during the first years, the magazines mediated a positive image towards energy efficiency measures, but mentioned little concrete action plans. After the implementation of more stringent laws, the magazines mediated different issues in a more equal spreading, however two different issues battled to be heard. These were concerns regarding the risks of using new methods not tried before, the lack of clear definitions from the authorities and a focus on a holistic perspective that included environmental thinking. The most recent years focused on practical solutions, adopting a holistic perspective that included both buildings and individual behaviors. During the years, the magazines in general framed energy efficiency measures as something positive and mediated the image of that energy efficiency measures would be taken in the future.

Keywords: Building Trade Magazines, Energy Efficiency, EPBD, Media Image, Sweden

2.0 Introduction

Amongst the member countries of the International Energy Agency (IEA), the building sector accounts for over 40% of the primary energy usage, where the residential sub-sector is the largest energy consumer worldwide. Over the last 20 years, the member countries have adapted building energy codes to reduce the energy consumption in the building sector, with different success ranging from a reduction of 22% in e.g. Netherlands to 6% in Southern European countries, of the average energy consumption calculated per dwelling. The different success rates over the last 20 years are assumed to be because different countries adapt different energy codes. For the future, the goal is to move from energy consuming buildings to energy producing buildings. This ought to be achieved by focusing on a holistic picture, where the three pillars of energy sufficiency, energy efficiency and energy production from renewable resources (IEA, 2013).

According to Liu et al. (2010), the Energy Performance of Building Directive (EPBD) was the starting point in the more recent focus of energy regulation in the building sector amongst the member countries of the EU. Sweden is a member country of IEA and the EU, and has thus implemented the EPBD (2002/91/EC). The first important step that was taken in Sweden, in 1 October 2006, to follow the goals of the EPBD, was the implementation of the national program for energy efficiency and energy smart building construction, which also introduced the energy performance certificate. This required that new buildings, and later on older buildings, had to have their energy consumption calculated by an independent expert, who also had to provide suggestions of cost efficient solutions to reduce the energy consumption. (Prop. 2005/06:145) In 2008, the Swedish government made a proposition, which was later
implemented, of the united climate- and energy policy (Prop. 2008/09:163). Sweden is amongst the countries that have already begun their work with energy reduction in the building sector by setting national goals, where the energy usage in buildings ought be reduced by 20 % in year 2020, and 50 % in year 2050, compared to the values of 1995 (Prop. 2008/09:163). In 2012, the goal of an energy reduction by 50 % in 2050 was withdrawn, instead the Swedish National Board of Housing, Building and Planning together with the Swedish Energy Agency developed a strategic action plan ranging from 2013 until 2050, where suggestions are made on how to increase the energy efficiency in buildings. The major focus is on energy efficient renovation in existing buildings, which was found as the most important action to take, during the planning phase of the implementation of the new strategic action plan. There should also be no fossil fuels used in the building sector by 2020 (Energimyndigheten & Boverket, 2013).

2.0.1 Laws that have been implemented to proceed towards more energy efficient buildings and energy efficiency in general

Over the years, there have been several measures to increase the energy efficiency within the EU and in Sweden. First the EPBD was implemented, which lead to that every member state of the EU should in the beginning of 2006 adopt national measures to increase the energy performance in buildings. Due to this new legislation, every new building should have their energy performance measured, and there had to be a set minimum requirement of these buildings’ energy performance. Large existing buildings should also be included in a different set minimum requirement of energy performance. The directive also stresses the need to take in mind that when planning for these changes, there needs to be a distinction between new and old buildings and outdoor climate (European Parliament and the Council, (2002/91/EC)). The first actual change in Sweden is the implementation of Prop. (2005/06:145), the introduction of the energy performance certificate, requiring energy consumption calculations for buildings. This proposition was made due to the new demands that were introduced in the EPBD. According to Prop. (2005/06:145) all new buildings, buildings that are being sold and lacks an energy performance certificate that is not older than 10 years, and large buildings must have an energy performance certificate. This was the start that forced change to happen within the building sector. A few years later, in 2008, Sweden implemented national goals to minimise the impact on the environment by having at least 50 % of the energy from renewable sources and increase the energy intensity by 20 % in 2020. This further stimulated the work of energy efficiency in buildings (Prop. 2008/09:163). In 2010, there was a recast of the EPBD, which included the new goals that every new building should by 2020 be a nearly zero energy building (European Parliament and the Council, (2010/31/EU)). Later on, in 2012, there were concerns that the planned energy efficiency within the EU did not measure up to what had been projected, thus the directive (2012/27/EU) was implemented. This directive stresses the need for every nation to implement national laws to secure that energy efficiency is happening, which is also stated in the EPBD. The new directive also raises the awareness that every nation needs to consider their own specific circumstances and start to implement national laws to enhance energy efficiency in every sector (European Parliament and the Council. (2012/27/EU)). In Sweden Prop. (2013/14:174) was implemented, to further enhance the energy efficiency in general, as was demanded in the previous directive. This proposition included new legislations that large companies should do an energy mapping every fourth year and new demands that authorities must use energy more efficiently along with new requirements to measure energy consumption in apartments (Prop. 2013/14:174). These laws and propositions that were implemented during the chosen time period can be seen in Figure 1. below.
Figure 1. This figure shows the major changes in laws and propositions being made between 2002-2014 in both the EU and in Sweden. The blue ones are directed to the building sector only, whereas the grey ones focus on energy efficiency in all sectors. Thus the blue ones contain the most prominent changes for this study (Karlsson Hjort & Johansson, 2013; European Parliament and the Council. (2012/27/EU); Prop. (2013/14:174)).

This timeline clearly visualises what has happened over the chosen time period. Due to the increase in new laws and proposition over time, it ought to be noticeable in the trade magazines, as more responsibility is placed upon the sector.

2.0.2 Nearly Zero buildings
In 2010, there was a recast of the EPBD, where all new buildings should be nearly zero-energy by 2020 (Annunziata et al. 2013). According to Torcellini et al. (2015), the amount of buildings increases, and so does the energy consuming services included in a building, such as
heating and cooling, computer and other plug in appliances. There is a need to change the current paradigm of the buildings energy consumption, towards the concept of net-zero energy buildings, and net-positive buildings. In the directive on energy performance of buildings, the recast of the EPBD, the definition of a zero energy building (ZEB) is that a ZEB should have a very high energy performance along with a high usage of renewable energy sources for the little energy needed. These energy sources are promoted to be on-site or nearby, e.g solar panels (European Parliament and the Council, (2010/31/EU)). According to Torcellini et al. (2015), the benefits of ZEBs are that they have a measurable goal. In contrast with green building or high-performance buildings, where there are no precise definition or measure to see how green or how much high-performance a building has, a ZEB has defined, measurable and thus achievable goals, making it more appealing for the building owners, architects etc. These goals relate back to the definition of ZEB, as this type of building aims to have as little energy consumption as possible, making it easier to calculate the actual energy usage, and trace back to what energy sources are used. In short, the calculation is done by measuring the actual annual energy that a building consumes. Guidelines how to do this can be found in the recast of the EPBD (European Parliament and the Council, (2010/31/EU)).

2.0.3 Energy efficiency in Sweden
The Swedish Energy Agency gathers statistics of energy consumption in Sweden, and presents new results every year. The latest report was published in 2013, and provides statistics of how the energy consumption in several sectors has changed over the years. In their calculation that is of interest for this study, they have included houses, apartment buildings, premises, holiday homes, fishing- forestry- and farming industries and construction processes, and naming the sector “housing and services”. Buildings and constructions have together the largest impact of the mentioned sections (Energimyndigheten, 2013; Energimyndigheten, 2015).

![Energy usage in buildings, construction etc.](image)

**Figure 2.** This figure shows how the energy usage in the sector called housing and services has changed over the more recent years. A slight reduction can be seen, apart from a peak in 2010, which had a long and cold winter. However, there are no clear downward line that indicates a reduction in energy consumptions since the beginning with the implementation of the EPBD (Numbers published by Energimyndigheten (2015) in “Energiläget i siffror (Excel)).
In addition to what the Swedish Energy Agency presents regarding the change of energy usage over time, several researchers have found both positive and negative aspects of Sweden’s work towards energy efficiency. According to Annunziata et al. (2013), Sweden does not have national regulations that encourage new technologies for energy efficiency off buildings, to be developed by designers. Due to this, it becomes harder to develop and adapt new efficient measures to reduce the thermal loss from e.g. roof, walls and window insulation, which is a highly efficient way to reduce the energy consumption in a building. There is also a connection between renewable energy and energy efficiency, as there should be quantitative targets for renewable energy usage in national regulations. However, Sweden does not address explicitly this need and connection in the national energy building legislation. There is also a lack of national incentives for nearly ZEBs.

Sweden has financial incentives directed towards both tenants for residential and non-residential buildings, along with incentives for landlords to increase the supply of energy efficient buildings on the market, nationwide. These incentives make it more profitable to both build and rent a building with high energy performance by e.g. a tax relief and low interest loans (Annunziata et al. 2013). The buyer of a new constructed building has the right to demand a specific energy performance in line with the energy performance requirements set by the Swedish National Board of Housing, Building and Planning. If the constructor fails to achieve the set energy performance target, after the energy performance certificate is calculated, it can lead to disputes and a fine (Sveby, 2012; Boverket, 2014). Annunziata et al. (2013) still describe Sweden as a leading country in the adaptation of policies and regulatory instruments to achieve the set energy reduction targets, as Sweden already in the 1970s introduced low-interest loans and grants for residential buildings to be able to apply energy efficient investments. In a study conducted by Smit et al. (2014), several projections of primary energy savings amongst member countries are presented. Sweden is assumed to not reach the 20% reduction of energy consumption by 2020, by only managing a saving of about 17.5%. Other studies show a similar projection, that Sweden will not achieve the energy reduction target, ending up with a saving of 13% instead of 20%. However, the Swedish Energy Agency states that this is just a projection, which is relatively uncertain. Another projection made by the National Institute of Economic Research assumes that Sweden will have an energy saving of 15%. This projection is based on the assumption that energy intensity follows with GDP development, which makes the projection uncertain; e.g. if the GDP development becomes weaker than what was projected, the energy intensity will rise and vice versa (Konjunkturinstitutet, 2013). As these are mere projections for the future, no one can say for sure if Sweden will achieve the 20% goal by 2020, however, the projections raise the awareness that Sweden might fail, and thus promote more work to secure that the goals will be achieved.

2.0.4 Building Sector
The building sector can be characterised as a sector that includes a broad variety of projects of different complexity and dimensions. In broad terms, the practitioners are the building constructors, the civil engineers and the process plant industry (Morledge & Smith, 2013), along with architects, contractors and material and equipment suppliers (Liu et al. 2010). The building sector is held responsible for a large impact on the environment, as it influences land, water, air and human health. During the building process; briefing, design, construction, operation and demolition, the sector has a large impact on the environment, and thus decisions made within the sector influence the work towards sustainable development (Gluch & Stenberg, 2006). Therefore, it is important to include the building sector, what issues are
raised within the sector and what information is reaching the practitioners, when addressing sustainable development in general terms.
In Sweden, those who are responsible for energy efficient renovations, energy declaration and follow-up to ascertain if the goal set in the planning process was reached, are the property owners and builders (Naturvårdsverket, 2013). Thus the building sector carries a lot of responsibility when it comes to reducing the energy consumption, which is further enhanced by the EPBD and national goals.

2.0.5 Trade Magazines
Within any specific sector, there are trade magazines that reach out to all practitioners, and are focused on reporting projects, development and research in the chosen field. The trade magazines also highlight upcoming projects and developments (Alderman, 2014). The practitioners in the building sector often use trade magazines as their information channel for environmental issues (Fermenías, 2004). Mass media, including trade magazines, along with politicians, are considered as the actors with most influence over environmental issues, and the work towards sustainability (Gluch & Stenberg, 2006). The readers of the magazines are commonly defined by the magazines themselves as people in the sector; consultants, planners, building inspectors, property owners, builders and building entrepreneurs (Husbbyggaren, 2015; Bygg & Teknik, 2014), which also matches the description of the participants in the sector defined by Morledge & Smith (2013), described above. Since trade magazines target almost all practitioners in the building sector, and report upon projects, research etc. the trade magazines can be used to cover a broader, more holistic overview of what information the sector is given regarding the need of energy reduction and work towards nearly ZEBs. Gluch & Stenberg (2006) describe trade magazines as not only distributors of knowledge and motives, but also a sharer of which actions are appropriate to take in relation to environmental challenges. The trade magazines do not state what to think, but rather what issues to think about. Since the start line in 2002 when the EPBD was implemented in the EU, the focus and work in progress towards the goals ought to be visible in the trade magazines, as it can be assumed to be an increase of articles focusing on issues regarding energy efficiency as the issue to think about. As Annunziata et al. (2013) identified, Sweden lacks in focus on nearly ZEBs, even though the recast of the EPBD with a focus on nearly ZEB took place in 2010. By looking at trade magazines published since 2002, possible attitudes and positions mediated by the trade magazines should be visible in the text content, along with the attention given towards the adaptation of energy efficient buildings and energy reduction. It can also be assumed that there has been an increase of articles mentioning energy efficiency as the thing to think about, and also different issues regarding how energy efficiency can be achieved, as it is a must according to the EPBD and national laws. In the end, the practitioners within the building sector are responsible to try to achieve the energy efficiency goals, and may also have an impact on what laws are being implemented, as they have the knowledge base on what can be done and not.
2.1 Aim

The aim of this study is to find what images and issues the trade magazines mediate to the practitioners in the building sector, what themes and patterns regarding the focus on energy efficiency and nearly ZEBs has been mediated, and how has this changed over time, beginning in 2002 when EPDB was implemented, ranging to 2014. The aim is also to highlight different attitudes and positions mediated to the readers, between the more general building magazines and one directed to HVAC and plumbing, to see if the work towards nearly ZEBs is thought of as a possibility or an obstacle.

2.1.1 Research Questions

1. What image and issues do the Swedish trade magazines mediate to the practitioners within the building sector, regarding the need of energy efficiency?
2. How has the frequency of mentioning work towards energy efficiency and nearly ZEBs changed over the years 2002-2014?
3. What possibilities and obstacles regarding the adaptation are mediated by the trade magazines to the readers?
3.0 Background

This chapter will describe in short terms what has been done in the field of how Swedish building trade magazines mediate environmental issues to their readers. In this chapter there will also be a focus on how media may frame an issue in different ways.

3.1 Previous studies

Gluch & Stenberg (2006) present in a study focused on how Swedish building trade magazines write about green building and environmental challenges, that there have been only a few studies done on the topic regarding how building trade magazines mediates environmental issues. This raises the uncertainty of how the trade magazines influence their readers upon a chosen topic. Gluch & Stenberg found out that during their chosen time period of 1990-2003, the trade magazines had either a focus on negative events, such as an unexpected incident where the consequences where not wished for, or the opinion that technology and specific building projects could lead the way to the future. The conclusion of their study is that the trade magazines fail to provide the readers with an unbiased discussion of environmental impacts, and thus do not provide a balanced way of thinking about green buildings. Green buildings can some sense be seen as a pre-face of the increased amounts of measures of energy efficiency that have happened since Gluch & Stenberg’s study, as Stenberg & Räisänen (2006) describe green buildings as a concept where sustainable development has to happen in ecological, economic and social aspects. According to Fermenias (2004), there are more people that read a trade magazine than research reports. Thus it becomes of large importance what the authors in the trade magazines actually write, as it has a large influence on how the readers generate information and knowledge.

3.2 Theory of media framing

This section will present how the media frames different topics, and why media framing is important when analysing media content. Different thoughts of how media can be used as a tool to shape public opinion are presented and discussed. This study has used the theoretical framework of media framing as a tool to systematically examine both the coverage and the framing regarding energy efficiency in the building magazines and how it differs over time.

3.2.1 Media framing

Framing can be defined as a way that a reality is presented, what story is being told, to help the user identify and label certain occurrences. In media, framing can be seen as the magazines or the journalist’s angle upon a topic, and is thus not only a question if the magazines are biased or not, as frames are described as how the magazines organise reality (Kitzinger, 2004). A frame is also not only a topic, but rather a way to organize or structure what a topic is about, and is essential when doing a content analysis to perceive what message is being told by the magazines (Borah, 2011). By analysing how media frames different issues, the researcher can get a hint on what message reaches the audience. Pavelka (2014)
writes that one of the main goals of news in media is to attract an interest amongst the audience. Choosing what to present in media affects the audience, and can be a variety of topics from weather forecasts to new regulations and legislation. According to Ford & King (2015), media plays an important role when it comes to framing climate change and it’s different components, as climate change is framed in different ways and thus suggesting how it ought to be discussed and what actions is suitable to take. This can also be applied to energy efficiency measures, as a necessary mean to reduce the impact on the climate. Ford & King also state that the readers that are provided a certain framing of an issue are then in turn a major driving force to influence decision makers to take action to minimise the risks of climate change. Therefore it becomes important how the media frames climate change, and thus also energy efficiency.

