Abandoned Swedish joint facilities and utility easements - A case of "legal pollution"

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Key words: Rights, Restrictions, Responsibilities, Joint Facility, Utility Easement, Cadastre, Land Management, Land Administration, Land Use, Legal Pollution

SUMMARY

Joint facilities and utility easements are important legal instruments regulating land use in the Swedish society. Joint facilities are created when two or more real properties have the need to use a facility, such as a parking space, in common. Utility easements are rights to construct and maintain e.g. a pipeline or cable located on a real property. Sometimes the installations cease to be of use for the right holders. This article investigates the legislation used to liquidate these rights legally as well as physically. The study has identified insufficient procedures regulating the demolition of the physical installations, which may result in a situation where physical installations remain on the property after the legal right has been liquidated. This may cause an inconvenience for the landowner due to own costs for removing the installation(s) or becoming responsible for the right holders´ removal of the installation. Furthermore, increased costs affecting the landowner may arise in future cadastral procedures if the right still encumbers the property. The existence of installations no longer in use may even constitute a risk for human health and security, and the environment. The conclusion is that there is a need for better instructions and processes for removing the legal right and for who is responsible for the removal of the physical installation(s).

SWEDISH SUMMARY

Gemensamhetsanläggningar och ledningsrätter utgör en viktig funktion rörande markanvändning i det svenska samhället. Gemensamhetsanläggningar bildas då två eller fler fastigheter har behov av gemensamma anläggningar. Ledningsrätt är en rättighet som upplåts i fastigheter för att säkerställa en ledningsrättshavares befogenhet att dra fram och underhålla en ledning inom ett visst bestämt område på en fastighet. Ibland upphör gemensamhetsanläggningar och ledningar upplåtna med ledningsrätt att utgöra någon nytta för rättighetshavarna. I denna artikel har lagstiftning och förfarandet granskats gällande avvecklingar av dessa rättigheter både rättsligt och fysiskt. Resultatet visar att det inte är tillräckligt reglerat i lagstiftningen hur en avveckling ska gå till. Det har medfört att både rättigheten och den fysiska anläggningen i många fall blir kvar trots att anläggningen inte används. Att ett bortförande av en avvecklad anläggning eller ledning inte sker kan innebära en olägenhet för fastighetsägare. Dels genom kostnader för eget borttagande av den fysiska anläggningen eller ansvar för rättighetshavarens borttagande, och dels genom de ökade framtida förrättningskostnader som kan uppstå när de formella rättigheterna fortsatt belastar fastigheten. Det kan även bidra till miljöskador eller utgöra en risk för människors hälsa, säkerhet och miljön om inte anläggningen fysiskt tas bort. Slutsatsen är att det är viktigt att det etableras tydligare regler

gällande både processen för att ta bort den formella rättigheten och ansvaret för det fysiska bortförandet av anläggningarna.

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1 INTRODUCTION

The Swedish legal framework for creation of private and public rights, restrictions and responsibilities is well established and effective. The use of privately created use rights are, as in many countries, part of the "web of interests"[1] governing the use of land and of major importance for e.g. protection against a third party. An example is an *easement* (in Swedish: *servitut*), which is a property's, i.e. the dominant tenement; right to use a part of another real property, i.e. the servient tenement. See, e.g. SFS (1970:988).

Joint facilities (in Swedish: *gemensamhetsanläggning*) and *utility easements* (in Swedish: *ledningsrätt*) are other examples of instruments regulating land use. A joint facility is a legal right (and physical constructions) beneficial for two or more real property units (SFS, 1973:1149), for example common parking lots, roads and green areas. A utility easement is a legal right for acquisition of land for a physical utility in the form of pipes (e.g. for water supply) or cables (e.g. for telecommunication) (SFS, 1973:1144).

2 PROBLEM DESCRIPTION AND SCOPE

This paper investigate inconsistencies in the legal framework for liquidating joint facilities and utility easements no longer in use and therefore left unattended by the right holders.

2.1 Problem description

The term "legal pollution" is used to describe the result of an in these authors´ opinion non-effective set of legal statutes and guidelines concerning the removal of redundant joint facilities and utility easements, physically and legally, thus "polluting" the aforementioned "web of interests" regulating land use. Even if the legal right itself is liquidated, the physical installation may still "pollute" the environment and can be a nuisance to land owner. The Swedish legal system has well established legal procedures for removing certain types of rights created by private agreements older than 50 years not in use anymore (SFS, 2013:488), however, these procedures does not include abandoned joint facilities and utility easements, which are created by cadastral procedures.

