Legal restrictions and solutions for local solar pv markets in the Netherlands

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Abstract
In the Netherlands, household end-users of electricity face several legal restrictions related to the use of their solar photovoltaic installation. The main three restrictions are the demands of the license of supply, unclarity as to program responsibility and regulated distribution tariffs. This paper analyzes these legal challenges further in order to suggest possible solutions. To this end, it investigates to what extent national legal provisions provide restrictions in four different cases of local solar markets, how these cases differ and what the implications of these differences are. Based on the obtained results, the paper explores three possible solutions the mentioned to legal restrictions: a supply license light, a system for local distribution and balancing, and different tax structures.

Keywords: solar pv, EU and Dutch regulatory framework, legal restrictions and opportunities

I. Introduction

Due to technical innovation and the liberalisation of the energy sector, a vivid market for solar photovoltaic (solar pv) systems in Europe has arisen.2 The reason for the growth of solar pv is mostly attributable to financial stimulations schemes, such as subsidies,3 and feed-in tariffs.4

In the Netherlands, a considerable number of solar pv systems have already been purchased by households end-users. Renewable energy is however still limited and only covered 4,7% in 2012.5 Most of the electricity produced is consumed by household end-users themselves; the remainder is supplied to the grid for which they receive compensation. However, the use of solar pv installations by house owners is restricted. They may not, for example, choose to deliver the remainder to a neighbour or other private party under the current Dutch legal framework. As this situation was not envisaged in the legislative process, legal uncertainty has arisen. At this point, it is not clear whether the legislator is willing to remedy this situation and, subsequently, how to remedy this situation. In this paper we review the legal restrictions that house owners face in four different forms of use of their solar pv installation (what is allowed and what is not) and explore the legal and market implications of three options to address these challenges for a particular case of solar pv use.

We proceed as follows. Section 2 discusses Dutch legal provisions regarding local energy markets and associated actors. Section 3 then investigates to what extent these provisions provide restrictions in four different cases of local solar pv use. Afterwards, section 4 explores possible solutions to these challenges. It also discusses the legal and market implications of these options for a single case of solar pv use. Finally, section 5 concludes.

II. The Dutch energy legal framework

In order to analyse the possible forms of solar pv use and whether or not these are legally allowed, we firstly outline the relevant roles of and legal provisions in the Dutch Electricity Act 1998 for the producer, supplier, household end-user, program responsible party and the transmission and distribution system operators.

The production of electricity in the Netherlands is relatively unregulated. In principal everyone can be an energy producer.6 Depending on the source, different requirements apply. The construction of a new coal plant for instance is strictly regulated under the Electricity Act, but also under environmental regulations. Purchasing solar pv systems, however, is unregulated. Installing such a system merely requires registration with the Distribution System Operator (DSO) and contracted supplier. The reason for this freedom stems from the liberalisation process and desired opportunities for new entrants in the sector.7

The supply of electricity is divided between two categories: supply to non-household end-users and supply to household end-users.8 Supply to the first category is unregulated and therefore free. The supply of electricity to household end-users on the other hand is strictly regulated. For that, a licence of supply is required.9 To obtain such a licence the applicant must meet a number of conditions, such as a particular administrative system, supply at fair prices, but also the obligation to supply electricity to anyone who so requests.10 These rather demanding requirements originate from the will to protect the position of the household end-user. The idea is that this end-user holds a weaker position and is unable to negotiate, among others, fair prices for such an important component of a household.11 Household end-users therefore hold a unique position in the
energy sector. They are always guaranteed with supply, but are also able to provide in their own needs with the assurance of a compensation for the supplied electricity.\textsuperscript{xiii} For maintaining a balance on the electricity grid, the Netherlands designed a rather unique system, namely the program responsibility system. Under this regime, program responsibility is the responsibility of end-users, other than household end-users, and supply licensees to establish or to have established programs related to the production, transport and consumption of electricity for the benefit of the Transmission System Operator (TSO) and to act in accordance with that program.\textsuperscript{xiv} Often this task is outsourced to a program responsible party (PRP). Due to the relatively low number of large producers and suppliers, this system is still comprehensible.