Shoemaker & Reese (1996) present that if the media content is considered as a provider of the reality that people experience outside of their own experience, and then any form of using media material for an analysis can highlight how this reality is framed. Different media sources working with the same town or content area may frame the reality in completely different ways, which the audience easily can observe. Due to this, media becomes more than a mere channel for presenting the reality, because if it was, such differences ought not to exist, thus making the media content an interesting topic to analyse.

Borah (2011) writes that the frames that are used in media are very much likely to be influenced by policy issues which originate from different administration sources, such as national laws. After a chosen issue is framed by the media, the reader’s opinion upon the frame may reshape it again. Becken (2014) also mentions that the way media frames an issue makes some messengers more significant and marginalise others. A successful frame connects expert knowledge and adapts it to a wider understanding, thus relating the frame back to what is “common sense”. Since this study does not reach beyond how the magazines are framing energy efficiency, only the possible connection of laws upon the framing will be investigated.

An interesting question to raise when doing a media content analysis is, as stated by Shoemaker & Reese (1996), if media does not present the real reality, then what does it present? The media can manipulate events as they apply its own framing on a topic when presenting its own form of reality, which can emphasise certain events, stereotypes or behaviours, as well as giving certain labels to people or phenomena. The media also has the power to highlight certain events or phenomena more than others, by simply giving it more space and frequency. This is often studied in content analysis, as Shoemaker & Reese (1996) write that the audience may consider a topic that is given a large amount of space as more important than topics given less amount of space in the magazine. Thus media influences how the audience perceives the presented reality, as the magazines lead the way of what issues are important. Pavelka (2014) mentions the situation of what goes into media content or not, what is given space and what is not, as a form of gate keeping. The media organisations decide what to write and in what manner, e.g. positive or negative. Pavelka also mentions that giving more focus to a certain issue in media, can be considered as a tool to influence public opinion. Delshad & Raymond (2013) have also found a similar result, as they present that according to their study, media framing strongly influences how the audience perceive things, and thus shaping their opinion. If a media framing is negative, it increases the challenges for certain entrepreneurs and policy makers, as this enhances a negative public opinion, and the other way round.

With the theory that the magazines are the ones that shape a frame of how an issue is presented, and in other words what reality is available to the readers, it becomes interesting to
investigate how an issue has been framed over time. In this study this is done regarding how three building trade magazines frame issues about energy efficiency. As was presented in this chapter, the frames are shaped by the magazines, which are influenced by different administrations, which also include national laws and EU directives. It is assumed that what the media choose to present, and thus how they frame an issue, have impact on how the readers perceive the topic, and thus what actions are suitable to take. As Ford & King (2015) write, media have a large impact on the audience regarding environmental issues, and the audience in turn may influence what laws and legislations are implemented. With this in mind, it is interesting to investigate how the chosen trade magazines frame energy efficiency, and connect it back to what EU directives and national laws that have been implemented during the chosen time span.
4.0 Materials and Methods

The following section will describe the different methods used in this study, beginning with the qualitative content analysis, followed by the sampling procedure and the different coding methods used. At the end of this chapter, validity and reliability will be discussed. Every separate section of the method will be followed up with a method discussion.

4.1 Qualitative content analysis

Hsieh & Shannon (2005) present qualitative content analysis as one of several possible methods to use when analysing a text. According to Macnamara (2005), qualitative content media analysis opens up the text, and focuses on the relationship between the actual text and the meaning of the text to its readers, as well as how this meaning differs between readers. Even though qualitative content analysis often lacks in reliability due to the researcher’s own definition of the codes and categories, it is necessary to develop a deeper understanding of the meanings of the text, and how this may influence and be interpreted by the readers. Cavanagh (2005) writes that qualitative content analysis reaches beyond mere counting, as in quantitative content analysis. Qualitative content analysis focuses a lot on how the text is coded, and how these codes are used. When analysing the text, Hsieh & Shannon (2005) and Ellingson (2011) present conventional content analysis as a way to generate themes and categories from the text, rather than predefined categories. This opens up the possibility to immerse into the data, which allows the new insights to appear. According to Cavanagh (2005), the questions of “why?” and “how?” are suitable for a qualitative content analysis, as the researcher finds patterns and meanings in the data, that could not be found by doing a quantitative content analysis.

According to Cavanagh (2005,) there is no straight rule on how to do a qualitative content analysis. However, the source of data needs to be considered, which will be discussed in the Sampling chapter. Krippendorff (2013) mentions that a qualitative content analysis is often done by a single researcher, due to the analysing process being difficult to explain or transfer to other researchers. During the process, the researcher will not be satisfied until the large amount of text is summarised in a good way. Carney (1972) writes that when conducting a content analysis, several simultaneous things need to be considered; the sampling procedure, the definition and limitations of the study and the set standards used for the data analysis. Carney thus suggests a pilot study to be conducted first, to assess how well every part of the study design interferes. This was done, and will be described in detail in the following chapters. After the pilot study, the remaining data can be collected and coded, which is the part where the researcher has the most interference and starts to draw the conclusions. After this is done, the researcher ought to make a back check with the data, to see if the conclusions are reliable.

To also be able to see how the focus on different themes changes over time, the data was quantified in that sense that the number of times a theme, category and code appeared were counted. Also worth noting is that one article has more than one code, and can thus be counted several times. Teräväinen (2014) mentions that counting a frequency of a theme does not explain anything on how the theme is mentioned and what it is discussing.
4.1.1 Qualitative content analysis – General discussion

When doing a content analysis, there are several risks to consider. Carney (1972) stresses the need to have well defined research questions, as the questions limit what material is gathered and analysed. Carney recommends that the researcher has a pre-existing knowledge of the area, to be able to conduct a good content analysis. This was somewhat achieved by doing a literature study of the area beforehand, to see what would be of interest to research.

Hsei & Shannon (2005) mention that a risk when defining codes from the text itself, rather than predefined categories, the researcher may fail in the development of an understanding of the texts, which generates themes and categories which do not represent the text. To prevent this from happening, knowledge of the study area was gained by extensive reading upon the subject, as well as that the articles were read several times, and different codes were tried out for the same string of text to see which would fit the best.

4.2 Sampling

Borbasi and Jackson (2012) argue that when doing a qualitative research, the samples are usually rather small compared to a quantitative sample. This means that the sampling processes are usually done by purposive or convenient selecting samples which are “information-rich”. According to Altheide (1996), when collecting data for a qualitative analysis, for example content analysis, the researcher ought to have some knowledge about the selected topic beforehand to decide what is proper media material to analyse. This knowledge was gained by researching what relevant trade magazines there were, as well as reading upon the topic from other researcher's reports. After this, a draft protocol was made, along with Altheide’s recommendations. This protocol was then tested upon a few articles, which will be discussed in detail below, and then developed further to keep an easy track of the findings to make it easier during the coding process, which will follow. As Altheide recommended, notes were taken on when the article was published, and how many pages it consisted of.

The trade magazines that were used for this study are based on the list from Svenska Tidsskrifter, Sweden’s largest trade association within media, cover about 350 of Sweden’s most renowned magazines (Svenska Tidsskrifter, 2015). There are a total of 7 trade magazines directed to the practitioners in the building sector represented on Svenska Tidsskrifter webpage. Out of these 7 trade magazines, two were initially selected, Husbyggaren and Bygg & Teknik, based on how many readers they reached out to, how accessible the magazines were back to 2002 and that they had a broad focus on major themes that were relevant for the practitioners in the building sector.

After collecting and coding the articles from the two selected building magazines, another additional trade magazine was selected, VVS-Forum, for a deeper perspective on the two peak years that appeared when doing the initial collecting and coding. The heating, ventilation and air condition (HVAC)- and plumbing section of the sector can be responsible for a lot of energy saving. Kinam et al. (2013) describes that a HVAC system alone stands for about 50% of the consumed energy in an office building. The huge potential of energy saving in HVAC and plumbing was mentioned frequently in the collected articles, and thus a deeper focus on this part of the building sector would be of interest.
4.2.1 Husbyggaren
The first trade magazine to be chosen was Husbyggaren, founded in 1958. The trade magazine is published and owned by The Swedish Building Engineers Association, which is a nationwide nonprofit organization that aims to put a high standard of the quality of performed work amongst their members by promoting sense of responsibility, quality and knowledge. The members have many different working positions within the building sector (SBR, 2015). The coverage of the content is both ideas and decision making, covering the whole building process, from planning to usage (Svenska Tidsskrifter, 2015). The articles are written by authors that are actively working amongst the different occupations within the sector, and are knowledgeable of how different topics are viewed upon and worked with in the real world. The magazine also employs lawyers that are knowledgeable of upcoming and current changes in laws and goals (Husbyggaren, 2015). The magazine is printed 5-6 times a year, and in 2014, 11 200 editions were published and sold (Svenska Tidsskrifter, 2015).

4.2.2 Bygg & Teknik
The second magazine to be chosen was Bygg & Teknik, founded in 1909. Bygg & Teknik is published and owned by Förlags AB Bygg & Teknik which is an independent publisher that promotes cooperation between researchers in building technologies, and the practitioners in the sector (Bygg & Teknik, 2014; Svenska Tidsskrifter, 2015). The focus of the magazine is to give easily accessible information to the practitioners in the sector (Bygg & Teknik, 2014). The magazine also provides the readers with information about development, new building material and ways of construction. The magazine is printed 8 times a year, and in 2014, 6 800 editions were published and sold (Svenska Tidsskrifter, 2015).

4.2.3 VVS-Forum
The magazine was founded in 1932 and is the largest HVAC- and plumbing trade magazine in Scandinavia. VVS-Forum is owned by VVS Företagen, which is an employers’ organization for companies working with HVAC and plumbing. VVS Företagen promotes competence among the practitioners and active actions for social responsibility to strengthen the conditions for successful business amongst its members. VVS Företagens Service AB is an affiliate to VVS Företagen and publishes VVS-Forum (VVS Företagen, 2015). VVS-forum monitors information relevant for all steps in the building process, from material suppliers to consultants and entrepreneurs. The articles cover news regarding laws and legislation from the government, organisations and other authorities, as well as relevant news for all employees in the different building sector branches (VVS-Forum, 2015). The magazine reaches out to cooling-, insulation-, energy- plumbing- regulation- and real estate companies, assemblers in the trade etc. The magazine is printed 12 times a year, with some special numbers in some years, and in 2014 a total number of 20 900 editions were published and sold (Svenska Tidsskrifter, 2015).

4.2.4 Owners of the magazines
The magazines are owned by different organisations, where their agendas promotes quality assurance, educated and knowledgeable practitioners and a good base of information upon research and projects which are relevant for the building sector. None of the organisations are owned or visible influenced by e.g. companies, and are thus somewhat independent in that sense that they do not try to influence an issue by being biased (Husbyggaren, 2015; Bygg & Teknik, 2014; VVS-Forum, 2015).
4.2.5 Keywords
To be able to select appropriate articles for the study, keywords were selected and tested during an initial search through two years of Husbyggaren and Bygg & Teknik. Husbyggaren was the first magazine that was used during the whole time span of 2002-2014, due to a search function on the magazine's web page that allowed the reader to use keywords and generate articles for every published number, where the keywords were either in the headline or in the lead. As headlines ought to summarise the content of an article, but not always do so (Ecker & Lewandowsky, 2014; Ifantidou, 2009), both headlines and leads were selected to get an easily comprehensible way of selecting articles, as leads can be considered a summary of the most important and interesting parts of the article, as well as giving a hint of which direction the article is heading (OWL, 2015) After all the numbers of Husbyggaren had been searched through, the keywords found in later articles were added, and the issues where those keywords were not present at the time were searched through again. Then the same procedure was done with Bygg & Teknik, where all magazines were in printed format. Due to the restriction to picture format only for the articles as a whole for Husbyggaren, and online picture and printed version of Bygg & Teknik, the focus of the keyword search was limited to headlines and leads to make it more manageable and still not miss out on any important article, as the keywords were revised during the initial search.

The keywords used for this study were based on words used in the EPBD, and also directed to cover the whole aspect of the aim, and limiting articles of other subjects to appear when doing the search. The keywords presented below are only the base of a word. By only typing in the beginning of every keyword in Husbyggarens search function, every possible ending is available. Almost the same procedure was done for Bygg & Teknik as well, where every headline and lead were manually read due to the restriction of printed format only. As the magazines are in Swedish, the keywords are as well, but a suitable translation is presented below. The keywords are:

<table>
<thead>
<tr>
<th>Swedish</th>
<th>English</th>
<th>Swedish</th>
<th>English</th>
</tr>
</thead>
<tbody>
<tr>
<td>Energianvändning</td>
<td>Energy Usage</td>
<td>Energibesparing</td>
<td>Energy Saving</td>
</tr>
<tr>
<td>Energifektivisering</td>
<td>Energy Efficiency</td>
<td>Passivhus</td>
<td>Passive House</td>
</tr>
<tr>
<td>Energieffektiv</td>
<td>Energy Efficient</td>
<td>Nollenergihus</td>
<td>Zero-Energy House</td>
</tr>
<tr>
<td>Energisnål</td>
<td>Energy Saving</td>
<td>Lågenergihus</td>
<td>Low-Energy House</td>
</tr>
<tr>
<td>Energiklok</td>
<td>Energy-Wise</td>
<td>Miljöbyggnad</td>
<td>Eco-Building</td>
</tr>
<tr>
<td>Energismart</td>
<td>Energy-Smart</td>
<td>Nollenergibyggnad</td>
<td>Zero-Energy Building</td>
</tr>
<tr>
<td>EPBD</td>
<td>EPBD</td>
<td>Lågenergibyggnad</td>
<td>Low-Energy Building</td>
</tr>
<tr>
<td>Miljöprofil</td>
<td>Environmental Profile</td>
<td>Energiprestanda</td>
<td>Energy Performance</td>
</tr>
<tr>
<td>Energideklaration</td>
<td>Energy Performance Certificate</td>
<td>Energikrav</td>
<td>Energy Requirement</td>
</tr>
</tbody>
</table>

During the search, additional options for keywords were added, but then removed due to their connection to other topics but that of the study, mainly technical descriptions of building appliances etc.
4.2.6 Articles

All articles were described in the sampling protocol, according to Altheide's (1996) recommendations, mentioned above.

A total of 183 issues were collected, 79 from Husbyggaren and 104 from Bygg & Teknik. Amongst the magazines, 193 articles were found using the keywords, 65 articles were found in Husbyggaren and 128 in Bygg & Teknik. As keyword search generates articles which focus does not fit this study’s aim, all articles were thoroughly read to get a set of articles which focus was on a relevant topic for this study’s aim. The selection process included all articles that had their major focus on presenting or discussing energy efficiency, the EPBD or Swedish laws and solutions, or hindrances that the laws indirectly brought upon the building sector, as new measures needed to be taken. After the sorting amongst the articles, a set of 71 articles remained for further coding and analysis. The articles are between 1-10 pages, and almost every article has pictures. All articles added include almost 250 pages of text only. After selecting the 71 articles, this was noted in the sampling protocol, and every article not included was read through again, so that nothing of interest was missed out. The same reading procedure was done for the selected articles, as more knowledge is gained the more familiarised the researcher becomes with the material (Altheide, 1996), so that articles that were initially of interest were then removed because of their technical focus.

After the first set of articles was coded, the years of 2008 and 2012 were also collected from VVS-Forum, as mentioned above. As there was a time limit for this study, and that knowledge had been gained when collecting the first set of articles, the collection of articles from VVS-forum included the selection process directly. Thus articles that did not meet the set criteria that was found being relevant for the first collecting, was not collected at all, which lead to only a few articles being collected from VVS-Forum. During 2008, 12 magazines were collected, and during 2012, 9 magazines were collected. Special theme numbers were excluded due to the fact that the focus of this study is on the magazines rather than special editions which have a smaller targeted audience. A total of 13 articles were gathered.