Joint facilities and utility easements can be created by the cadastral authority after application from those benefitting from the right and without consensus from the landowner (SFS 1973:1149; 1973:1144). Even if an agreement is reached in consensus by the landowner and the cadastral authority, the agreement, is often initiated by the cadastral authority, which has the mandate to force

[1] The term "web of interests" is used by Meinzen-Dick and Mwangi (2008) for describing the multitude of interests in land.

a decision if an agreement cannot be reached. It has been argued that since this often is known by the landowners they may feel forced to enter into a (seemingly) voluntary agreement, since it may result in a better outcome than a legal procedure over which they have no control (SOU, 2007:29).

Physical installations such as pipelines can even be the cause of environmental hazards and pollution when left unattended after not being used anymore (Juric, 2016).

The first joint facilities were created during the 1960ties and -70ties, which means that the need for removal of installations probably will increase over time, as described in a governmental bill (Prop. 2014/15:71, p. 18). Eriksson and Hedlund (2016) found that cadastral surveyors follow slightly different processes when liquidating joint facilities. Some joint facilities have been liquidated after the joint facility have been abandoned physically, while others have been liquidated legally and thereafter the owners of the participating properties have been instructed to remove the joint facility physically. In one of the by Eriksson and Hedlund (2016) inspected cadastral processes where the legal joint facilities have been liquidated, the physical installation was still situated on one of the former participating real properties, years after the liquidation. Furthermore, Eriksson and Hedlund (2016) also state that the participating properties number of shares in the joint facility sometimes have been used to decide how to distribute the cost for the liquidation of the joint facility, but that there is no legal support for this procedure.

The use and execution of joint facilities and utility easements involve the construction of physical installations such as parking lots and pipelines on land owned solely by others or in shareholdership with others. These installations have to be maintained and their lifespan are often limited, whereas the legal right to utilise them is valid "forever" until it is cancelled.

Joint facility installations, which are not physically removed, may become an inconvenience for the property owner, or a danger for the environment or human health and security (Eriksson and Hedlund, 2016). Abandoned joint facilities can also generate increased costs if the property on which the facility is located is part of a cadastral procedure (Prop. 1996/97:92, p. 62). It can also be difficult to establish who is responsible for removing a joint facility installation if it is no longer in use (Tillström and Wiström, 2012).

2.2 Scope

The subject for this research is the legal problems and consequences that arises for the landowner if the installation has been abandoned and the right holder cannot be identified or is not interested in taking responsibility. The scope of this paper is to further analyse the legal problems concerning liquidation of joint facilities and utility easements described in Eriksson and Hedlund (2016) and Juric (2016). Numerous other use rights exist, but they are omitted from this study since they rarely involve the construction of physical installations, which can become a problem for the landowner if not removed after the legal rights are executed anymore.

2.3 Research methodology

This study is the result of an analysis of Swedish land use legislation regulating joint facilities and utility easements. Legal cadastral legislations and related literature have been studied to analyse the

legal possibilities and cadastral processes for formation and abolishment of joint facilities and utility easements. Statistics on the formation of joint facilities and utility easements have been used to illustrate the increased use of these legal instruments.

3 JOINT FACILITIES AND UTILITY EASEMENTS

3.1 The Swedish cadastral process

The Swedish cadastral process starts when a written application is submitted to the cadastral authority. A responsible cadastral surveyor is appointed and discusses the case with the applicant. The surveyor check the applicant's and other interested parties' rights and other legal, financial and planning issues, and decides whether the procedure is possible to be carried out (Lantmäteriet, 2016f). This often involves consultation with other authorities such as the county administrative board. One or more physical meetings of the participants may be necessary before a decision is taken. All decisions are registered in writing and on a cadastral map and copies are sent to the parties involved. After four weeks the decision(s) gain legal force and a party may appeal against it in a court of law, if dissatisfied. The results are registered in the Real Property Register when the procedure has gained legal force. The complete documentation including minutes, cadastral maps and textual descriptions are sent to the appointed interested parties. The cadastral dossier is placed in Lantmäteriet's, the Swedish cadastral, mapping and land registration authority, archive (Lantmäteriet, 2016f.). See figure 1.