Lastly, the network companies (TSO for the high-voltage transmission and DSO for the low and medium voltage distribution grid) are responsible for electricity transportation, asset management, maintenance, connection conditions and the regulation of access conditions.\textsuperscript{xv} Tariffs are set by the regulator. The TSO, TenneT, also has two tasks the DSO may not undertake: grid balancing and facilitating electricity trade. As such compensation for network losses, maintaining the voltage, infrastructural management and, as mentioned above, program responsibility and the imbalance market are solely part of the TSOs portfolio.\textsuperscript{xvi xvii}

III. Legal restrictions to local solar PV

Solar pv use by households can take many forms. Four general stereotypes can be readily imagined:
1) solar pv system on one’s own roof for own use;
2) solar pv system on another roof for own use;
3) solar pv systems owned and exploited by multiple actors for everyone’s use; and
4) electricity production with solar pv systems sold in an online market where one can sell surpluses and purchase shortages.

As a consequence, any discussion of legal restrictions of solar pv use must acknowledge the various forms that it may take. Let us therefore discuss the legal restrictions and then see to what extent they apply to each form in more detail.

Roughly three main legal restrictions are readily identifiable if we look at the general characteristics of solar pv use and the Dutch legal framework. First, we face the demands of the license of supply. House owners are simply not in a position to acquire one. Fortunately, the legal prohibition to supply without a license also offers two relevant exemptions\textsuperscript{xviii} as we will see below.

Second, a question about program responsibility arises. By law, household end-users are exempted from the program responsibility but yet will behave as suppliers once they start feeding electricity back into the grid. Should responsibility hence shift towards household end-users or will it remain with the PRP?

Third, we identify two financial restrictions in the form of distribution tariffs and the tax regime. Under the current legal framework, it is not possible to differentiate tariffs. This stems from the position of the DSO and the impossibility for household end-users to work without the DSO. Household end-users are therefore bound to the DSO, whilst other parties, for example new entrants, could easily provide the same services, maybe even for lower tariffs.

In light of these legal restrictions, it should be clear that the first form of solar pv use as described above is not a problem. The use of one’s own solar pv installation does not conflict with existing regulation in any way, nor do the restrictions apply. The second form may be permissible under the first exemption of the license of supply;\textsuperscript{xviii} which provides for the possibility to supply to a neighbor, as long as both parties are the owners of the solar pv system and are therefore both liable under private law for any disturbance in the supply, e.g. technical difficulties. In this light it is important to make clear and proper agreements on the allocation of the solar pv and the electricity. Application of the program responsibility regime to the second form suggests a high level of insecurity. If household end-users will act as suppliers, will they then bear this responsibility?

Lastly, the inability to differentiate between both tax and distribution tariffs poses a financial barrier. In form two, the household end-users, giving the probable small size of such a project, will probably still benefit from the functioning of the DSO. The third form may be permissible under the second exemption\textsuperscript{xviii} of the license of supply if all end users, as well as the producer, belong to the same legal entity, so either a business or a specially for that occasion established company in the case of household end users. Whatever ‘belonging to the same legal entity’ means, however, does not become clear from either legislative history or jurisprudence. Therefore, we understand ‘belonging to’ as either owning shares of a company\textsuperscript{xix} or being a member of an association, foundation or cooperative. This entails at least practical activities in order to establish that company, and in many cases also financial complications, such as costs related to the establishment (e.g. notary fees). In this light it is important to make clear and proper agreements on practical (establishment), financial, and allocative

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(solar pv panels) demands, but also on the functioning of the company. As such the question arises whether household consumers are willing to undertake these activities, especially if their situation allows them to act as in possibility one. Much like form two, form three is hindered by insecurity that arises from the program responsibility regime. How can we best define the role of a supplying household end-user, with respect to the legal regime? Form three might take on a bigger size than form two, for instance a street or small neighborhood. In this case, the obligation to work with the DSO may pose a restriction. Through the application of advanced ICT methods, the tasks of a DSO might be less needed. The tax regime, again, poses mostly a financial restriction.