4.2.7 Sampling – General discussion

According to Borbasi and Jackson (2012), the data need to represent what is actually happening, and not only what is recorded, thus having a high credibility. By choosing three different magazines, with different focus that reaches out to practitioners in the building sector, different matters and focuses are gathered during the sampling. What could also be seen was that by adding additional articles, the focus would be lost, as the core of the articles was rather on a technical aspect. There were also no major differences regarding the agendas of the magazine owners, which also strengthen that by adding additional material, nothing new would be acknowledged (Husbyggaren, 2015; Bygg & Teknik, 2014; VVS-Forum, 2015).
4.3 Coding

Coding could be used on a broad range of materials, e.g. different kinds of documents or literature. The data that could be coded could range from a lone word to a whole page of sentences. The coding is an important link between data collection and the analysis, and explanatory of the meaning of the data, as well as a way to categorise the data before analysis (Coffey & Atkinson, 1996; Maxwell, 2013; Saldaña, 2013). For this study, both first- and second cycle coding was used, along with analytical memo writing and development of a code book. When deciding upon first- and second cycle coding method, the analysis method of content analysis was used as a goal, to select the most suitable coding method.

Before the coding started, the preliminary selected first cycle coding method was tested out, as a way to learn how to code properly and also see what kinds of codes could be generated. According to Saldaña (2013), preliminary codes should be noted separately from the final code. In this study, this first step was done partly manually and partly on the computer, as the material was in printed version, the preliminary codes for a string of text were noted in an excel document, and then revised into the final code after some articles were coded to get the feeling of what kind of material there was. After the code was decided, the code was added into the margin of the text, with brackets to see where the coded string started and ended (Coffey & Atkinson, 1996).

Saldaña (2013) and Guest et al. (2012) present that there are two ways of coding, lumping and splitting, where the former use a code for a larger string of text and the latter apply many more codes for the same amount of text. For this study, lumping coding was used, due to the large amount of text that was generated during the sampling.

There is also a discussion about if every part of the collected material has to be coded. Saldaña presents arguments for both ways of coding, but as the data collected sometimes had a relevant focus in some part of the text, and not in other parts, some strings of text were eventually excluded. Initially everything was coded, but as the coding proceeded, some strings of text were not relevant for this study’s aim, so they remained unconded, as also supported by Guest et al. (2012).

Saldaña (2013) recommends that first time coders, as in the case of this study, should do some part of manual coding. This was done throughout the texts, as they were not available in text format on the computer for digital analysis. By coding manually, the researcher gets into more control and feeling of the data set, as some electronically coding program can be seen as overwhelming at first. Saldaña argues that by doing manual coding, a smaller data set is better suitable, as it is time consuming. This was reflected on before starting the data collection, as when selecting suitable trade magazines, most of them were only available in digital format for the later years, 2012-2014. To be able to use the same coding method on every single article, everything was done manually.

As this study is done solo, the codes and the coding process were discussed both with the supervisors and classmates, as recommended by Saldaña (2013) when doing solo coding, to see if a better suitable code could be applied, as well as making the researcher reflect upon the process. Analytical memo writing is also a good tool when doing solo coding, as reflections and thoughts are written down during each session, which can then be used when going through the data set again to redefine the codes (Maxwell, 2013; Saldaña, 2013).
How many codes to define vary and Saldaña (2013) presents that different researchers recommend different amounts of codes. The recommended amount of codes ranges from a maximum of 1000 to between 80-100 codes. This study aimed for a maximum of 100 codes, which could still be manually manageable on paper.

4.3.1 Code-book and analytic memo writing
As recommended by Saldaña (2013), a code-book was developed before the coding started. The code-book consisted of an excel file with the headlines of “Code Name”, “Detailed Description”, “Inclusion Criteria” and “Exclusion Criteria” (See Appendix 9.3) The code-book made it easy to keep track of already used codes as well as how they were initially defined. As the coding took place during several weeks, the code-book made it easy to remember what the code was about, so that the code was used for the same purpose during the whole coding process. Saldaña (2013) argues that analytic memo writing is an important aspect of the coding, as it both documents and reflects upon the researcher's coding process. During every coding session, thoughts and reflections upon the codes and topics of the articles were noted, to find possible patterns, that a code might be better suitable as a sub-code or thoughts about coming findings. The analytical memo writing were thus of great help later on in the process, when reducing the amounts of codes generated through the first cycle coding.

4.3.2 First cycle coding
For the first cycle coding, descriptive coding was first tested and then selected, as it seemed appropriate the available data set. Saldaña (2013) describes descriptive coding as a suitable method for almost any qualitative study, and that it is suitable for beginner coders. By using this way of coding, parts of texts are often given a word or a short phrase. Charmaz (2011) argues that the use of gerunds helps the researcher stay connected with the data and find the most important actions in a text, rather than only themes and topics. Saldaña (2013) presents that the most common way of naming a descriptive code is with a noun, and a gerund is a variation of a noun. Descriptive coding codes the identified topic, which should not be confused with the content. The topic is what the text writes about, and not the message or the substance. Saldaña writes that descriptive coding is one way to prepare the necessary groundwork for a second cycle coding and even further analysis, but will not alone lead to a deeper analysis. After the descriptive coding is done, every string of text that has the same code ought to be gathered together in a single file. As this was not possible when the material was printed and the text was very small, an additional code-book was developed, where every code was given a row, and every year a column. Every time a code appeared was counted, and noted together with the specific number an article had been given. This made it easy to still keep track on where every part of texts belonging to a certain code could be found.

4.3.3 Code landscaping
Saldaña (2013) argues that the lack of a sophisticated computer program does not hinder the researcher to apply creative ways of organising the codes before the second cycle coding. One suitable method is code landscaping. By counting how many times a code appear, a stair shape could be applied in a simple word or excel document. A similar method to the one suggested by Saldaña was used, but instead of using different font size, the amount of times the code appeared was counted over the whole time span, and then sorted from the most
frequent to the least frequent. After this was done, the analytical memos were read through again to see if some codes would rather be sub-codes. Every code noted for that possibility was gone through again through all articles, and some of them were then placed as a sub-code rather than a code, as they seemed to fit better together.

4.3.4 Second cycle coding
Pattern Coding was chosen as a suitable second cycle coding, as it continues to adapt the material towards content analysis. Pattern coding is a method that gathers a broader lot of material into a new summarising code (Saldaña, 2013). This process also helps the researcher to reassemble and recontextualise the data, and open up a possibility to think of and with the data (Coffey & Atkinson, 1996). Due to the coding being done manually, every code was written down on a string of paper and spread out on the floor for an easy overview. Then parts of the article belonging to a certain code were read, the analytical memo writing was used again to help see connections and patterns between the codes. Codes were grouped depending on what they had in common. Some codes were more easily grouped than others, but by reading upon examples for every code, a general pattern could be found after some time. Codes that were initially grouped could later on in the process be regrouped, as a clearer pattern appeared the more reading that was done. Pattern codes could then be used as a category or a theme. For this study, the codes generated through pattern coding are called meta-codes, and are viewed upon as categories that will lead to the themes (Saldaña, 2013).

4.3.5 From category to theme
A similar process as the one done during the second cycle coding was applied when trying to find themes for the categories. Every meta-code generated during the pattern coding was written down on a paper, and then paired with others to see if they could be summarised in a theme. Maxwell (2013) stresses the importance of not predefining themes or codes before doing the coding, as the researcher cannot know beforehand which themes will become representative for the data set. In the end, a diagram was developed, as the text was first sorted in a larger number of codes, and then summarised into categories and themes (Hsieh & Shannon, 2005).

4.3.6 Coding – General discussion
There has been some critique given towards coding, as it can be seen to try to be objective, when it is not. Saldaña (2013) argues that coding as a method is not really objective, as the researcher defines the code, perceives the world and writes in a way that no other will. Everyone is individual, and thus a qualitative study does not really try to be objective. Saldaña also presents some critique that coding is just frequency counting, in line with traditional content analysis. By just counting the frequency of a code, a deeper analytical approach cannot be applied. As the aim of this study is to highlight what issues the trade magazines mediate as important to the readers; the practitioners in the building sector, qualitative content analysis will be used instead to reach beyond mere frequency counting. Thus coding helps to sort the data for further analysis, and opens up the possibility for the researcher to familiarise and think about the data. Maxwell (2013) and Coffey & Atkinson (1996) present that qualitative data analysis, such as coding, should not be the only analysis applied. To apply further analysis than just coding is an important step in the process. This will be done in this study, as content analysis will be used.
4.4 Validity and Reliability

According to Silverman (2013), validity is the credibility of the researcher’s interpretations. A problem with qualitative research, is that the researcher has to be convincing in that way that the readers believe that the findings are reliable, and thus not only depending on the sampling procedure, where a few well selected samples represent what the researcher wants to present. This problem is called anecdotalism. Silverman writes that one way to overcome anecdotalism is comprehensive data treatment. This means that every unit of the data is addressed and incorporated into the analysis. In contrast to quantitative analysis, where data is included from e.g. a survey, data is only generated until the findings are statistically significant and have a correlation. In qualitative analysis, every data are incorporated until it can be generalised amongst the other data. To ensure validity for this study, these thoughts were adopted in the coding process, so that no code and string of data were left out.

Everything that was gathered and coded was connected to each other in one way or another. Cavanagh (2005) mentions that to assure validity for a qualitative content analysis, there has to be a relationship between the phenomena under investigation, and the categories that are emerging from the data. It is also important to be open for a revision of the codes, as the goal is to generalise all the data, and not exclude any. This is stressed by both Silverman (2013) and Cavanagh (2005). As this study is done by a solo researcher, the validity is based on that every string of data is included in the analysis, rather than a corporation of coding definition and development that is otherwise recommended to ensure validity. Due to these limitations, the validity process discussed in this chapter was regarded seriously to ensure that no anecdotalism will occur.

Silverman (2013) defines reliability in a qualitative study as by which degree of consistency the data units are assigned a specific category, and in the case of this study, how this is done over several occasions. Krippendorff (2013) mentions that for a qualitative content analysis study, the need of high reliability is not as needed as in a quantitative study, as the researcher adopts a more holistic view, and is more involved with the material. Silverman (2013) stresses the need for the researcher to document the procedure of categorisation to ensure a higher reliability. This was achieved in this study by writing analytical memos, and by using a well-defined code-book, according to Saldaña's (2013) suggestions. By doing this, every coding session started with a backtrack on what had been done before, and how things were defined during the previous occasions, to assure a high reliability.
5.0 Result

This chapter will present all themes and categories generated through the content analysis and coding process, which represent what image and issues the trade magazines mediate to the practitioners in the building sector. The themes catch the greater generalised content, and the categories go deep into what the content is. Those categories that are influenced by the changes in the legislations will be divided into three time periods, 2002-2006, 2007-2010 and 2011-2014. This is done because there have been significant changes that can mark an end to an era of a kind. The first time period signifies the pre-EPBD era, the second time period signifies the first steps to achieve the goals of the EPBD and the implementation of the energy performance certificate. The last era signifies where the work towards energy efficiency is now, and where it is headed. Those categories that are not directly influenced by these breaking points will be presented as a single group instead. This section will also compare if and how the two general building magazines and the HVAC and plumbing magazine differs on what image and issues they mediate as the thing to think about.

This section focuses mainly on answering research question one and three.

The quotations were translated from Swedish to English. The original quotations will be presented in footnotes.

5.1 Themes and Categories

During the content analysis, several categories and themes were found. These will be presented below, to provide the reader with an understanding of the main issues mediated through the time span. The themes will later be used as a main heading, summarising the main issue, and will be followed by categories used as subheadings, for a deeper analysis of what was mediated. The themes and categories were generated by the coding procedure, described in the Sampling chapter. With the focus on what issues the trade magazines wanted to mediate, the categories and themes were generated by grouping the codes, and later the categories, into suitable groupings describing those main issues. In short, the categories can be seen as the issues that the magazines want to mediate, and the themes the broader picture they try to provide the readers.
<table>
<thead>
<tr>
<th><strong>Theme</strong></th>
<th><strong>Description</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Actions of authorities; laws, goals, requirements and certifications</td>
<td>Catches the meaning and need for goals, laws and requirements set by different authorities, from the EU to the Swedish Government and municipalities, and how they can bring solutions to reduce the energy usage in buildings.</td>
</tr>
<tr>
<td>How to achieve energy reduction without losing the importance of individual differences and environmental impact</td>
<td>There is always a conflict between the individual need of a group or building, and the need of a holistic perspective, communication between groups, to actually bridge these problems and by looking at a problem as a whole, still be able to see everything as an own individual in a population. This theme will present what is suggested to do this, and still be able to reach the energy reduction goals, and not destroy the environment further.</td>
</tr>
<tr>
<td>Possible solutions and change in behavior</td>
<td>There are two main areas to focus on when trying to solve the problem with high energy consumption. There needs to be a change both in the buildings as well as the responsibility, information and behavior pattern of a whole population.</td>
</tr>
<tr>
<td>Possibilities that follows with new requirements</td>
<td>Focuses on the positive prospects of the possibility to develop new methods and ways of thinking when something has to be done.</td>
</tr>
<tr>
<td>Hardship and concerns of uncertainties that follows with new laws and goals</td>
<td>As there are already existing problems, the positive prospects of future solutions may not be real or applicable. This theme presents the negative aspects and the voices of concerns lifted during the years.</td>
</tr>
<tr>
<td>Category</td>
<td>Description</td>
</tr>
<tr>
<td>------------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Importance of knowledge about energy efficiency</td>
<td>By increasing communication, information and interest in the energy efficiency matter, this might motivate people to act towards change.</td>
</tr>
<tr>
<td>The bigger picture and importance of early planning</td>
<td>There is a lack of an overview, not enough focus on the importance of early planning and follow up, and a focus on that every building is different and needs to be treated as such.</td>
</tr>
<tr>
<td>Defined conditions due to new EU directives and national requirements</td>
<td>Focuses on specific requirements, and how certification and other means can help to achieve those.</td>
</tr>
<tr>
<td>Energy saving over time and hope for the future</td>
<td>A description of how the trade magazines mediate the energy usage and reduction history, and where it will head next.</td>
</tr>
<tr>
<td>Available technical solutions</td>
<td>Focuses on what solutions are available, and what can be done in the buildings</td>
</tr>
<tr>
<td>Indoor quality and easily installed and used appliances</td>
<td>Presents the need of indoor quality and easy accessible and user-friendly appliances, when developing for the future.</td>
</tr>
<tr>
<td>Importance of reducing the impact on the environment</td>
<td>Catches the thoughts of that one cannot only focus on energy reduction, but needs to consider which energy sources are used, and how they affect the environment.</td>
</tr>
<tr>
<td>Opportunities and possibilities</td>
<td>Generally optimistic view on what is happening and have happened during the time periods. Now is the time to invest money, be ambitious and develop new ways to save energy.</td>
</tr>
<tr>
<td>Thoughts of actions following the implementation of the EPBD and national laws and goals</td>
<td>Some generalised goals and aims, and how different solutions can bring both economic growth and/or how this can, or will be, done.</td>
</tr>
<tr>
<td>Responsibility of individuals</td>
<td>Everyone needs to do some change and take action in order for change to appear, as every person, inhabitant, builder and estate owner is responsible for this to happen. Everyone has a connection to a building of some sort.</td>
</tr>
<tr>
<td>Risks and hindrances</td>
<td>There are several hindrances and worries about different risks raised during the years. This topic will focus on the hard road ahead.</td>
</tr>
<tr>
<td>The laws does not secure that energy saving is happening</td>
<td>It is too late to act now, the 2020 goals cannot be achieved by the means of today’s progress (during all the three time periods chosen). There are risks involved, as new technologies may not be functional, it becomes safer to use the established old methods. The changes are too expensive.</td>
</tr>
<tr>
<td>New thinking, innovation and education</td>
<td>Focuses on knowledge and innovation, how this can bring further expertise and increased awareness into taking new kinds of action.</td>
</tr>
</tbody>
</table>
5.2 Actions of authorities; laws, goals, requirements and certifications

This theme catches the meaning and need of goals, laws and requirements set by different authorities, from the EU to the Swedish Government and municipalities, and how those can bring solutions to reduce the energy usage in buildings.

5.2.1 Thoughts of actions following the implementation of the EPBD and national laws and goals

This category will focus on how the magazines present and write about more generalised goals and aims, as well as how different solutions can bring both economic growth and energy reduction, and how this can or will be done.