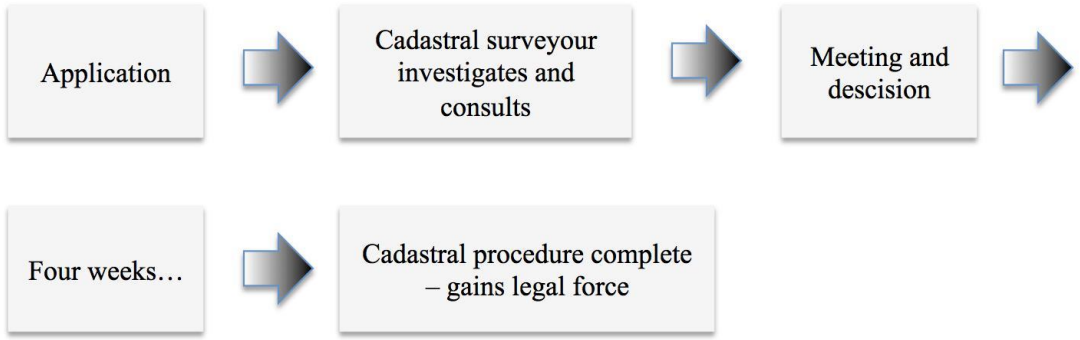

Figure 1. The Swedish cadastral formation process. Based on Lantmäteriet (n.y.)

3.2 Joint facility

A joint facility belong to two or more real properties who has a legal share in it. Joint facilities may be remnants of old agricultural co-operations for effective use of land and resources such as wells, loading areas or similar constructions (Ekbäck, 2011). Today, most joint facilities are created for roads, but several also for green areas, sewage- and heating installations, parking areas and playgrounds (Ekbäck & Karlbro, 2009). The joint facility is in many ways like a common easement right for the real properties participating in the facility (Paasch, 2011), but also regulates other issues such as how construction and maintenance costs are divided among the shareholders (SFS, 1973:1149).

In 2015, 94 849 joint facilities existed which are almost 3 000 more than the year before (Lantmäteriet, 2016a). More joint facilities have been created than deleted during the last decade. Table 1 illustrates the increased use of this legal construction.[2]

Table 1. Increased use of joint facilities 2006-2015. Based on (Lantmäteriet, 2016a; 2012)

Year	*Total number*	*Increase during year*
2015	*94 849*	*2 797*
2014	*92 052*	*2 055*
2013	*89 997*	*1 832*
2012	*88 165*	*1 945*
2011	*86 220*	*2 148*
2010	*84 072*	*2 114*
2009	*81 958*	*2 287*
2008	*79 671*	*2 695*
2007	*76 976*	*3 189*
2006	*73 787*	*3 039*

Real properties, not persons, have part in a joint facility and the share thus follow the ownership of the property when sold or otherwise transferred (Lantmäteriet, 2016b).
Joint facilities are created through a cadastral procedure, which is executed by the cadastral authority (SFS, 1973:1149, §1 and §4). Many facilities have however been created through older legislation, but are today being transferred to function in accordance with today's legislation (Österberg, 2013).

A joint facility can be managed in two different ways according to the Joint Property Units (Management) Act; directly by the shareholders or by a joint property unit association (SFS, 1973:1150, §4). Those that not are transferred may still be managed by the older Certain Joint Facilities Act (SFS, 1966:700), see Österberg (2013).

All facilities should be registered in the national Real Property Register[3] and there has to be a connection to the Joint Property Associations Register where the association details are registered (Lantmäteriet, 2016d, ch. 5).

[2]It has not been possible to obtain statistics showing abandoned joint facilities.
[3] The Real Property Register contain, among other things, information about geographical location, ownership, mortgages, easements, shares in joint facilities and other property information affecting the property and (SFS, 2000:308).

Borges (2007) state that many joint facilities are inactive today and no longer in use. There are even a large number of joint property associations, which not administer the association in accordance with the Joint Property Units (Management) Act. Furthermore, several associations have not updated their statutes and the participating properties have incorrect shares in the joint facility. Of the 25 552 joint property associations existing today 37% have not updated statutes/or shareholders during the last ten years, and 20% have not been updated during the last 20 years.[4] This indicates in these authors´ opinions the existence of a huge number of "sleeping" associations.