From the system of the law it follows that form four is impossible. If someone from Groningen wants to sell their electricity to someone in Maastricht, it is unlikely that they fall under the mentioned exemptions of the license of supply. Giving the fact that the trade in an online market is bound to a certain geographical area, distribution is surely needed and therefore, the traditional DSO has to play a role. It furthermore complicates the program responsibility since it is unclear who will bear these responsibilities. From these two legal restrictions it already becomes clear that an online electricity exchange market is therefore not a legal option at this time. The current tax regime or even differentiating tax tariffs make no difference here.

In the end, the overview indicates that with the exception of form one, solar pv use knows varying degrees of legal restrictions. In our further discussion we would like to zoom in on the legal restrictions of form three for the remainder of this article. On the one hand, the challenges to form two may be side-stepped with relative ease while on the other hand form four would require the creation of an entire new legal framework, which is beyond the scope of this article.

IV. Relieving the restrictions; some options

In this section we would like to propose and discuss three options to remedy the mentioned legal restrictions to solar pv systems owned and exploited by multiple actors for everyone’s use (form three): for the obligatory license for supply we suggest a license light; for the program responsibility and local distribution and balancing we suggest a closed distribution system; and for the problem of taxes we suggest a differentiating tax regime.

The first possible solution concerns a license light. It allows solar pv owners to supply electricity to anyone they desire, without the obligation to provide to anyone who so requests. The license light merely entails a registration obligation with the Dutch regulator, Authority for Consumers and Markets and possibly an obligation to close an emergency provision contract. The latter is to prevent an interruption in the electricity supply, which is prohibited under both European Union and Dutch law.\(^{xxxvi}\) It could however complicate the program responsibility issue further, given the insecurity of who is responsible. A solution could be presented in the form of closed distribution markets. Closed distribution markets (CDM) constitute the second possible solution. This entails a certain closed geographical area in which end-users are exempted from working with the traditional DSO, where they bear all the distribution responsibilities. It is for them to decide how they want to execute these, by themselves or by outsourcing (a part of) the responsibilities. In a CDM it is possible to balance locally, so the program responsibility is confined to balancing demand and supply in that area.

Under the already established exemption\(^{xxxv}\) for large non-household end-users over 100 of these CDM’s have been created throughout the Netherlands. Although there is no systematic analysis of the functioning of these CDM’s, the absence of critical notes might also be an indicator.

A CDM moreover creates the possibility to charge and calculate their own distribution tariffs, possibly offering cheaper services and therefore being able to close a business case. The Dutch government recently presented two preparatory legislative proposals\(^{xxxvii}\), whereby a CDM is possible, by means of an experiment. After a set period, the government will analyse the data and decide upon further action. The third and final proposal concerns the tax regime. Under European Union law it is permissible to differentiate between tax tariffs for sustainable and non-sustainable electricity.\(^{xxxviii}\) Differentiation would help to promote solar pv initiatives due to lower tariffs per kWh produced and consumed. It therefore may also present a good business case to sell surpluses and buy shortages. The Dutch government however chose not to differentiate.\(^{xxxix}\)

The most recently installed government decided\(^{xlix}\) to change this and allow lower tax tariffs, in case of sustainable electricity consumption, provided the production installation is placed within a certain zip code area.\(^{xl}\)

The suggested relieving options imply a number of practical and contractual considerations, which we will discuss below. First, the supply license light might introduce insecurity of supply, which is impermissible under both EU and Dutch law. The supply license light concept seems sufficient to the extent of normal operations and the occasional use of external (read
DSO) back-up. The question is more how this would work if the intermittent nature of solar pv would require more regular back up power supply. Demand peaks each day in the evening when solar radiation is low / non-existent, for example. Batteries can of course go a long way handling peaks and lows, but making them obligatory faces its own legal challenges. A solution to this might be an obligatory emergency provision contract. In case the security of supply might be interrupted, the emergency electricity could cover the demand. An implication of this might present itself in higher prices per kWh. It will therefore always be necessary to prevent this from happening as much as possible.