2002-2006
There was an upcoming discussion about the energy performance certificate, as it was implemented 1 October of 2006. The articles focus on what positive aspects that may follow, as the new requirement gives clear information on what needs to be achieved. The energy performance certificate is mediated as something positive, that will be applicable on all buildings from 2009 and on. There is also a presentation that the solution that reduces the energy need is simple and easy to use. Even though there are advanced technical solutions present, there is a large focus on simplicity, as by adopting simple methods, the energy need can be reduced. Some articles state that by overviewing what is already there in a building, and focus on energy efficiency in e.g. ventilation, more energy can be saved. By increasing the amount of available certification systems and guide lines to the practitioners, the magazines presents that it becomes easier to save energy in existing buildings. “Our building stock consists mostly of already existing buildings and the goal of the quality assurance is to enable them to achieve a healthy indoor environment with minimal energy usage”
(Husbyggaren, Issue 4, 2005, pp. 42)

Some articles highlight the increased responsibility as something stressful, while others focus on the concrete way to achieve these new goals. The trade magazines can be described to provide a positive image of these changes, as they highlight that some voluntary changes were made before the actual implementation.

2007-2010
Smart demands are discussed a lot in the articles, as they claim that is a need to increase this. Instead of focusing on simple solutions like the previous years, the magazines mediate the issue of doing things in the proper order; “We must always base our decisions with heart and brain by always prioritising the right energy reduction measure in the right order” (Bygg & Teknik, Issue 2, 2009, pp 69). There is also some concern that the energy saving technology is too advanced and does not give any energy reduction, due to it being too complicated. Hence, more simple solutions are still being requested by practitioners in the building sector, and

1 “Vårt byggnadsbestånd består till största delen av redan befintliga byggnader och målsättningen med kvalitetssäkringen är att dessa ska kunna uppnå en god innemiljö med minsta möjliga energianvändning.”
2 “Vi måste alltid grunda våra beslut med både hjärta och hjärna genom att alltid prioritera rätt energiåtgärder i rätt ordning.”
mediated in the magazines. Due to this demand, many solutions are suggested, e.g. easier measurement of energy consumption in different parts of a building and integration between different stakeholders amongst the building sector. By focusing on smart demands and easy solutions, there can be an energy reduction along with economical gain.

Due to the new energy reduction goals, along with the regulatory framework from BBR and the energy performance certificate, the positive effects of simple guidelines and check lists for projection are highlighted in some articles. By increasing the awareness of such check lists, the magazines claim that the building sector can work more easily to achieve the new goals. This is described as something positive and easy to use, which also goes in line with previous demands of simple solutions. It can also be seen as a way to make it easier to prioritise the right measures. Another issue raised in the magazines is to increase the accessibility to experts to help with the transition that is needed to achieve the goals of the energy performance certificate. The connection between guidance and guidelines from e.g. Boverket and energy experts, and the energy performance certificate, are highlighted during this time period, as there is a lot focus on how to actually use the energy performance certificate to achieve the goals of the EPBD. By focusing on the usage of the energy performance certificate, without giving it a positive or negative title, concrete suggestions on how to best use this new regulation are discussed in many of the articles. However, the new requirement can be seen as a positive solution; “Sweden is facing a major need of upgrading in the next decades and the energy performance certificate may also increase the demand for energy efficiency in existing buildings”3 (Bygg & Teknik, Issue 5, 2008, pp 31)

During this time period the trade magazines focus on descriptions with a somewhat positive attitude, as the new implemented goals are described as a must, and something has to be done in one way or another.

2011-2014
There has been a new definition of the EPBD (2010/31/EC) with more long term goals, and the magazines mediate this by accepting that “Now is the basic requirement that a building after amendment should have the same performance as a new building.”4 (Bygg & Teknik, Issue 2, 2012, pp 27). The magazines mediate these changes with absence of enthusiasm, as much work has already been done during the previous years to achieve these new requirements.

Passive houses are presented as a good solution to apply more long term thinking, as a passive house, compared to an ordinary house, consumes less energy. The magazines presents passive houses as a positive and easy available solution, to increase Sweden’s work towards the energy efficiency goals.

As during the previous years, guidance plays an important role in adopting the goals of the EPBD. By giving guidance to different projects, energy reduction can be secured during all the process steps, from planning to usage of a building.

In contrast to the two other time frames, during this period, a voice of concern regarding the positive aspect that has been mediated: “One is thus confused through the means of media to believe that the building sector has achieved significant energy saving. But the reality often

3 “Sverige står inför ett omfattande behov av upprustning de närmaste decenierna och energideklarationerna kan också komma att öka efterfrågan av energieffektivisering i den befintliga bebyggelsen.”
4 “Nu är grundkravet att en byggnad efter ändring ska ha samma prestanda som en ny byggnad.”
speaks another language...”5 (Bygg & Teknikk, Issue 2, 2014, pp 39). This is indicated by the magazines as that the usage of the existing suggested solutions and guidelines from e.g. BBR are not used in the right way to achieve the goals of the EPBD. Instead of focusing too much on new solutions, better understanding and application of the existing ones may be enough, along with no overly positive or negative calculations. There is also other indicators presented that the previous work towards the goals is not enough alone, as there is a problem with already existing buildings. Some articles stress that the members of the EU need to define new long term goals which also has to include how to proceed with the renovation of the existing buildings, to be more energy efficient. These thoughts are in line with what have been discussed during the last decade, but now there is an increased focus on the needs of precise guidelines, check lists and easily available information during the whole building process.

5.2.2 Defined conditions due to new EU directives and national requirements
This category presents the discussion of specific requirements, and how quality assurance and certification can help to achieve those.

2002-2006
Before the implementation of the EPBD, the magazines mediate the issue that there have to be more restrictions and more stringent requirements. “More than 90 percent of the expected buildings in the coming 50 years are already built”6 (Husbyggaren, Issue 4, 2006, pp 49). As existing buildings requires other measures than new buildings, to be energy efficient, the magazines stresses the need to further include the existing buildings in the more stringent requirements. Thoughts about how to apply the upcoming requirements are discussed, where several articles mention the need to include the already existing buildings. Another important aspect during this time period is to increase the quality assurance during the whole building- and usage process. To not waste the opportunity that new laws and requirements provide by opening up the question of quality is assured, the magazines stresses the need to include this in the requirement, and in the same time assure that the quality assurance affects both existing and new buildings.

2007-2010
The requirements that followed the EPBD and the energy performance certificate are described as a good way to proceed, as the development is now not only dependent on engaged developers or passive houses, but becomes something more generally perceived that everyone has to follow. “Both the authorities and the market places demands on energy efficiency...”7 (Husbyggaren, Issue 3, 2010, pp 14). The general image presented is that these requirements are the right way to head, and that they will be here to stay. However, the magazines claim that requirements alone may not lead to energy reduction. There is also a need for knowledge and guidelines, as described in the previous part. Due to the somewhat difficult process that follows the implementation of the energy performance certificate, the government and municipalities have given dispensation for buildings that they will not have to pay a fine, if the energy performance certificate is ordered during 2009. To tackle this, there has been an increase in certification options, which cost money but is mediated as a good thing.

5 “Man förleds därmed via media att tro att bostadssektorn uppnått betydande energibesparingar. Men verkligheten talar dock ofta ett annat språk...”
6 “Mer än 90 procent av de byggnader som förväntas finnas om 50 år är redan byggd.”
7 “Både myndigheter och marknad ställer krav på energieffektivitet...”
Along with the previous time period, there is a discussion of quality assurance in existing- and new buildings. A problem raised is that due to this, the new buildings are more complicated to build than old style houses, according to the articles. The magazines mediate the picture that by using certification as a quality assurance method, this can be overcomed, as well as more generally applied.

2011-2014
During this time period, there is a lot focus on requirements that need to be followed. As the implementation of the EPBD and the energy performance certificate have been present for a while, the requirements generate advancements towards the goals. There is also available information on how to further adopt a building to increase the energy performance even more, and this is voluntary. “The requirement for reduced energy usage is also an important aspect of environmental certification of buildings – something which greatly promotes the development of energy efficient buildings.”

VVS-Forum present the image of that much can be done within the sector, and thus the magazine stresses the need for more stringent laws and requirements, as “The government seems to have listened to some branches of industry … and points out that this does not apply to the building sector who stands united in wanting tougher energy requirements.”

This time period can be defined with a positive attitude towards the existing requirements, and the certification systems are in employment and working as they are supposed to. However VVS-Forum raises the issue of if the goals are ambitious enough.

5.3 Possibilities that follows with new requirements
This theme focuses on the positive prospects of the possibility to develop new methods and ways of thinking when something clearly has to be done.

5.3.1 Opportunities and possibilities
This category catches the optimistic view of what is mediated as happenings and what has happened during the time periods. Now is the time to invest money, be ambitious and develop new ways of saving energy and reduce the impact on the environment.

2002-2006
There is a general agreement that can be seen when reading the articles, that there can be made a lot of energy saving in the building sector in Sweden, without risking the quality of the indoor environment.

The upcoming regulations are mediated as a winning concept, as it is presented to boost Sweden's energy reduction work. There is also a focus on a building’s lifetime, and that it does not only need to be more energy efficient, but the building materials ought to be recyclable and that a building should to have a low impact on the environment. Calculations of a life cycle analysis are also described as something that strengthens the argument that

8 “Kravet på minskad energianvändning är också en viktig aspekt när det gäller miljöcertifiering av byggnader - något som i hög grad driver på utvecklingen mot energieffektiva byggnader.”
9 “Regeringen verkar ha lyssnat på vissa industrigrenar. … och pekar på att detta dock inte gäller byggbranschen som är enig om att vilja ha tuffare energikrav.”
energy efficient method is an investment rather than an expense. Money can be saved by investing in energy saving measures. One main issue presented is the investment of environmental- and energy efficient technology. There can also be savings by building a low energy house, as the energy price was assumed to rise. The choice of building technique is also important “We also use an environmental friendly technology which is not more expensive than conventionally built houses.”10 (Husbyggaren, Issue 5, 2006, pp 57). By developing such methods, the magazines claims that Sweden can take a leading role and earn money by exporting these methods, and be a protagonist towards more energy efficient buildings. To stimulate such developments, there is a request of finalisation from the government, and labeling of houses as environmental friendly.

This time period can be summarised as an optimistic period, where the focus lies on long term thinking, and a view that the environment is important to preserve.

2007-2010
The benefits of adopting the new techniques, is strongly presented during this time period, as it both reduces the GHG emissions and saves money, as there is less need for heating. This goes for both conventional houses and passive houses. The magazines mediate that both existing and new buildings have a lot of energy saving potential “The potential for energy saving is in many cases 50 percent or more...”11 (Bygg & Teknik, Issue 3, 2008, pp 65). These measures are described as affordable for almost everyone, thus there is a lot of energy saving potential that can be made, along with the energy performance certificate as a way to secure the future. There are articles that present the benefits of the energy performance certificate, and that in half of the cases, the suggested energy saving measures are actually applied, and this may hopefully strengthens the optimistic thinking in the building sector.

During this time period, the magazines focus on the benefits of investments in both passive houses, as well as optimising conventional building. There is money to be saved, along with less energy usage, and thus less impact on the environment.

2011-2014
The role of passive houses as a new ambitious way to achieve the energy efficiency goals is raised more frequently during this time period. This goes hand in hand with presented image of the need of more efficient building techniques that include several energy saving aspects, such as insulation and ventilation, and also include the usage of renewable energy sources. There can be a lot of energy saving in both household- and office buildings, by focusing on the heating and using concrete as construction material. The general opinion is described as positive toward these changes.

VVS-Forum claims that by further increasing the adaptation actions that the HVAC- and plumbing section may take, there is an opportunity to reduce the energy need ”- It is possible to save 30 percent in most buildings HVAC systems. This means that there is potential to reduce the world’s energy use by 6 percent,”12 (VVS-Forum, Issue 2, 20120, pp 66). Several articles focus on this potential, and also highlight the importance to work towards nearly ZEBs, as is also the requirement of the recast of the EPBD.

10 "Dessutom använder vi en miljövänlig teknik som inte är dyrare än konventionellt byggda hus."
11 "Potentialen för energibesparing är i många fall 50 procent eller mer..."
12 "Det är möjligt att spara 30 procent i de allra flesta byggnadens VVS-system. Det innebär att det finns potential att reducera världens energianvändning med 6 procent,"
In contrast to the two previous time periods, the issue of actual solutions in a technical manner is more common. This may be due to that these methods were developed during the previous years.

5.3.2 New thinking, innovation and education
This category will highlight the focus on knowledge and innovation, how this can bring further expertise and increased awareness into taking new kinds of actions.

2002-2006
During this time period, the magazines mediate the issue of a lack of knowledge and experience that will occur after the implementation of the EPBD. By addressing this upcoming problem before it will happen, the magazines tries to provide the readers with the image that by focus on scientific research and further educate the practitioners in the building sector, this required knowledgebase can be achieved.

2007-2010
As customers have an influence on how much is done towards energy efficient buildings, the magazines provide the readers with the image that the customers need to be further informed of the benefits of e.g. passive houses when it comes to achieving the energy efficiency goals. They may be a bit more expensive to buy, but over time the building becomes cheaper to use. According to some articles, by also using the energy performance certificate as an opportunity to increase the knowledge amongst the estate owners, more action towards implementation of energy saving technologies ought to happened. “Knowledge and experience grows with every passive house being built”\(^{13}\) (Husbyggaren, Issue 5, 2008, pp 30). The magazines stresses the need to further develop suitable methods to achieve this, by focusing on the building process as a whole and on sustainable building materials, along with educated experts to give a third person’s view upon a project.

This period is defined by a strong focus on gaining more experience and knowledge, and spread this among several stakeholders in the sector.

2011-2014
The magazines mediate the picture that passive houses are a good innovation that can take the leading role, and inspire modification of conventional buildings. Even though a modified conventional house may not be exactly as efficient as a passive house, it is still a huge step in the right direction. To be able to achieve even further development of buildings, the magazines stresses the need of increased knowledge and motivation amongst all practitioners in the building sector. As new technologies become available, there is a need secure their quality and efficiency, which is done in several projects.
As there is a large portion of houses already built, cultural heritage buildings become an important focus, as they also need to be more energy efficient. During this time period, this is highlighted as an opportunity to further develop modification methods, and both increase and spread the knowledge of how to do this. “It is important to spread the knowledge of good practices so that everyone can choose them and work towards the same goal.”\(^{14}\) (Bygg & Teknik, Issue 2, 2011, pp 38).

To summarize this time period, there is a lot focus on knowledge and the benefits of spreading

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\(^{13}\) ”Kunskap och erfarenhet växer med varje passivhus som byggs.”

\(^{14}\) ”Det är viktigt att sprida kunskap om goda lösningar så att alla kan välja dessa och verka mot samma mål.”
the awareness of available techniques.

5.3.3 Indoor quality and easily installed and used appliances
This category represents the need for comfort and simple solutions when developing for the future.

Easily used appliances and energy usage monitors are discussed as a tool to help inhabitants reduce their energy need, but not reducing the living comfort, e.g. less heating. A question is also raised in the magazines as “The profit trails is already established, and the industry has absolutely no motivation to compromise on something when many are already happy. But IS everyone happy?”15 (Husbyggaren, Issue 4, 2014, pp 11). Due to this uncertainty, several articles stress the importance of securing the high standards for indoor quality. To make everyone happy, the magazines suggest that there should be an increased focus on securing the application of easily installed and used appliances.

5.4 Hardship and concerns of uncertainties that follows with new laws and goals

This theme is about the negative presentation and voices of concerns that has been mediated through the years, as a continuation of new laws and goals. There are already existing problems, and the previous presented positive prospects of future solutions may not be real or applicable.

5.4.1 The laws does not secure that energy saving is happening
This category presents the concerns that it is too late to act now as some articles states that the 2020 goals cannot be achieved by the means of today’s progress. There are risks involved, as new technologies may not be functional, but old ones are. The changes are also too expensive.

2002-2006
During this time period, the magazines mediate the issue of concern and the feeling of being forced to take action, due to the upcoming implementation of the EPBD. As new ways of using insulation and ventilation is needed, there is no certainty that these methods may not bring any negative effects as well. Several articles stress that the indoor environment might be in danger if there is too much effort placed in energy efficiency only. Another concern is that the upcoming requirements are not stringent enough, and by this it becomes impossible to reach the long term goals. This is considered as a lack of motivation, and it also strengthens the negative feelings towards the EPBD presented by the magazines.