Some years ago plans were made to transfer the joint property association register from Lantmäteriet to the Swedish Companies Registration Office (in Swedish: *Bolagsverket*). The reason for suggesting the move was that joint property associations are legal entities/companies and should therefore be registered in the same register. The move was however not approved by the government, stating that the same efficiency could be achieved by e.g. using e-services.[5] However, this is not subject for this study, since if an association is not active there is no interest to have their updated information in the register.

When a joint facility needs to be changed or liquidated, this can be organised by the cadastral authority by application. Today, the statutes in the Joint Facilities Act (SFS, 1973:1149, §35) are used for liquidation (Lantmäteriet, 2016b). Lantmäteriet (2016b) also describe that the Land Code can be used in connection with reassessment of joint facilities which involve a liquidation of the right (SFS, 1970:994, ch. 14, §13). The Land Code (SFS, 1970:994, ch. 14) regulate that when an easement is liquidated the physical construction, has to be removed within one year, otherwise it will be transferred to the landowner, see Tillström and Wiström (2012) and Österberg (2013).

[4] According to statistics from the Real Property Register. Provided by Ms Anna Lindborg, Lantmäteriet, 2016-09-14.

[5] Both agencies were in principle positive to the move, but the government decided against it. The argument was that the cadastral agencies (Lantmäteriet and selected municipalities) create and update joint property units and joint facilities and it would be strange if the associations should be registered by another agency, whereas the objects themselves are registered by Lantmäteriet. Instead, organisational changes have been made. Email communication with Mr Per Sörbom, Lantmäteriet, 2016-09-08. See Öhrn and Moberg (2006) and Lantmäteriet (2004).

Figure 2a. Joint facility for a sewage pipeline. Source: Lantmäteriet

Figure 2b. Part of joint facility for ga:13, bridges and associated buoys for boats. Based on Lantmäteriet (2014, appendix KA1)

3.3 Utility easement

An utility easement is a right allowing a real property or other parties, such as power companies, to use a space on a servient real property for construction and maintenance of a facility used for the benefit of society (SFS, 1973:1144). Utility easements may be created for different types of utilities, e.g. cables for electronic communication, electric power, water pipelines and pipelines for heating purposes (SFS, 1973:1144). Even telecommunication masts can be subject for utility easements due to a change in the Utility Easements Act in 2004 (SFS, 2004:643). The right is usually regarded as a right attached to a person (i.e. a company), but can even be executed by a real property (Julstad, 2006, p. 471). Today utility easements also are created for companies and other non-public legal entities.

In 2015, 63 296 utility easements existed, which is 1 500 more than the year before (Lantmäteriet, 2016a). More utility easements have been created than deleted during the last decade. Table 2 illustrates the increased use of this legal construction.[6]

Table 2. Utility easements 2006-2015. Based on (Lantmäteriet, 2016a; 2012)

Year	***Total number***	***Increase during year***
2015	*63 269*	*1 579*
2014	*61 690*	*1 438*
2013	*60 252*	*1 378*
2012	*58 874*	*1 634*
2011	*57 240*	*1 536*
2010	*55 704*	*1 757*
2009	*53 947*	*2 159*
2008	*51 788*	*1 920*
2007	*49 868*	*1 947*
2006	*47 921*	*1 602*

Utility easements are created by a cadastral authority as stated in the Utility Easements Act (SFS, 1973:1144), and are registered in the national Real Property Register stating which real property they encumber (SFS, 2000:308, §22). When a utility easements need to be changed or liquidated this can be organised by application to the cadastral authority. Today the statutes in the Utility Easements Act (SFS, 1973:1144 §33) are used for liquidation. Lantmäteriet (2016c) state that a comparison to the legislation in chapter 7 in the Real Property Formation Act (SFS, 1970:988)

[6]It has not been possible to obtain statistics showing abandoned utility easements.

which regulate abolishment of easements can be done. However, even if today's legislation can be used to regulate liquidation, it does not mention anything about responsibilities for the physical liquidation of the utilities.