The license light furthermore presents insecurity concerning the program responsibility system. As we explained above, for household end-users the licensed supplier bears the program responsibility while the TSO is responsible for maintaining the balance. If household end-users would supply streets and small neighborhoods, side-stepping the supplier, the question arises how the program responsibility can be covered. Who will then make the programs and communicate with the TSO? Could household end-users outsource this to another party, possibly a new entrant? The second mentioned possibility, the CDM, might offer a solution, although it presents its own challenges. Second, the inter-actor dynamics within CDMs may pose complex legal issues. A strong sense of community seems a prerequisite for successful collective entrepreneurship. Yet even if present, this does not protect against free riding behavior on part of some actors or the resulting unequal division of costs and benefits. How may it be prevented and/or punished? Moreover, while monitoring and bonding may help (two common strategies in this regard), the question rises who can hold a company that has such an information and strategic advantage to account? Can it be regulated in order to avoid abuse?

Another question resides over the longevity of a CDM. New technologies become old and communities change over time because of migration, changing values, or simply because the next generation replaces the existing. Will new house owners have the option to choose a new supplier and not take part in the CDM? In this light, what are the entry and exit conditions of a CDM? A question especially relevant if service provision is unintentionally more expensive than normally. Doesn’t the ‘not more than usual’ rule apply and allow for customer switching? The tax option of course could play a vital role in avoiding this situation.

In the end, the overarching message would be that CDMs need contractual safeguards to deal with contingencies and that it is important to discuss these before starting one. Much like a marriage knows the possibility of a prenuptial agreement, planning for contingencies may not be romantic, but it sure helps create clarity and trust among the participants of a CDM in case of difficulties that present themselves along the way. Third, it is very well conceivable that any local project will only exist if there is a viable business case. The electricity bill consists of three, almost equal, parts: the price for the kWh, taxes and system and distribution tariffs. xxvii If household end-users are able to lower the price for the electricity itself, it might already be rewarding. However, the taxes and distribution tariffs also constitute such a large portion of the electricity bill, it might be desirable to be able to lower these costs. Unfortunately, the tax regime renders it impossible to lower the costs of this component.

Through the discussion of the possible solutions, even more insecurities and questions arise. The last years the Dutch government has researched possibilities to accommodate societal changes and wishes not only to be self-sufficient but also to create a local solar pv based electricity market. From the most recent announced preparatory legislative package, xxx it becomes clear that the Dutch government is only willing to experiment, and is therefore not bound to adjust the law permanently to these societal wishes. The experiments will be evaluated after a period of 10
years. If the experiments prove themselves to be successful, permanent provisions might be introduced. It prevents the government from committing itself to provide in legal possibilities for developments that, for now, merely offer insecurity.

V. Conclusion

In this article we have identified three main legal restrictions and related them to four possible forms of solar pv use by house owners. Furthermore, we have suggested and discussed three possible solutions to remedy the legal restrictions for the community form of solar pv use.

One important conclusion overall, both for the restrictions and possible solutions, is that from the legal provisions practical issues arise. This manifests itself often in the need for clear and concise agreements between the parties involved. Examples concern the ownership over the solar pv installation, the distribution of the electricity, the participation in the project, the possibility to exit the project and the question whether responsibilities should be outsourced or not and subsequently, to whom? Unfortunately, the development of local solar pv based electricity markets is still new in the Netherlands and thus lacks a certain standardization or viable domestic examples to learn from. In this, foreign experiences could play an important role. So can the Dutch government. They could remedy the most apparent legal restrictions. It seems however they are not willing to do this yet...