Before the EPBD nothing had changed since the late 1970s. There is also a fear of little development “When you look at today's building technology around us one can only think that the development has gone back to the levels of 1960s and 1970s.”16 (Husbyggaren, Issue 5, 2006, pp 56). Pre EPBD there was also no requirement to make changes, and thus a conflict in interest between the landlord and tenants is a problem. Some articles raise the fear

15 “Vinstleden är redan etablerade, och branschen har ingen som helst motivation att rucka på något där många är nöjda. Men ÄR alla nöjda?”
16 “När man ser på dagens husbyggnadsteknik i vår närhet så kan man bara tycka att utvecklingen har gått tillbaka till 1960- och 1970-talets nivå.”
of false presentation of a building’s energy performance, due to this. To tackle this problem, one suggestion is to reduce the initial cost of energy saving changes, and spread it over several years.

This time period reflects the lack of requirements, and thus the risks of falsification and no development.

2007-2010
As during the previous time period, the magazines mediate that there is a concern regarding the requirements lack of need to implement any suggested improvements. There is only a need to make an energy performance certificate. The magazines states that this will lead to failure of reaching the 2020 goals. The risk of a falsified presentation of a building’s energy performance is still present, along with risks of moisture and mold in a building where changes are actually implemented.

Since the introduction of the energy performance certificate, the problem with different calculation methods to measure buildings energy consumption is strongly stressed. The calculations seldom represent the reality, and thus present either too negative or too positive energy performances. This further increases the skeptic image that is given to the practitioners. Along with this, there is also a lack of certificated experts to help speed up this procedure of calculating the required energy performance certificate. Even the energy performance certificate is strongly criticised “The energy performance certificate in its current form, has virtually no value and can therefore be considered as a zero return.”17 (Bygg & Teknik, Issue 5, 2009, pp 68).

Another issue mediated is the large focus on passive houses as the only solution. The magazines claim that history proves that by focusing on one solution only, development of optional techniques is prevented. This makes the whole system more static and prevents innovation.

To summarise, this period follows the thoughts of the previous years, but also raises the risk with energy performance calculations, as they often do not represent the reality, and may thus prevent energy saving actions to take place.

The only negative picture promoted by the VVS-forum in 2008 was that some articles mentioned that the energy performance certificate and current laws were not enough, that the sector has so much more potential, and thus the laws ought to be more stringent, to achieve what is in line with the green focus mentioned above. “ – There is a lack of requirements regarding the implementation of measures.”18 (VVS-Forum, Issue 8, 2008, pp 66).

2011-2014
As energy saving adaptions have been made during several years, the concern of “... public statistics and the results of many energy projects show that actual energy savings are considerably less than expected or have been missed out completely.”19 (Bygg & Teknik, Issue 2, 20014, pp 37) has been raised in the articles. The available solutions are also very expensive, and some articles raise the concern that new methods and technologies are not

17 “Energideklarationen i sin nuvarande utformning, har i stort sett inget värde och kan därför betraktas som en nolldeklaration.”
18 “...Det är brist på krav när det gäller genomförandet av åtgärder.”
19 “...visar offentlig statistik och resultaten från många energiprojekt att den verkliga energibesparingen är avsevärt mindre än förväntat eller har uteblivit helt.”
approved and may damage buildings severely. The rent is supposed to support renovations in existing buildings, but it is not sufficient and conflicts with low rental increases.

This time period follows the line of the previous ones, but also highlight that there has been none to just little energy savings.

5.4.2 Risks and hindrances

There are several hindrances and worries about different risks raised during the years. This category will focus on what the magazines mediate as the major obstacles.

One major hindrance mediated by the magazines, is the lack of motivation from the practitioners, to adopt new technologies, even though many studies show that they are very cost efficient on a long term perspective. There is also a lack of holistic thinking, including every step in a building process, which in the end risks the quality of the building.

As there are no clear directions given by authorities of who is responsible to make the actual implementations, the magazines raise the awareness of the risks that this brings. Due to the fact that “...an obscure legislation can open up for interpretations which directs the work in a completely different, and wrong, direction than was intended.” \[20\](Husbyggaren, Issue 2, 2010, pp 64), the magazines mediate their concern about the lack of clear a definition on how to actually proceed. This also leads to insecure project leaders, which makes the building process slower, and with less assured quality.

VVS-Forum also catches up on the uncertainty of that the suggested improvements given by certified energy performance experts do not have to be applied. Due to the uncertainties with the energy performance certificate, the magazine states that property owners become somewhat concerned of how to follow the new requirements. As the energy performance certificate needs more educated certification experts, some concern regarding “We need more energy experts and it is difficult to recruit new ones because many lack adequate basic knowledge.” \[21\] (VVS-Forum, Issue 10, 2008, pp 58), was raised.

As the work towards energy reduction has proceeded, the lack of a holistic view becomes prominent, as there has been none to little actual energy reduction. This may be due to “Sometimes the subsystems simply do not fit in with the bigger picture,...” \[22\] (Bygg och Teknik, Issue 2, 2014, pp 37).

As passive houses and nearly zero buildings are perceived to be more common, the problem with the confusion of an exact definition of what a passive house or nearly zero building are, is raised. There is a need to find a common way to use the definition both within Sweden and the EU, to make the knowledge exchange easier.

\[20\] “...en oklar lagtext kan öppna upp för tolkningar som sedan leder arbetet i en helt annan, och fel, riktning än vad som var meningen.”

\[21\] "Det behövs fler energiexpeter och det är svårt att rekrytera nya på grund av att många saknar tillräcklig grundläggande kunskap."

\[22\] "Ibland passar delsystemen helt enkelt inte ihop med helheten,..."
5.5 How to achieve energy reduction without losing the importance of individual differences and environmental impact

As every building and inhabitant is different, consumes different amounts of energy and thus impacts the environment differently, this needs to be considered when addressing energy efficiency. This theme will present what is suggested to achieve this, and still be able to reach the energy reduction goals, and not destroying the environment further.

5.5.1 The bigger picture and importance of early planning

Many articles raise the need or the lack of an overview over a buildings whole lifespan and the importance early planning and follow up, as every building is different. This category will dive into this matter further.

2002-2006
The magazines presents the picture of that there is a lack of an overview of the impacts to a building during its lifespan, and rigorous early planning is highlighted, as these hindrances can, or will, often lead to less energy saving and problems during a construction, as the bits do not fit together. However, in contrast to this, there are also thoughts of that there needs to be an increased focus on buildings as singular objects, different from other buildings, as the upcoming energy performance certificate needs to be building specific. By increasing this kind of focus, and still maintaining a holistic view in the early planning phase, the energy performance certificate is mediated as something to help increase the energy efficiency.

As it is still early on in the energy efficiency project, there are hopes that problems may be overcomed.

2007-2010
Even though concerns regarding the lack of an overview were mediated during previous years, there seems to have been no change, as many articles still raise the same questions of if a holistic picture still maintains the importance of that every building is different. In addition, as passive houses become more common, passive houses and conventional houses are being compared more frequently. The magazines address the issue of different environmental impacts of different kinds of buildings. Due to this, there is a problem to focus on pure energy usage only, as a more holistic perspective needs to be adopted and include several impacts on the environment. “This applies to all buildings being constructed today, but is more important in highly energy efficient buildings.”23 (Bygg & Teknik, Issue 5, 2010, pp 14).
This time period also introduces the increased need for a follow up, as the energy performance certificate does not guarantee that adaptations are implemented. By increasing the amounts of follow ups that assure that the cost efficient solutions provided with the expert who performed the measures, along with subsidies for well executed adaptations, more action is assumed to happen.

This period is defined by the increased holistic thinking, following the previous years, but now also including passive houses.

23 "Detta gäller alla byggnader som uppförs idag, men är viktigare i mycket energieffektiva byggnader."
During this time period the magazines further mediate the importance of holistic thinking, which they claim is even more important when adapting towards ZEBs, which ought to have minimum energy consumption and also a low impact on the environment: “It is obvious that the building sector is facing a major adjustment.”\(^{24}\) (Bygg & Teknik, Issue 5, 2012, pp 34). One problem mentioned that is not included in the planning is material provisioners, which could easily be solved by increasing the early planning. To minimize the risk frauds and lies, it is also important that the building inspector has no relation to insurance- or the building company. By adopting early planning and a holistic view, this risk can be minimised.

During these years, the focus on early planning has risen, and by adopting more early planning, a more comprehensive view can be achieved, which was asked for over the previous years.

5.5.2 Energy saving over time and hope for the future
This category will focus on how the magazines mediate the energy usage and reduction history, as a consequence of implemented laws, and where it will head next.

2002-2006
As buildings consumes a lot more energy during the usage phase, compared to the building- and demolishing phase, the magazines claims that there is a need to constantly upgrade the technology within a building, to be able to make up for the high energy consumption in the early phase. This seems to be a problem as “[... and since the mid- 1980s the energy efficiency has not improved.”\(^{25}\) (Husbyggaren, Issue 5, 2003, pp 20). During this time period, a lot of the energy focus is on what is going to happen in the coming years. “The sector shall between 2000 and 2010, through voluntary measures, reduce the energy consumption per square meter by 10 percent and the use of fossil fuels by 20 percent.”\(^{26}\) (Husbyggaren, Issue 5, 2005, pp 8), which represents the magazines trust in the upcoming changes that will follow the implementation of the EPBD.

2007-2010
Several projects for energy efficiency have been done during the last decades “[... but have not received the boost that one might have expected until recent years.”\(^{27}\) (Bygg & Teknik, Issue 2, 2009, pp 76). The magazines states that the awareness of the increased environmental problems has become more general knowledge, the work towards energy efficiency and resource efficient buildings has, or is hoped to, increase. A lot of hope is placed upon the possibilities of passive houses.

Even though some years have passed since the last time period, the same hope for the future, and lack of actual change, are discussed. However, some positive changes can be seen.

2011-2014
During this time period the magazines raises the issue about already existing buildings, as “[... the energy performance of apartment buildings from the 1950s and other older buildings is

\(^{24}\) ”Det är uppenbart att byggningsbranschen står inför en stor omställning.”
\(^{25}\) ”... och sedan mitten av 1980-talet har energieffektiviseringen inte förbättrats.”
\(^{26}\) ”Sektorn ska mellan åren 2000 och 2010, genom frivilliga åtgärder, minska energianvändningen per kvm med 10 procent och användningen av fosila bränslen med 20 procent.”
\(^{27}\) ”... men inte fått det uppsving som som man kanske skulle trott förrän de senaste åren.”
poor.”28 (Husbyggaren, Issue 2, 2012, pp 42). Compared to the other two time periods, there is less comparison with the last decades. Instead there is a common consensus that “The building sector accounts for about 50 percent of Sweden’s total energy usage.”29 (Bygg & Teknik, Issue 5, 2012, pp 40).

5.5.3 Importance of reducing the impact on the environment
This category will describe the raised awareness that one cannot only focus on energy reduction in buildings, but also needs to consider a broader perspective, such as what energy sources are used, and how they impact the environment.

2002-2006
Early thoughts of the need for renewable energy are mediated during this time period, as the magazines claims that when the need of energy efficient buildings increase, there also has to be a focus on where the energy comes from. By doing this, the practitioners are given information of the importance to focus on minimising their GHG emissions. There are even thoughts of “In many cases, it might be more beneficial to start by changing to a more environmentally friendly energy source than making buildings more energy efficient.”30 (Husbyggaren, Issue 4, 2005, pp 42). Thoughts of less resource intense constructions are also starting to develop. One way to also reduce the impact on the environment, is to adapt new buildings to stricter energy consumption standards, that helps achieving a less energy consuming building from the beginning. Once a building is already there, it is expensive to change e.g. the building envelope.

A lot of focus is on minimising the impacts on the environment, rather than energy efficiency only.

2007-2010
Compared to the previous time period, there is an increased focus on only CO2 emissions instead of GHGs, and energy sources. District heating is promoted as a beneficial heating method rather than energy, as the CO2 emissions from the latter is much greater. “By using environmentally friendly district heating for a normal construction site establishment the CO2 emissions can be reduced by about 90 tons over a two year period.”31 (Husbyggaren, Issue 3, 2008, pp 46-47). Many articles stress that there needs to be a change regarding the focus on only energy efficiency, as a good insulated and ventilated building may still not be environmental friendly if the energy in the building come from unsustainable resources. In line with previous years, there is a lot focus on energy sources. However, CO2 is the most prominent GHG gas discussed, and the fear of environmental problems is mediated.

This focus could also be found in VVS-Forum. “We have no more than 10-15 years left, and then you must reverse the trend of reduced emission in order to halt a global environmental catastrophe.”32 (VVS-Forum, Issue 1, 2008, pp 46).

28 “... energiprestandan hos flerbostadshus från 1950-talet och andra äldre hus är dålig.”
29 “Bostadssektorn svarar för cirka 40 procent av Sveriges totala energianvändning.”
30 “I många fall kan det till exempel vara mer fördelaktigt att börja med att byta till en mer miljövänlig energikälla än att göra byggnader mer energieffektiva.”
31 “Genom att använda miljövänlig fjärrvärme för en normal byggnadsetablering minskar CO2-utsläppen med cirka 90 ton under en tvåårsperiod.”
32 “Vi har högst 10-15 år på oss, sedan måste trenden vända med minskade utsläpp för att kunna stoppa en global miljökatastrof.”
2011-2014
Due to buildings becoming more insulated, there is a new risk mediated in the magazines. When a building is not using heating, e.g. during summer, there is a risk of getting a too high indoor temperature, thus reducing the indoor quality. Hence, there cannot be a green focus only, as human health is also important.
During this thime period, the magazines presents less issues regarding GHG emissions, and more on the responsibility of companies and consumers to buy green energy and highly efficient energy. Sweden is described to have a lot of potential of producing green energy, and a long term goal may even be to sell green energy to neighbour countries, and thus reduce CO₂ emissions.

Even though there are risks for human health, the general attitudes in the magazines are positive, as there is a lot of potential in Sweden to increase the usage of green energy and renewable energy sources.

5.6 Possible solutions and change in behavior

When addressing the different obstacles to be able to achieve the 2020 goals, it is important to mediate possible solutions. The magazines also address the need of changed behavior and living pattern amongst buildings inhabitants. This theme will focus on this.

5.6.1 Available technical solutions

This category focuses on what solutions are already there, and what can be done in a building, and how this has changed as new laws promotes the productions of new and more efficient technologies.

2002-2006
The magazines stresses that there is a need to promote the usage of the best possible available technological solution. The benefits of proper insulation, good heating system and the problem with poor windows are raised during these years. By also increasing the accuracy of the planning, a lot of money can be saved later on.

2007-2010
Further implementation of available solutions is promoted. “Technology to achieve highly energy efficient buildings exists today, ...” (Bygg & Teknik, Issue 5, 2010, pp 12). An increased rate of renovation is a suggested solution in the articles, as it also opens up availability to implementing energy saving methods.
The increased use of floor heating is mediated. However, the magazines claims that as the technology becomes more advanced, the energy usage for floor heating has been reduced over the last decades. Still, floor heating is described as more energy consuming than ordinary radiators.

2011-2014
There is still a focus and discussion of increased performance of technological solutions, such as heating, insulation, windows, ventilation and indoor temperature, in the magazines. As passive houses are perceived to become more common, the magazines presents that the

33 "Teknik för att nå mycket energieffektiva byggnader finns idag...."
increased insulation ability of windows, particularly in passive houses, has both benefits and disadvantages. “The sun can only heat up a room through the windows and thus provide heating at no additional cost, which is welcomed in the winter but can be uncomfortable in the summer.”\(^{34}\) (Bygg & Teknik, Issue 5, 2014, pp 37).

During this time period, there is a lot of discussion about the need to renovate existing buildings. This is often described as an opportunity to introduce energy efficient technologies and solutions. In this line of thinking, the building material is also important, as the renovation ought to result in long lasting benefits, with a minimal impact on the environment.

As the adaption towards the EPBD continues, this time period is defined the availability of new and efficient technologies, especially for passive houses, and how to use the need of renovation in old buildings as an opportunity to implement changes.

5.6.2 Responsibility of individuals

Everyone needs to do some change and take action in order for change to appear, and every person, inhabitant, builder and property owner is responsible for this to happen. Everyone has a connection to a building of some sort. This category will present how the magazines mediate this issue, and how it differs as new laws and goals are implemented.

2002-2006

As there are no requirements to make changes, the magazines mediate the picture that the authorities, government and building owners need to take a leading role towards change. Due to a lack of this role model, concerns are raised as on what level a private person is responsible. “Surely the responsibility cannot lie on an unenlightened individual...”\(^{35}\) (Husbyggaren, Issue 5, 2006, pp 56).