Figure 3a. Utility easement for power cables. Source: Lantmäteriet

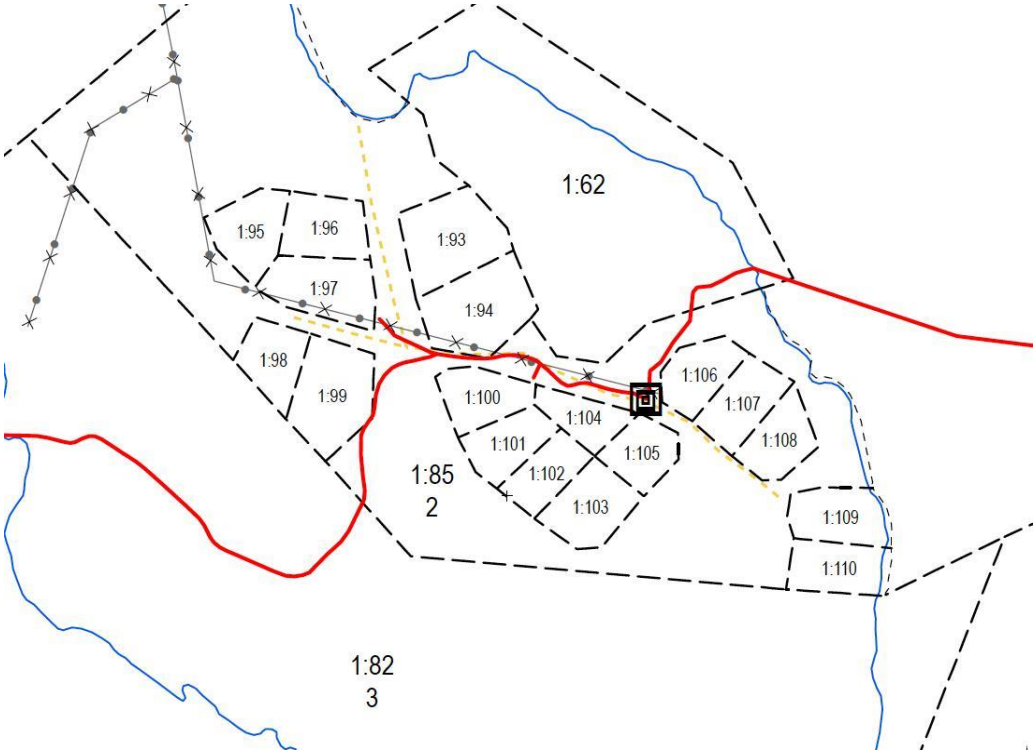

Figure 3b. Part of utility easement for high-power cables. Based on Lantmäteriet (2016e, appendix KA6)

4 INTERNATIONAL OUTLOOK

The need to construct and maintain physical constructions on land belonging to others are also found in other countries, and legal rights to facilitate these exist.

Access can in many cases be solved by the use of easements giving the right holder's privileges to construct and maintain e.g. water pipelines and electric power cables. There may however also be specialised legislations. Examples are found in a multitude of national legislations. For space reasons only few examples are shown below. Furthermore, it has yet to be investigated whether some of them also may create "legal pollution" if not being taken care of if their physical installations for some reasons are abandoned. This is subject for future research.

The need to regulate the liquidation of rights and physical facilities no longer in use is not only of legal, academic interest. For example, Howell (2009) illustrated the problem in a newspaper article mentioning an American company claiming ownership for an abandoned pipeline, but the company did not assume responsibility for maintenance or removal, causing inconvenience for the landowner.

4.1 Joint facilities

The basic principles found in the Swedish joint facilities, i.e. being a legal construction for using and maintaining a (physical) installation on a real property, can be found in other countries, for example in the Netherlands and Germany.

The Dutch right of common ownership [*mandeligheid*] is a relation between two or more real properties in land and a parcel attached to the ownership of neighbouring properties (DCC, 1992, Book 5, articles 60-69; Ploeger, Velten and Zevenbergen, 2005, section 1.3.1. The purpose of the right is to facilitate common features beneficial to the properties involved e.g. a common way out or the use of a common wall. The right has earlier been used for only a few type of common features, but has since 1992 "been expanded to all other cases of co-ownership where the ownership is inseparable from the ownership of a (nearby) parcel, e.g. a parking lot or even a whole golf course" (Paasch, 2011). The share in the commonly owned property follows with the sale of the shareholder properties.

The German right of neighbouring real property [*Anliegerflurstück*] is the right for two or more real properties to use a part of neighbouring land legally attached to them. Typically consisting of a path, road, or ditch intended for common use by the shareholder properties (AVLBD, 2015).