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1 In Germany, by many considered the leader in solar pv, produced 19,340 GWh electricity in 2011 through solar pv systems alone. Belgium produced 1169 GWh electricity in 2011, France produced 2050 GWh electricity in 2011 and the Netherlands produced 101 GWh electricity in 2011. Compared to 2010, the numbers were considerably higher: Germany produced 11682 GWh, Belgium produced 560 GWh, France produced 620 GWh and the Netherlands produced only 60 GWh. Source: Statistics International Energy Agency.

2 Many countries for instance have a purchase subsidy, awarding consumers a portion of the purchase price. In the Netherlands this subsidy is called SDE+ (stimulation sustainable energy). For this subsidy grants from energy taxation are used.

3 Many countries have a feed-in tariff or a comparable system. This tariff includes a cost-based price for renewable electricity supplied to the grid. See among others, Eyre, N, Energy saving in energy market reform – The feed-in tariffs option, Energy Economics, Vol. 38, July 2013, pp. 176-185.

4 Source: website Dutch national government.

5 Article 1, sub 1 under g Electricity Act 1998.

6 Kamerstukken II 1998-99 26 463, nr. 3.

7 The distinction between users in the Dutch Electricity Act 1998 is a technical one; small end-users are users with a connection of 380 Ampere or smaller, large end-users have bigger connections, article 95a Electricity Act 1998. Small household end-users could therefore also be small companies. The distinction between household and non-household end-users is chosen for the purpose of this article and relates to the distinctions made in the European Union Electricity directives.

8 Article 95a, sub 1 Electricity Act 1998.

9 Article 95b Electricity Act 1998.

10 Kamerstukken II 1998-99 26 463, nr. 3.

11 In the Netherlands there is a slightly different system from the feed-in tariff, namely offsetting. This means that for every supplied kilowatt-hour, one kilowatt-hour is subtracted from their energy bill, including the tax to be paid, Article 31c Electricity Act 1998. This system ensures a compensation that corresponds with the market price, whereby it is unnecessary to determine the compensation price every now and then.

12 Article 1, sub 1 under o Electricity Act 1998.

13 Article 1, sub 1 under k and article 10a juncto article 16, sub 1 Electricity Act 1998.

14 See article 1, sub 1 under k and article 10 juncto article 16, sub 2 Electricity Act 1998.


16 Article 95a, sub 2 under a and c Electricity Act 1998.

17 Article 95a, sub 2 under a Electricity Act 1998.

18 Article 95a, sub 2 under c Electricity Act 1998.

19 In the Netherlands we distinguish between two types of limiteds: namely the private limited company, article 2:175 Civil Code and the public limited company, of which public company the shares are traded on the stock market, article 2:164 Civil Code.


21 Article 1, sub 1 under aq Electricity Act 1998.

22 See Consultation ’Stroom’ and Consultation resolution experiments local sustainable electricity generation.


24 The Dutch government chose to lower the tax tariffs depending on the amount of electricity used. Below 10,000 kWh per year (e.g. the category of household end-users), the tariff per kWh is € 0.1185. Above 10,000 kWh per year, the tax tariff is € 0.0010 per kWh, article 59 Environmental Taxes Act.

25 See website Dutch government.

26 This intention was further developed in the Energy Accord (2013), and will be implemented in the Environmental Taxes Act in the near further.

27 Article 86g, sub 1 Electricity Act 1998.

28 In the third form, household end-user may be self-sufficient and therefore less burdensome on the transmission grid, but also reduce balance risks on the distribution grids. In local projects, the will has arisen to be able to meet supply and demand through ICT applications. Under form three, especially if it concerns a street of small neighborhood, this is very well possible. It is however not legally possible to work without the DSO. This is, again, only reserved for large non-household end-users. This is justified in the law through the natural monopoly of the DSO, and the roles it fulfill.

29 Pront-van Bonnel, S., Een redelijke energieprijs: de mythe van de marktwerking (Fair energy prices: the mythe of free markets), inaugural speech, 2012, June 20 (University of Amsterdam).

30 See endnote xxiii.