The magazines states that buildings where the inhabitants live longer tend to not be upgraded in the same frequency as buildings where new inhabitants move, as changes are often made when and before new inhabitants move in. This is described as an effect of the lack of social and economic status for energy efficiency modifications. The only upgrades that increase the status are solar panels, as they can be seen by all.

The lack of clear definition on who should to take the first steps towards change is prominent in the magazines during these years, but role models are suggested as one way to proceed.

2007-2010

Several articles mentions that the responsibility to order an energy performance certificate lies upon the property owner, and the responsibility to suggest changes and present the investment cost, lies upon a certified energy performance expert. As mentioned in several other categories, there is a substantial absence of requirements to actually take responsibility further and implement the suggested changes, provided by the energy performance certificate expert. “But as so often when responsibility is shared one would think that someone else grabs it and so it tends to be forgotten.”\(^{36}\) (Husbyggaren, Issue 5, 2007, pp 32). There are also thoughts of “Here comes the classic term “customer first” in. The customer controls the development.”\(^{37}\) (Husbyggaren, Issue 7, 2010, pp 14). Due to this, the magazines mediate that there is still a

\(^{34}\) ”Solen kan bara vara upp ett rum genom glas och på så sätt tillföra uppvärmning utan ytterligare kostnader, vilket är välkommet på vintern men kan vara obehagligt på sommaren.”

\(^{35}\) ”Inte kan väl ansvaret ligga på en okunnig privatperson...”

\(^{36}\) ”Men som så ofta när ansvaret är delat så tror man att någon annan tar tag i det och så tenderar det att bli bortglömt.”

\(^{37}\) ”Här kommer det klassiska uttrycket "kunden i centrum" in. Kunden styr utvecklingen.”
conflict of who should take responsibility. There are also complaints that there is no single authority that has the ultimate responsibility for the energy performance certificate. During this time period, there is an upcoming issue of how the living and behaving patterns of the inhabitants of a building effects the energy consumption. The magazines claim that similar houses can have used different amounts of energy due to living patterns and habits. “It is imperative that you get the residents involved in the rehabilitation of a housing area and causes them to feel responsible for the area's operation and maintenance.”

Therefore, the responsibility cannot be placed only on role models and good examples, as promoted during the previous years.

The conflict of who is responsible is very prominent during this time period, and can be said to actually hinder the progression.

2011-2014
As with the previous time period, the importance of inhabitant’s behavior and living patter is in focus. Behaviours and habits largely affect the energy consumption, especially regarding indoor temperature and water usage. “These factors together may signify 10 000 kWh/year between low- and high-consumers.”

5.6.3 Importance of knowledge about energy efficiency
By increasing communication, information and interest in the matter, the magazines present the assumption of that the motivation amongst people ought to increase and thus leading to action towards change.

To be able to achieve energy efficiency, communication and cooperation is important. “Interprofessional cooperation was also a key to success in reaching the goal of pushing energy consumption.”

In line with what has been mentioned in previous themes, early planning, communication may be a method to achieve energy efficiency. Some articles states that communication opens up where the weakest link of the chain is, and by using communication as a method to strengthen the chain, every practitioner included gets their saying, and exchange of knowledge can happened. Thus, by increasing the communication, the weakest link in the construction chain can be strengthened.

The importance experience amongst the practitioners in the building sector is raised in the magazines, as the energy performance certificate demands experience. Project leaders get an increased role, as new technologies are implemented. The perceived increased interest in passive houses is also described as a safe way to proceed.

In line with increased responsibility of the inhabitants, the magazines stresses that it is important to educate and motivate the inhabitants of why an energy efficient renovation has taken place and how to assure that the measures are not in vain. “For example, a building which in itself is very well insulated consumes large amounts of energy for heating, if the windows are constantly kept open by the inhabitants.”

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38 ”Det är av yttersta vikt att man får de boende engagerade i upprustning av ett boendeområde och får dem att känna ansvar för områdets drift och skötsel.”

39 ”Dessa faktorer kan tillsammans betyda 10 000 kWh/år mellan låg- och högförbrukare.”

40 ”Samarbetet mellan yrkesgrupperna blev också ett nyckelord för att lyckas nå målet med att pressa energiförbrukningen.”

41 ”Exempelvis kan en byggnad som i och för sig är mycket välisolerad konsumera stora mängder värmeenergi, om fönsterna ständigt hålls öppna av de boende.”
5.7 Summary

Since the implementation of the EPBD, the trade magazines focus on several different matters, ranging from the opportunities that new legislations bring, to what hindrances they also introduce. There is also the introduction of environmental awareness, raised as an issue in the magazines. What needs to be stated further, which is not prominent enough in the above sections, is that VVS-Forum had, in contrast to the other magazines, a general positive attitude, where the major concern was that the laws and goals were not ambitious enough. This may be due to that this section of the building sector has the greatest energy performance saving, as was introduced before.
5.8 Frequency count

This section will briefly present how the number of articles, themes, categories and codes change over the years. This will hopefully further increase the knowledge of not only what is discussed, as described in the previous section, but also further immerse into how this has changed, to help come to a conclusion of why this is happening and to what consequences. For the frequency count, the articles from VVS-forum were not included due to that they were only collected for two peak years. The themes, categories and codes that were found in the other two magazines were counted. Every time a code was noted is counted as one. For the categories, this consists of a grouping of codes, every time every grouped code appeared counts as one. The same procedure was done for counting the themes. This means that the numbers that are presented in the tables represent how many times each group’s codes appeared. This section will answer research question two.

5.8.1 Articles over time
The different amount of articles over time is presented below.

![Spreading of articles over time](image)

**Figure 3.** This figure shows the amount of articles found over time. Only the articles used for the analysis are visible in this figure. The largest peaks can be seen in 2008 and 2012, where 12 articles were found, followed by a minor peak in 2010, where 9 articles were found. An increase can be seen from 2002-2003 and the next coming years. However, since the amount of articles increased in the early years, there is no visible increase over time seen in the graph.

This concludes that there has been an increased focus in energy efficiency matters since 2002 in the building trade magazines, but it did not increase overall since introduced, on any year but three peak years. Therefore conclusions could be drawn that the magazines have increased the presentation of energy efficiency as an issue to think about since the start of EPBD, but
not increased their focus when no new laws are introduced.

5.8.2 Themes and categories over time
During the years, different issues have been mediated by the magazines. This section will present how this differs over all the years summarised, as well as how it differs between the three time periods of 2002-2006, 2007-2010 and 2011-2014.

**Table 1. As can be seen in this table, the themes are somewhat equally mentioned during the whole time span.**

<table>
<thead>
<tr>
<th>Theme</th>
<th>Number of times mentioned</th>
</tr>
</thead>
<tbody>
<tr>
<td>How to achieve energy reduction without losing the importance of individual differences and environmental impact</td>
<td>228</td>
</tr>
<tr>
<td>Possibilities that follows with new requirements</td>
<td>206</td>
</tr>
<tr>
<td>Possible solutions and change in behavior</td>
<td>191</td>
</tr>
<tr>
<td>Actions of authorities; laws, goals, requirements and certifications</td>
<td>179</td>
</tr>
<tr>
<td>Hardship and concerns of uncertainties that follows with new laws and goals</td>
<td>178</td>
</tr>
</tbody>
</table>

As the themes are given somewhat equal focus, it would also be of interest to see if it differs over the time periods.

**Figure 4. As can be seen in this figure, during the time period of 2002-2006, the most common themes mediated have a focus of the positive possibilities that follows with the coming implementation of new requirements along with the picture of that it is important to consider every building as different and minimize the environmental impact. 2007-2010 focuses a lot on goals and requirements, in comparison with the other time periods. During**
This period, the EPBD was implemented in Sweden, and there were new requirements. The issues mediated by the magazines was considered as more equally important during this time period, as the focus on different issues are more equally spread. 2011-2014 has the largest focus on how to proceed and solve the problems, as well as a focus on the responsibility and behavior of different individuals.

The different focus areas during the different time periods are clearly visible. The amount of space which is given to the themes can be traced back to what have happened during the years. 2002-2006 did not have any new requirements, and thus the focus was rather on the benefits of that energy efficiency has to proceed to secure the future. This is assumed to be due to, what the magazines also mediated, that it was not necessary to take action until later time periods. As the EPBD was implemented in 2006, the issues of the benefits and hindrances, as well as the actual requirements, were given more space during 2007-2010, as it was something new that was happening. As there was a lot that happened during the middle time period, regarding implementation of new laws, the magazines mediated an equal spreading of the found issues. During the last time period, the EPBD and the revision of the EPBD had been made, and several years had been available for development to happen. However, the focus on the theme that represent responsibilities and actual suggestion on how to make development happen, were given most focus. This may indicate that the magazines wants to mediate the image of that it is important to take action and claim responsibility for this to happen.

Table 2. This table presents how common each category is over the whole timespan. As can be seen, the largest focus is on the negative aspects that laws alone are not enough, general thoughts of what actions must be taken after the implementation of the EPBD and national laws, the positive image of what opportunities and possibilities that may follow after the implementation of the new laws and what available technological solutions there are.

<table>
<thead>
<tr>
<th>Category</th>
<th>Number of times mentioned</th>
</tr>
</thead>
<tbody>
<tr>
<td>The laws does not secure that energy saving is happening</td>
<td>146</td>
</tr>
<tr>
<td>Thoughts of actions following the implementation of the EPBD</td>
<td>136</td>
</tr>
<tr>
<td>and national laws and goals</td>
<td></td>
</tr>
<tr>
<td>Opportunities and possibilities</td>
<td>135</td>
</tr>
<tr>
<td>Available technical solutions</td>
<td>128</td>
</tr>
<tr>
<td>The bigger picture and importance of early planning</td>
<td>93</td>
</tr>
<tr>
<td>Importance of reducing the impact on the environment</td>
<td>79</td>
</tr>
<tr>
<td>New thinking, innovation and education</td>
<td>62</td>
</tr>
<tr>
<td>Energy saving over time and hope for the future</td>
<td>56</td>
</tr>
<tr>
<td>Defined conditions due to new EU directives and national</td>
<td>43</td>
</tr>
<tr>
<td>requirements</td>
<td></td>
</tr>
<tr>
<td>Responsibility of individuals</td>
<td>39</td>
</tr>
<tr>
<td>Risks and hindrances</td>
<td>32</td>
</tr>
<tr>
<td>Importance of knowledge about energy efficiency</td>
<td>24</td>
</tr>
<tr>
<td>Indoor quality and easily installed and used appliances</td>
<td>9</td>
</tr>
</tbody>
</table>

Since there is a gap between the four most common categories and the others, the top four can be considered as what magazines mediate as the most important issues to think about over the whole time period.
Figure 5. This figure shows how the focus on the top four categories changes during the three time periods. During 2002-2006, the magazines mediated the image of opportunities and possibilities that would follow after the implementation of the EPBD in Sweden, along with the issue of the negative aspects that the same laws might bring. Between 2007 and 2010, this changed to being overall negative, followed by the focus on how to practically make the necessary adaptations. During 2011-2014, the biggest focus was on how to use the technological methods that are already available, to improve the energy efficiency in buildings.

As could be seen in Figure 4, this also highlights that there has been a change in what the magazines mediate as the most important issues over the years. It started off with a positive image, until the requirements that followed the implementation of the EPBD, were actually present. This lead to that the magazines gave more space to the negative attitudes, to end up with less discussion on whether the new requirements are good or bad, but rather focus on how to take action and make things actually happen.
6.0 Discussion

This section will discuss the findings from the result section, and tie the findings back to the study’s aim. The question of what issue the trade magazines mediate as the most important to think about and how they are framing energy efficiency, along with how this changes over the years will be discussed. This study’s finding will also be connected to previous research and findings, to see whether it differs or not from what has been claimed before. By doing so, a contrast may be found between what issues the magazines want the practitioners in the building sector to regard as important, and if these issues are also promoted by the other authors presented in the beginning of this study.

6.1 Largest focus over all the years

As the amount of articles discussing energy efficiency matters in buildings has increased from the start year of this study, 2002, to the end in 2014, it can be regarded as a way that the trade magazines’ view of this matter as important has increased. This in turn may affect what energy efficiency measures and national goals and laws that have been available during the years, as Ford & King (2015) state that the way a magazine frames environmental issues gives the readers, the practitioners, knowledge upon the area, and the readers are in turn a major driving force to impact policies regarding the issue.

Through the years, there was some change regarding what themes the magazines wanted to mediate. The largest difference could be found in the first years after the introduction of the EPBD, and the later years. In the first time period, the image mediated to the practitioners was mostly positive, speaking of what opportunities that new legislations would bring, as it would move the work of energy efficiency forward. The middle time period had a much more equal focus on what was important for the readers to think about, followed by the image mediated in the most recent years, that the largest importance is to apply available solutions to increase the energy efficiency in buildings. The focus on categories differed more, as the four most frequent categories were of different nature. Those were of positive and negative aspects of what would have to follow after the change in the legislations and thoughts of what actions had to be taken as there were new laws. There was also a focus on what available solutions there were. By just reviewing this over all the years, one may get the feeling that the magazines provide an unbiased knowledge base, which is also wished for by Gluch & Stenberg (2006), but by dividing this in the three time periods, it becomes questionable if this is the case. This will be discussed below.

6.2 Different framing of energy efficiency over time

As described in the Result section, there have been different framing and focus areas over the years in the building magazines, and between the more general building magazines, Husbyggaren and Bygg & Teknik and VVS-Forum. This will be discussed in depth in this section. Every headline represents the different time periods.
Table 3. Summarises how the magazines have framed energy efficiency during the different time spans.

<table>
<thead>
<tr>
<th>Time period</th>
<th>Most dominant frames</th>
</tr>
</thead>
<tbody>
<tr>
<td>2002-2006</td>
<td>Framing energy efficiency as something positive that will happen in the near future, due to the EPBD and the upcoming national legislation of energy performance certificate</td>
</tr>
<tr>
<td>2007-2010</td>
<td>Framing energy efficiency and the measures that must be done, due to the EPBD and the legislation of energy performance certificate as something risky and uncertain</td>
</tr>
<tr>
<td></td>
<td>Framing energy efficiency in regard to the new national law of energy performance certificate and the united climate- and energy policy, as a possibility to increase energy efficiency measures</td>
</tr>
<tr>
<td></td>
<td>Framing energy efficiency as a step toward less environmental impact, in line with the goals of proposition of united climate- and energy policy (eg. energy reduction by 20 % until 2020)</td>
</tr>
<tr>
<td>2011-2014</td>
<td>Framing energy efficiency as something that can happen by implementing technological solutions (e.g. building passive houses in line with the recast of the EPBD) and renovation of existing buildings</td>
</tr>
</tbody>
</table>

As can be seen in table 3, energy efficiency has been framed differently over time, with several ways of framing the issue in the middle time period. These framings will be discussed in detail below, and be connected to what EU directives and national laws that has been implemented during the time span.

6.2.1 Biased start towards possibilities that the EPBD will bring

Starting off with the first time period of 2002-2006, energy efficiency was framed as something positive with the coming implementation of the EPBD in Sweden, and by adopting early planning and putting trust in the upcoming energy performance certificate, the 2020 goals can be reached. The directives and proposition that were influencing this period were, according to Karlsson Hjort & Johansson (2013), the implementation of the EPBD and the proposition including the need for the energy performance certificate (Prop. (2005/06:145)), which is reflected in how the magazines frame energy efficiency. By framing energy efficiency as a positive outcome for the future, due to the mentioned legislations, the magazines structure the story of energy efficiency as something that will happen in the future, and thus also marginalise the issues of what action can be taken already in this phase. According to Becken (2014), this is something that often happens in media, as they choose how to frame an issue, which according to Borah (2011) is influenced by laws etc. The influence of the EPBD is clearly visible in the magazines during this time period, as most of the information regarding energy efficiency is connected back to the EPBD and how Sweden will adapt to the new legislation. A connection could also be drawn to the statement that Becken (2014) makes, that a successful frame relates back to “common sense”. Since the EPBD was implemented in 2002 in the EU, and Sweden implemented measures to follow up in 2006, what was common sense during this time period might not be the same at it is today, as the work towards energy efficiency in buildings had its starting point during this time period. Thus the positive framing of energy efficiency as something for the future, might only
be a successful frame due to the fact that not much legislations had been made before, and not influencing what was “common sense” to change.