4.2 Utility easement

The Dutch building lease, superficies [*Opstal*] is a right allowing the right holder to acquire buildings, plantations and other constructions such as pipelines (DCC, 1992, Book 5, §101-105). The right to own a building may be granted as an independent right, but may even be granted together with the right to use land that is leased. The right is created when the lessee (called the *opstaller*) only has limited rights on the land itself to create and manage (underground) cables, pipelines, antennas or electrical installations.[7]

The Irish right of *wayleav*e (and other rights) to lay cables, pipes, wires or other conduits allow the creation of erection of certain constructions on a real property. The rights services the common good, but owned by utility bodies such as power companies. They are in principle considered easements, but are listed separately in the Irish legislation (LCLRA, 2009, part 2, section 11, and Explanatory Memorandum).

In Germany a cable right [*Leitungsrecht*] is a right to construct and maintain cables/pipelines for e.g. water, electricity, telecommunications, sewage, etc. on a property. The right can be granted to another property as an easement [*Grunddienstbarkeit*] (BGB, 1896, sections 1018-1029) which grants to right to a real property or as an personal easement [*Beschränkte persönliche Dienstbarkeit*] (BGB, 1896, section 1090-1093) allowing a person/company to construct and maintain cables/pipelines on the real property.

This study has not focused on the processes for creating or deleting these rights and "legal pollution" possible abandoned rights may constitute, which is subject for future research.

5 DISCUSSION

Legislation does in these authors´ opinion put more focus on the creation of these rights and less on cancelling or altering them. The result of this inconsistency is a lack of efficiency in land administration, leading to uncertainties about who has the responsibility to remove an old

[7] See Ploeger, van Velten, and Zevenbergen (2005, section 1.5) and Slangen and Wiggers (1998, pp. 361-362).

installation and how will this happen if the owner of the construction is not interested any longer and it may not even be possible to contact them anymore. This can in some cases lead to economical costs for the landowner.

5.1 Joint facilities

Tillström and Wiström (2012) state that rules for the physical demolition of joint facilities and the costs associated to this activity is missing in the rules and guidelines for abolishing joint facilities. Tillstöm and Wiström (2012) also state that it is unclear in what type of situations the cadastral authority can demand the abolishment of a joint facility and the dissolution of a joint property association.

The liquidation of joint facilities has been done in different ways by employees at the cadastral authorities, which indicate a flaw in the current legislation (Eriksson and Hedlund, 2016). The most prominent reasons are the lack of practical rules for how to handle the physical installations in the cadastral procedure and what obligations the responsible cadastral surveyor has concerning the investigation and making decisions in the matter (Eriksson and Hedlund, 2016).

The statutes in the Land Code, ch. 14, §13, are used as basis for placing the responsibility for the removal of installations. The right holder must remove the installation within one year after the liquidation of the right; otherwise, it will be transferred to the landowner. This seem in these authors' opinion to build on the perception that a physical installation is of monetary value and can be seen as beneficial for the landowner receiving the installation. However, a worn down or unusable installation would instead generate a cost for the landowner. For example, a landowner may not be interested in using the part of a facility located on his/her land and the cost for removing it and restoring the land may exceed the potential income for selling the facility.

Eriksson and Hedlund (2016) note that the Swedish Land Code (SFS, 1970:994, ch. 14, §13) does not have statutes concerning the division of costs in connection with the liquidation of joint facilities. It is important that this is regulated. Furthermore, it is not convenient that physical installations can be passed on to the real property, since joint facilities contain more complex physical installations than easements normally do. It has in the preparatory work to the current legislation been suggested that compensation should be given to the landowners taking over ownership and responsibilities of a joint facility being of no economic value, but only constituting a financial cost and an encumbrance for the owner (Prop. 1970:20, p. 741). It may according to Eriksson and Hedlund (2016) be difficult for an individual landowner to receive compensation if the joint facility is divided amongst a large number of shareholders. If a landowner however want to take over ownership and responsibilities of an abandoned joint facility the statutes in the Land Code (SFS, 1970:994, ch. 14, §13) can be used.

The statistics shown in the previous section show that there is a problem concerning access to up-to-date information in the national Joint Property Association Register since 37% of the information on associations is ten or more year's old information, which may make it difficult to locate the right holders. Tillström and Wiström (2012) mention that it can even be difficult to identify who is responsible for removing a (physical) joint facility when there is a long period of time between the end if its actual use and the time of removal.