Gluch & Stenberg (2006) raise the awareness of the risk with a biased discussion in trade magazines, as it does not provide a good knowledge base for its readers. And as Fermenias (2004) presents, the practitioners within the building sector gain their information and knowledge from trade magazines rather than research reports, this time period partially fails giving a good unbiased knowledge base upon the reality. Conclusions can be drawn that the risk of this overly positive framing of energy efficiency during the first years after the EPBD is that no one really takes responsibility for actions to happen, but just waits until someone else takes that responsibility, as the magazines mediate that a lot of actions will be taken after the new laws have been implemented. By being overly positive, the readers are given reason to believe that everything is going as planned. This is not the reality presented by current projections; as there are many concerns raised that Sweden might fail to reach the 20 % reduction goal by 2020 (Smit et al. 2014; Konjunkturinstitutet, 2013). However, it must be stated that it is just projections, and the projections are sensitive to e.g. changes in the GDP. Due to the fact that the magazines framed energy efficiency as something positive that would happen in the near future and little actual actions were suggested, might have slowed the energy efficiency process down. And as Gluch & Stenberg (2006) and Ford & King (2015) stress that the trade magazines do not only distribute knowledge, but also present possible solutions and actions, the magazines can play an important role in what actions are taken. Thus the work towards energy efficiency could have started earlier, as there were available technical solutions and an EU directive that promoted measures to be taken.

6.2.2 Framing energy efficiency issues in several ways

As the work with the energy performance certificate really took off during the middle time period (Prop. 2005/06:145), according to Alderman (2014), this is expected to be addressed in the trade magazines. The presentation of different issues that the implementation of the EPBD and the energy performance certificate brought was discussed a lot during the years of 2007-2010.

As can be seen in table 3, the magazines framed energy efficiency in three different ways, where the most prominent ones were the thoughts of concerns and negative voices in contrast with the framing of energy efficiency as an opportunity to further develop methods and take on new ways to secure energy saving in buildings. The third framing was more neutral, but stressed the need to think about the environment and emissions of GHGs, that also increases with high energy consumption. Ford & King (2015) state that it is common that climate related issues are framed differently, and Shoemaker & Reese (1996) present that two or more magazines focusing on the same field may present different stories, thus framing an issue differently. This is prominent during the middle time period.

After the implementation of Prop. (2005/06:145), which introduced the energy performance certificate in the late 2006, this influenced how the media framed energy efficiency, moving from a single frame to two frames focusing on either the positive or the risk that this new law would bring. In contrast to the first time period, where the issue only was framed in one prominent way, this time period may have more ways of framing due to that the first three directives and laws (see figure 1.) drove the development of “common sense” regarding energy efficiency forward. The three most influential laws and directives may have importance for the way the magazines framed the issue, and since the laws are being implemented nationally during this time period, it is only natural that this influenced how the magazines framed energy efficiency (Borah, 2011). As the magazines mediate issues both
positive and negative towards the EPBD, Prop. (2005/06:145) and Prop. (2008/06:145), different presentations of the reality are available to the readers, and there is not as strong marginalisation visible as during the first time span. However, a question that could be raised is if a form of gatekeeping can be assumed to happen, which is described by Pavelka (2014). The category given largest focus is the most negative one, which also increases the focus of the negative aspects of the major theme presented during these years. There are a lot of fears and concerns mentioned in the magazines, as the articles present the fear that the energy performance certificate may be used as a tool to falsify the real energy consumption values, and also increase the risk with badly calculated measurements, and thus prevent the real energy efficiency to happen. Gluch & Stenberg (2006) found out in their study, that it is common to either present a positive or a negative image of a chosen issue in trade magazines, which leads to the question if the magazines during this time period are biased or not.

There could also been a connection with the implementation of Prop. (2008/06:145) about the united climate- and energy policy, which introduced the energy saving goal of 20 % by 2020, and 50 % by 2050, related to the framing of energy efficiency measures that needed to include environmental thinking. Conclusions can be drawn that this can be considered as a step towards the holistic picture that IEA (2013) and Stenberg & Räisänen (2006) present as needed to achieve a transition from energy consuming buildings to energy producing buildings, and as a way to achieve the much needed sustainable development. This framing includes both thoughts of possibilities and risks, when it comes to minimising the construction process and a finished building’s environmental impact. The frame could be seen as successful as it relates back to what is common sense regarding environmental impact, as Prop. (2008/06:145) was an eye opener for environmental thinking, presented in some articles.

An interesting contrast is happening when comparing the first two building magazines with VVS-Forum, which targets a smaller audience of the building sector. During 2008, there were a lot of positive attitudes given space in the magazine for HVAC- and plumbing. One thought may be that this positive mediation of issues regarding energy efficiency in VVS-Forum may be due to what Kinam et al. (2013) mention; that there are a lot of energy savings to be done by adapting the HVAC- and plumbing section of the sector. Due to the large opportunity that lies within this field, the question is if the positive framing makes other ways of framing marginalised, which was not the case in the two other building magazines. It is impossible to tell what is not there in an magazine, but assumption can be made that either the reality is as positive as VVS-forum mediate or this is a form of gatekeeping, described by Pavelka (2014) as a way that magazines choose what to print and not, and marginalisation of different frames. The differences between the two groups of magazines may be due to the fact that they have different energy saving potential, and thus are influenced differently by the three available laws and directives mentioned in this section.

6.2.3 Actions that may be taken
Since the recast of the EPBD (Directive (2010/31/EU)), the magazines have framed energy efficiency issues as something that can be addressed by applying different technical solutions, e.g. by building passive houses or nearly ZEBs. During the years 2011-2014, two additional laws were also implemented, Directive (2012/27/EU) and Prop. (2013/14:74), which further enhanced the need for energy efficiency in every sector, thus also including the building sector. Due to these new legislations, along with the previous ones, there are a lot of guidelines on how to achieve energy efficiency, and the magazines frame the issue with focus on technical solutions. In contrast with the previous time periods, the articles published during
these years present several projects and give examples of what can actually be done, which is also stated by Ford & King (2015) as something that is common to happen in trade magazines. As there have been almost a decade since the EPBD was first implemented, there ought to have been a change in the framing of energy efficiency, and this is too a degree the case.

The theory that laws influence the framing can partially be seen. Backtracking to the previous time period, where one prominent frame was influenced by Prop. (2008/06:145), about the united climate- and energy policy, the environmental thinking really took off. This is further enhanced during this time by the implementation of the recast of the EPBD. Pavelka (2014) writes that a magazine wants to attract readers, and by focusing on what is important for the sector at the moment, the magazine might gain new readers. This time period further develop what measures can be taken to minimise the environmental impact, and increase the energy efficiency, both in general and by building ZEBs. Due to this, a successful frame will have to consider this way of thinking, as it is common sense.

One problem that is addressed during this time span is the need for renovation of existing buildings, which is also identified by Energimyndigheten & Boverket (2013). The goal of an energy reduction of 50% by 2050 was removed in 2012, and instead the focus was on renovating existing buildings in an energy smart way. This may have influenced the magazines way of framing energy efficiency, as they presented the renovation actions as something that could still be happening in the future. Due to the removal of a specific goal, the only major influencing laws upon existing buildings were those of general terms, focusing on energy efficiency over all. The removal of the goal was not addressed at all in the magazines, which is the 20% reduction by 2020 was. That goal was something the magazines mediated as something to work for and trying to achieve, but what would be done next was not really discussed. This might also have had an impact on how the magazines framed energy efficiency during this time period, as the framing still was rather about what could be happening in the future. Looking back a decade earlier, the current framing is similar to the first one regarding the lack of action taken now, with exception of ZEBs, and there is a large trust put in the future. Again, the magazines can be said to marginalise other issues that might have had an impact on what actions would be taken already today. Due to this influence and sharing of knowledge, which is described by Pavelka (2014) and Delshad & Raymond (2013), the readers are still given the reality that this is something for the future, even though it is assumed not to be, which has been projected by Annunziata et al. (2013), Konjunktursinstitutet (2013), Smit et al. (2014) and Torcellini et al. (2015), as actions have to happen if the building sector is to become more energy efficient and reach the 2020 goals.

When comparing the two building magazines with VVS-Forum, a similar difference as presented above could be seen. However, the framing during this period was also about ZEB, which would only be natural since the implementation of the recast of the EPBD. Again the HVAC- and plumbing section has the largest energy saving potential, even in a ZEB. What could be seen here is the way VVS-Forum is framing the issue is that they stress the need for an even more stringent definition of what a ZEB is, thus trying to influence the laws, which according to Borah (2011) might happen.

6.2.3 Summarising thoughts
The story the magazines tell, their angle upon energy efficiency, are somewhat still the same as a decade earlier, and one might wonder how this will lead to actual energy savings. However, the magazines do mediate different issues regarding what available techniques are
best suitable to lead to energy savings. Torcellini et al. (2015) stressed that there has to be a paradigm shift from energy consuming buildings to energy producing buildings. If this is true, and if this paradigm shift needs to happen to achieve the 2020 goals, which according to Smit et al. (2014) and Konjukturinstitutet (2013) is not projected to happen, it is not mediated enough in the trade magazines during the whole time span. If the magazines could provide the readers, which are the practitioners in the building sector, with less information about the adaptation of energy efficiency proceeding as it should, more space could be given to why not enough is happening and what could be done to secure that the goals will be reached. In the end, as also stated by Fermenias (2004), the practitioners within the building sector often use the trade magazines as their primary source of information, and according to Ford & King (2015), Pavelka (2014) and Delshad & Raymond (2013), the trade magazines set their norms about what actions are suitable to take. One might wonder what would have happened if the trade magazines started to mediate other issues earlier, and framing energy efficiency in another way. If the magazines would have had several different prominent framing in the later years, as they did in the middle time period, could this have had an impact on more concrete measures for renovation of existing buildings? Where would we be now if more measures were taken earlier? Could we reach the 2020 goals, and securing the work towards a more sustainable society? Even though the work towards energy efficiency in the building sector continues, there is a lack of national goals and laws that would drive energy efficiency measures in existing buildings, which could be seen in the way the magazines frame energy efficiency today, as something that is for the future, with the exception of ZEBs.

7.0 Conclusions

The Swedish building trade magazines mediate several different issues over the years, regarding the need of energy efficiency. These issues can be summarised in five themes, which differ upon what the trade magazines want the readers to assume as the important thing to think about. The issue that was given most focus early on was the positive aspects of what might and will follow after the implementation of the EPBD, and later on new laws and requirements. After the first set of years, the magazines mediated the issues of whether the new legislations would bring the expected opportunities and possibilities, as was mediated earlier. The magazines now present the risks of that the laws were not defined enough and that there is no clear definition of who ought to take responsibility for measures of energy efficiency to happen. During the last years, the magazines mediated what possible actions that could be taken, mostly by technological means, such as insulation in the building envelope. The magazines also mediated through all the years, different thoughts of how and why the authorities implemented different laws, and how the practitioners within the building sector could secure that the requirements were reached. Suggestions of increased knowledge and awareness amongst the practitioners were also raised, as well as that there had to be a change that the planning process would adopt a holistic perspective earlier, to include every important aspect of a buildings lifetime. This would then reduce the impact on the environment, as several experts would come together and share their information of proper actions, which would reduce the risk that a building later on had to be remodeled to be even more energy efficient. The holistic perspective would then also include the impacts on the environment, and emissions of GHGs, as the magazines mediates this issue as something important to consider, as the building sector has a large impact on the environment, as well as the importance of individual behavior amongst inhabitants in a building due to that different behavior consumes different amounts of energy.
The possibilities defined by the magazines are most prominent in the magazine focusing on HVAC and plumbing, as this section of the sector has the most potential of energy efficiency. These possibilities are mainly that by implementation of new laws, the research and opportunities for innovative technologies and methods ought to increase. There is also a possibility that follows by the implementation of new directives and propositions, as it drives the advancement of the adaptation towards ZEBs and renovation in existing buildings, which do not only reduce the energy need, but save money and decreases the impact on the environment. The obstacles defined by the magazines are mainly the uncertainties that the new requirement brings, and that the definition of ZEBs and energy performance certificate is not clear enough. There is also an obstacle defined as who should take responsibility of action first.

By framing energy efficiency issues with a positive attitude and the opportunities the necessary changes bring, the magazines do not provide the readers with every aspect of the reality, and thus the readers are given reasons to believe that the work towards energy efficiency are going as planned, when it is not as the 2020 goals are estimated to not be achieved.

8.0 Acknowledgements

Firstly I would like to thank my supervisors Harald Rohracher and Johan Niskanen for their help during the whole process of conducting the study and write the findings. I would like thank Harald Rohracher especially for his critical thinking upon what I had found and how I presented my findings, as well as for letting me borrowing an introductionary book of coding, which opened up my eyes for a whole different research world! I would like to thank Johan Niskanen especially for introducing me upon new thoughts of energy efficiency in the building sector and for giving me several great research articles which helped me continue when I could not see how I would proceed.

Secondly I would like to thank my fiancé Johan Molin, who has supported me for almost 10 months since I started planning for the study. It has been a huge help to have such a lovely and supporting living partner during these months!

Lastly I would like to thank my sister Amanda Karlsson for support with English grammar and language. I know that the writing is not perfect, but my sister made me laugh at all the silly mistakes I made. I would also like to thank my mother and father for giving me hope to believe that I would be able to achieve this, and for supporting me since the age of 5 that I can go as far as I want as long as I work hard! And I would like to thanks my friends that has provided me with moment of laughter and boosted my self-esteem, which made me not give up when times were as darkest.
9.0 References


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Available at: < http://www.regeringen.se/content/1/c6/23/64/43/5b6c278d.pdf> [Accessed 30 April 2015]


## 10.0 Appendix

The appendix provides the code notebook

### 10.1 Codes explained

This section presents part of the coding notebook, and provides the reader with a code that was found, and more detailed information about them.