5.2 Utility easements

When the present legislation for utility easements (SFS, 1973:1144) was created, the rights holders where mainly the state or municipalities. Today, however, execution of utility easements by private companies/stakeholders have increased and new facilities have been introduced, for example telecommunications masts owned by private mobile phone operators, who can obtain the right to create and operate facilities on land. This may create problems when the physical installation has to be removed and the private company have been dissolved long ago or cannot be identified. This is not only the case for dissolved companies, but even for deceased individuals who executed a right. It may even be difficult to get right holders to take responsibility, due to bankruptcy or they are difficult to locate. It is in these authors´ opinions a need for more effective legal instruments to protect the landowner from economical damage. If the right holder no longer can be located due to e.g. inaccuracy in the real property register not being updated (which is a problem today)[8] or, bankruptcy and dissolution of the company, and there are no means making the party economically responsible for removing it. Otherwise, the bill may end with the landowner.

There are problems with inconsistencies and updating routines of actual right holders of the utility easement in the Real Property Register. There has over the years been a number of company fusions, transfer of rights and change of names of the right holders, which had resulted in outdated information in the register. There are currently ongoing initiatives to secure a better updating frequency in cooperation with some of the larger right holders.[9]

Lantmäteriet has listed several reasons for modernizing legal statutes concerning the dissolution of utility easements for unnecessary pipelines, e.g. protection of animal and plant life, securing overall healthy environment for the next generations and to prevent environmental damages (Lantmäteriet, 2011). It is furthermore concluded that pipelines no longer in use often remain in the ground or water after use due to lack of incentives to remove them and restore the area. It is also mentioned that abandoned pipelines from both general and individual economic perspectives cause huge financial losses since they make efficient land use difficult and are a hinder in the planning process. The presence of a utility easement makes the right holder one of the parties involved in the cadastral and planning process. The registration of the right in the Real Property Register (land register and cadastral index map) is seen as a negative entity encumbering the property (Lantmäteriet, 2011).

6 CONCLUSION

This study has shown that existing legislations to liquidate joint facilities and utility easements are not transparent; giving raise to different legal solutions for liquidation and the question how to deal with the physical constructions under, in or above the ground is not transparent and effective today. The authors´ therefore recommend legal inventions in e.g. the Joint Facilities Act (SFS, 1973:1149), the Utility Easements Act (SFS, 1973:1144) and the Land Code (SFS 1970:994) concerning the liquidation of joint facilities and utility easements. For example, the possibility for a joint facility shareholder to leave a joint property unit must be evaluated in regard to the possible coming

[8] Personal communication with Mr Anders Larsen, Lantmäteriet, 2016-08-14.
[9] Email communication with Mr Olof Unger, Lantmäteriet, 2016-08-29.

liquidation of the joint facility, to avoid an "easy way out" for a stakeholder and leaving the remaining shareholders with the coming costs.

Legislation can however be a time consuming process and it is therefore important to create transparent processes and other descriptions allowing the cadastral authorities to cadastral changes. Fast and transparent processes are needed for individual administrators and right holders in need of fast and effective liquidation of joint facilities and utility easements.

The study has identified that there are insufficient procedures regulating the demolition of the physical installations, which may result in that physical installations remain on the property when the legal rights has been liquidated and/or that the right is left as it is due to liquidation costs. It is recommended that liquidation should be dealt with more extensively in the guidelines already available, e.g. Lantmäteriet (2016b; 2016c) to ensure a uniform cadastral formation process, and in non-expert brochures, which can be used in consultations and communications with existing and future right holders.

It may cause inconveniences for the landowner due to own costs for removing the physical installation(s) or becoming responsible the right holders removal of the installation, or by being subject for increased costs which may arise in future cadastral procedures if the right still encumbers the property. The existence of installations no longer in use can also be a risk for human health and security and the environment. The conclusion is that there is a need for better instructions and processes for removing the legal right and as well as for the removal of the physical installation(s) and how the right holder and owner of the installation is made to fulfil his/her obligations. The authors´ think the problem will increase in the future due to continuous technical development and concern for the environment.

6.1 Future research

This study has focused on Swedish cadastral legislation and cadastral processes for creating and deleting joint facilities and utility easements. However, the identified problems may also be present in other countries, as shown in Howell (2009). The authors are planning to expand the research to encompass non-Swedish cadastral legislation to investigate whether "legal pollution" through abandoned rights is an isolated Swedish phenomenon or also exist in other countries, being the result of non-optimal cadastral processes.

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