<table>
<thead>
<tr>
<th>Code name</th>
<th>Detailed Description</th>
<th>Inclusion Criteria</th>
<th>Exclusion Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Action</td>
<td>Taking action towards change, adaptation and implementation</td>
<td>All indication towards &quot;happenings”</td>
<td>No clear definition of action happening</td>
</tr>
<tr>
<td>Ambition</td>
<td>Clear motivation, a driving force, willingness and effort</td>
<td>Clear statement of the feeling of ambition</td>
<td>The usage of &quot;ambitious” as in a large- or huge project</td>
</tr>
<tr>
<td>Attractive</td>
<td>Attractive architecture, technologies or locations for or in buildings</td>
<td>Focus on looks</td>
<td>Attractive market etc.</td>
</tr>
<tr>
<td>Behavior</td>
<td>Behavior amongst inhabitants in buildings</td>
<td>Inhabitants living- and being patterns</td>
<td>Outside building behavior pattern</td>
</tr>
<tr>
<td>Calculations</td>
<td>Calculation of energy usage, saving etc.</td>
<td>Calculation methods</td>
<td>In depth mathematical explanations of engineering etc.</td>
</tr>
<tr>
<td>Case Description</td>
<td>Description of a case study in an article, e.g. specific project, building etc.</td>
<td>Description of a case in summary</td>
<td>Cases handling energy efficiency in more specific</td>
</tr>
<tr>
<td>Certification</td>
<td>Certification systems, e.g. LEED, BREEAM, miljöbyggnad etc.</td>
<td>Existing certifications in SE and EU</td>
<td>Nonspecific and ”goal” oriented</td>
</tr>
<tr>
<td>CO2 Emissions</td>
<td>Emission of mainly CO₂, but also GHGs. Discussing the need of reduction</td>
<td>CO₂ emissions and reduction needs</td>
<td>Focus on the broad general need of reduction, not relevant to the building sector</td>
</tr>
<tr>
<td>Comfort</td>
<td>Comfortable living and easy used appliances for energy saving, both for inhabitants and builders</td>
<td>Comfortable home, and easy used technologies</td>
<td>Personal thoughts of comfortable materials, ways of building etc.</td>
</tr>
<tr>
<td>Communication</td>
<td>Communication between stakeholders, individuals and other relevant people</td>
<td>Both the need of, usage and lack of communication</td>
<td>General communication without specification</td>
</tr>
<tr>
<td>Conservatism</td>
<td>The old methods are most reliable, and new ones are not that good</td>
<td>Old methods are best suited</td>
<td>General thoughts of &quot;those were the days”</td>
</tr>
<tr>
<td>Consumer</td>
<td>The consumers need, responsibility and</td>
<td>Influence and need</td>
<td>(Code: Inhabitants)</td>
</tr>
<tr>
<td>Criteria</td>
<td>Description</td>
<td>Specific measures to achieve</td>
<td>Loose description of ambitions or aims rather than criteria</td>
</tr>
<tr>
<td>--------------------------</td>
<td>------------------------------------------------------------------------------</td>
<td>------------------------------</td>
<td>-------------------------------------------------------------</td>
</tr>
<tr>
<td>Definition</td>
<td>The users need of own definition, or the nations responsibility to define EU directives, goals etc.</td>
<td>Need of definition from stakeholders</td>
<td>Definition as a description of certain phenomena, things etc.</td>
</tr>
<tr>
<td>Difference between houses</td>
<td>More in depth description of different functions, energy usage, technologies between houses</td>
<td>Comparison of at least two houses</td>
<td>Not in comparison purpose</td>
</tr>
<tr>
<td>Difference over time</td>
<td>How energy usage have changed over time</td>
<td>Descriptions of energy data over time</td>
<td>Other differences over time, e.g. goals, ambitions, projects not concerning energy consumption</td>
</tr>
<tr>
<td>Difficult Solutions</td>
<td>Solutions difficult to implement, e.g. technical, information sharing, communication</td>
<td>Highlight difficulties of implementation of solutions</td>
<td>Not clear that the solution is seen with problem to implement</td>
</tr>
<tr>
<td>District Heating</td>
<td>Discussion of different district heating, development, usages and availability</td>
<td>Heating mentioned in general</td>
<td>General heating in connection with energy efficiency</td>
</tr>
<tr>
<td>Early Planning</td>
<td>Highlighting early planning process, positive and negative</td>
<td>Mention early planning usages</td>
<td>Planning, later processes or as a whole</td>
</tr>
<tr>
<td>Energy Reduction</td>
<td>Energy reduction discussed more in depth, the need of, how to do etc.</td>
<td>A clear focus on energy reduction</td>
<td>Focus on energy reduction only as a “must do” with no motivation</td>
</tr>
<tr>
<td>Energy Saving</td>
<td>The possibilities to save energy, energy savings happening, planned or calculated</td>
<td>Focus on savings</td>
<td>Energy in general</td>
</tr>
<tr>
<td>Energy Sources</td>
<td>Different energy sources, both renewable and non-renewable, and energy (electricity) to houses</td>
<td>Sources for production and sources into buildings</td>
<td>Detailed description of non-renewable and renewable energy sources</td>
</tr>
<tr>
<td>Energy usage</td>
<td>Focus on energy usage, current or the need of reduction</td>
<td>Energy usage only, in focus</td>
<td>Energy in general</td>
</tr>
<tr>
<td>Expensive</td>
<td>Defining investments as expensive (negative tone)</td>
<td>Expensive investments, buyings</td>
<td>Highly personal opinions from the authors</td>
</tr>
<tr>
<td>Experience</td>
<td>Previous done projects, generally accepted knowledge within the sector and its people</td>
<td>Focusing on accepted knowledge from before</td>
<td>Assumed experience to be obtained in the future</td>
</tr>
<tr>
<td>Expertise</td>
<td>Where specific knowledge is needed in order to proceed, e.g. a knowledgeable project leader</td>
<td>Specific knowledge to be able to proceed</td>
<td>Knowledge or experience in general</td>
</tr>
<tr>
<td>Failure</td>
<td>Projects, implementations, developments, laws, directives that are seem to not be working</td>
<td>Changes that are failing, or fear of failing</td>
<td>Personal accusation and feelings of failure</td>
</tr>
<tr>
<td>Floor Heating</td>
<td>All kinds of floor heating systems</td>
<td>Floor heating presentation/discussion</td>
<td>Discussing heating in general</td>
</tr>
<tr>
<td>Follow Up</td>
<td>From projects, monitoring processes over the coming years, assessment of success</td>
<td>The need of follow ups or what is already happening</td>
<td>Not handling follow up assessments</td>
</tr>
<tr>
<td>Future</td>
<td>Prospecting the future, e.g. projects, developments, materials, change in goals, achieving goals</td>
<td>Future prospects of different kinds regarding the sector</td>
<td>Future wishing and/or guessing without anchoring in real facts</td>
</tr>
<tr>
<td>Goals</td>
<td>National and/or international goals, rules and laws</td>
<td>All goals, rules and laws</td>
<td>Project goals, personal goals etc.</td>
</tr>
<tr>
<td>Growth</td>
<td>Growth amongst companies, economy, competition, development of new ways</td>
<td>Companies and/or economy</td>
<td>Market growth</td>
</tr>
<tr>
<td>Guidance</td>
<td>A guiding help from: consultants, national/international defined goals, guidance instruments/checklist</td>
<td>Help and guiding offerings from external institutes</td>
<td>Lack of definition of what form of guidance available, offered or needed</td>
</tr>
<tr>
<td>Guidelines</td>
<td>Stated goals break down into sub-points and criteria to be achieved, and how to achieve them</td>
<td>A more detailed description of how to achieve goals</td>
<td>Not clearly explained points on how to achieve (goes into the Code: Guidance)</td>
</tr>
<tr>
<td>Healthy house</td>
<td>Healthy indoor quality, environmental friendly material and a sustainable thinking</td>
<td>Healthy for people and the environment</td>
<td>Focus on inhabitants health only</td>
</tr>
<tr>
<td>Heating</td>
<td>Different kinds of heating systems, e.g. radiator, air-heating, and heating savings</td>
<td>All kinds of indoor heating systems and heating savings</td>
<td>Excluding floor heating</td>
</tr>
<tr>
<td>Hinderance</td>
<td>Obstacles for implementation of building ways, adaptation to</td>
<td>All ”negative” presentation of possible obstacles</td>
<td>Presentation of obstacles, but in a way that they can be overcomed</td>
</tr>
<tr>
<td></td>
<td>goals etc.</td>
<td>Broader aspect of different matters in the sector</td>
<td>Holistic thinking in even broader matter, regarding more global thinking</td>
</tr>
<tr>
<td>------------------------</td>
<td>---------------------------------------------------------------------------</td>
<td>--------------------------------------------------</td>
<td>-------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Holistic</td>
<td>A holistic view is needed, system thinking, the broader aspect of a matter, often including several stakeholders</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Increased Awareness</td>
<td>Increased awareness of the need of change, energy savings, different materials, certifications, behavior etc.</td>
<td>Clear statement of increased awareness or need of it</td>
<td>Not ways of communicating or increase knowledge</td>
</tr>
<tr>
<td>Information</td>
<td>General description and information about e.g. directives, goals, and what is to be achieved</td>
<td>General summarising information of e.g. (Code: Goals)</td>
<td>Specific case information</td>
</tr>
<tr>
<td>Innovation</td>
<td>The need of new solutions, technology, innovations. Investing in new ways of thinking</td>
<td>Everything that is new and innovative</td>
<td>Already existing solutions</td>
</tr>
<tr>
<td>Insulation</td>
<td>Insulation methods, materials, details, air circulations</td>
<td>Everything concerning insulation and indoor air circulation</td>
<td>More general as a (Code: Materials) or (Code: Solutions)</td>
</tr>
<tr>
<td>Interest</td>
<td>Interest in a matter, future prospects, general awareness and increased knowledge</td>
<td>A summary of increased positive awareness</td>
<td>Details about increased knowledge, awareness etc.</td>
</tr>
<tr>
<td>Investment</td>
<td>Investment, more expensive than other solutions, but generates over time</td>
<td>Investment, possitive cost</td>
<td>Negative statement of costing too much money</td>
</tr>
<tr>
<td>Irony</td>
<td>Ironic description of past, present and future</td>
<td>Clear ironic language (Code: Scepsism), (Code: Pessimism) and (Code: Ambition)</td>
<td></td>
</tr>
<tr>
<td>Knowledge</td>
<td>Knowledge amongst stakeholders, inhabitants or the general public. The need to increase or the already existing</td>
<td>Knowledge amongst all people concerned</td>
<td>Specific knowledge descriptions</td>
</tr>
<tr>
<td>Material</td>
<td>All short mentions of construction materials as a group, e.g. concrete, wood</td>
<td>A summary of materials</td>
<td>Detailed explanations of specific materials</td>
</tr>
<tr>
<td>Mold</td>
<td>Concerning mold and moist problems</td>
<td>Mentioning mold and/or moist</td>
<td>More considering general (Code: Risk) or (Code: Hindrance)</td>
</tr>
<tr>
<td>Money</td>
<td>Focus on costing money, rather than an investment. Negative focus</td>
<td>Cost rather than investment</td>
<td>Possitive cost (Code: Investment)</td>
</tr>
<tr>
<td>More Importance</td>
<td>When more focus</td>
<td>When matters regarding</td>
<td>When wishing for in-</td>
</tr>
<tr>
<td>Category</td>
<td>Description</td>
<td>Energy Efficiency Increases in Importance</td>
<td>Increased Importance, but there is still not available yet</td>
</tr>
<tr>
<td>--------------------------</td>
<td>-----------------------------------------------------------------------------</td>
<td>-------------------------------------------</td>
<td>----------------------------------------------------------</td>
</tr>
<tr>
<td>Nearly Zero</td>
<td>Talking about Nearly Zero buildings, positives and negatives, development etc.</td>
<td>Regarding Nearly Zero in general terms</td>
<td>Detailed descriptions of benefits or hincrances of technical solutions with Nearly Zero</td>
</tr>
<tr>
<td>New horizons</td>
<td>Seeking out new ways of proceeding forward, positive future prospect, thinking outside the box</td>
<td>New ways of proceeding forward</td>
<td>No focus on future prospects (Code: Future) or (Code: Innovations)</td>
</tr>
<tr>
<td>No Development</td>
<td>Expression of dissatisfaction of no or little development over time</td>
<td>None to little development over time</td>
<td>Presentation of none or little development with a historical comparison perspective</td>
</tr>
<tr>
<td>No Motivation</td>
<td>Lack of motivation to take action due to different things, e.g. no functional goals/requirements, expensive</td>
<td>Lack of motivation towards change</td>
<td>Where something is done unwillingly</td>
</tr>
<tr>
<td>No opportunity</td>
<td>Existing guidelines and/or goals gives no opportunity towards new developments and energy savings</td>
<td>No opportunity with existing goals/guidelines</td>
<td>(Code: Scepsism), (Code: Pessimism)</td>
</tr>
<tr>
<td>No overview</td>
<td>Lack of a holistic picture or thinking, where there ought to be one</td>
<td>Lack of a holistic perspective</td>
<td>When there is which for a holistic perspective (Code: Holistic)</td>
</tr>
<tr>
<td>No routine</td>
<td>When there is no routine on how to proceed, achieve or plan things</td>
<td>Lack of routine in a negative perspective</td>
<td>No clear examples on when there is no routine, but mere accusations</td>
</tr>
<tr>
<td>No/Little Energy Reduction</td>
<td>When there is expression of that none to little energy reduction are made even though there are implemented changes</td>
<td>None to lite change even though changed methods</td>
<td>When there is no clear example of this happening</td>
</tr>
<tr>
<td>Now and Next</td>
<td>Description of current situation and what is planned or might happen in the coming decades</td>
<td>Comparison of now and what is expected</td>
<td>Pure speculation of what might come without solid arguments</td>
</tr>
<tr>
<td>Opportunity</td>
<td>Opportunities for implementing new innovations, developing further and catch the possibilities.</td>
<td>Catch every possitive possibility</td>
<td>When no example are given on how to achieve and/or catch the opportunity</td>
</tr>
<tr>
<td>Optimistic</td>
<td>A optimistic description of the way things</td>
<td>Optimistic thinking of the sectors heading direction</td>
<td>Future prospection</td>
</tr>
</tbody>
</table>

Note: Codes are placeholders for further categorization or analysis.
<table>
<thead>
<tr>
<th></th>
<th>Description</th>
<th>Context</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overview</td>
<td>Generally used for an overview of a non-specific matter, that does not go into case description</td>
<td>When no details can be extracted that add relevant information When it is rather a case description, a comparison between buildings or over time etc.</td>
</tr>
<tr>
<td>Passive House</td>
<td>General discussion of properties of a passive house, possibilities and obstacles</td>
<td>General mentioning of passive houses Detailed description of material, appliances and constructions</td>
</tr>
<tr>
<td>Pessimism</td>
<td>General &quot;can't do&quot;, a dark or gloomy view upon projects and different matters</td>
<td>A gloomy description of functions Not the worst outcome of things (Code: Skepticism)</td>
</tr>
<tr>
<td>Planning</td>
<td>Regarding planning processes, in every stage, including both a broad aspect of stakeholders or not</td>
<td>Everything regarding planning (Code: Early planning)</td>
</tr>
<tr>
<td>Potential</td>
<td>Seeing the potential of different investments, optimizations, renovations etc.</td>
<td>Potential, or different potentials of a project Not high flying ambitious projects</td>
</tr>
<tr>
<td>Realism</td>
<td>Realistically planning phases, no overly positive calculation with goals that cannot be achieved</td>
<td>Realistic goals/projects that are/was achievable Everything that has no comment on being realistic</td>
</tr>
<tr>
<td>Refurbishing</td>
<td>Refurbishing or rebuilding on what is already there, maximizing opportunities</td>
<td>Refurbish what is already there Not renovation (Code: Renovation)</td>
</tr>
<tr>
<td>Regulations</td>
<td>Existing regulations, goals etc. Change in existing regulation or discussion of changes</td>
<td>Existing and coming regulations The overviewing goals (Code: Goals)</td>
</tr>
<tr>
<td>Renewable Energy</td>
<td>Focus on &quot;green energy&quot;, renewable energy sources, &quot;green electricity&quot;</td>
<td>&quot;Green&quot; energy and electricity Detailed description of sustainable component (Code: Healthy houses), (Code: Renewable Energy)</td>
</tr>
<tr>
<td>Renovation</td>
<td>The need of renovation, planned renovation, renovations that have been made</td>
<td>Everything regarding renovation (Code: Refurbishing)</td>
</tr>
<tr>
<td>Requirement</td>
<td>Requirements to be named a certain thing, a certain definition, to achieve specific goals, etc</td>
<td>To achieve what must be achieved Requirement that does not need to be met</td>
</tr>
<tr>
<td>Responsibility</td>
<td>The responsibility of proceeding forward, Whoever is responsible or ought to be</td>
<td>No statement why someone ought to be</td>
</tr>
<tr>
<td>Category</td>
<td>Description</td>
<td>Example</td>
</tr>
<tr>
<td>-------------------</td>
<td>-----------------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Risk</td>
<td>Risk coming with possible solution, implementation of new methods, criteria etc.</td>
<td>Risk of possible changing methods</td>
</tr>
<tr>
<td>Satisfaction</td>
<td>How satisfied inhabitants and/or customers are with the results of a change</td>
<td>Satisfaction amongst inhabitants or customers</td>
</tr>
<tr>
<td>Skepticism</td>
<td>Descriptions of things going in the wrong direction, things that cannot be worked out in a certain way</td>
<td>Things that are failing or going in the wrong direction</td>
</tr>
<tr>
<td>Seasons</td>
<td>Description and/or discussion about seasonal changes and its impact on energy usage/heating etc.</td>
<td>Clear focus on seasonal impact</td>
</tr>
<tr>
<td>Smart Demands</td>
<td>Smart demands from buyers, suppliers etc. or the need of such demands, leading to increased sustainability</td>
<td>Need of, or existing &quot;smart&quot; demands</td>
</tr>
<tr>
<td>Solutions</td>
<td>Descriptions of technical solutions, rebuilding, installations of new heating etc. Or questions about specific solutions</td>
<td>Actual solutions or questions regarding them</td>
</tr>
<tr>
<td>Specific Cases</td>
<td>Everything needs to be considered as a specific case with its own limits and definitions, mostly buildings</td>
<td>Everything (Buildings) are unique</td>
</tr>
<tr>
<td>Sustainability</td>
<td>A holistic sustainability thinking and/or acting, existing or in need of</td>
<td>Sustainability thinking and/or acting</td>
</tr>
<tr>
<td>Technology</td>
<td>Everything concerning technological solutions, descriptions etc.</td>
<td>Everything technical</td>
</tr>
<tr>
<td>Temperature</td>
<td>Regarding indoor temperature, what are present in a house, optimal temperature or wished one.</td>
<td>Indoor temperature</td>
</tr>
<tr>
<td>Ventilation</td>
<td>Description of ventilation systems, installed or to be, both past,</td>
<td>Mentioning of different ventilation system</td>
</tr>
<tr>
<td>existing and new</td>
<td>Everything regarding windows, new window types, benefits or obstacles</td>
<td>Everything regarding windows in detail</td>
</tr>
<tr>
<td>------------------</td>
<td>------------------------------------------------------------------------</td>
<td>----------------------------------------</td>
</tr>
<tr>
<td>Windows</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>