RENEWABLE ELECTRICITY CERTIFICATES IN THE FLANDERS REGION: PERFORMANCE AND POLICY OPTIONS FOR REFORM

Peter Van Humbeeck[a,b] *, Annemie Bollen[b], Mohamed Al Marchohi[a,b]

[a]University of Antwerp, Prinsstraat 13, 2000 Antwerp, Belgium. www.ua.ac.be
[b]Social Economic Council of Flanders, Wetstraat 34-36, 1040 Brussels, Belgium. www.serv.be

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Abstract

The tradable green certificates (TGC) system in the Flanders region in Belgium has led to a strong growth in renewable electricity production, accompanied however by a parallel increase in complaints about regulatory uncertainty and high cost. In this paper, we assess the major strengths and weaknesses of the FlemishTGC- quota system. We then use the framework of a regulatory impact assessment (RIA) to analyse possible reform options to make the RE-supporting scheme more effective, efficient and fair. Two main options stand out: retention of the quota obligation for suppliers but with a thoroughgoing *banding* of certificates (Q option) or abolition of the quota obligation for suppliers and of the corresponding market for certificates by a system of *guaranteed selling prices* for the certificates that differ per application (NQ option). Our analysis shows that in the case of Flanders, whit a large concentration of market power on the electricity market as well as on the TGC- market, even a radically modified quota system (Q option) will be unable to alleviate a number of fundamental disadvantages of the existing system. A system without quota (NQ option) can also work in a concentrated market and turns out to be more effective, efficient and just. The Flemish government however very recently opted for Q. It therefore seems that the coalition of existing integrated players on the electricity market and affiliated RE producers who for obvious reasons supported the retention of the quota obligation have had more impact on the political decision making than analysis by scholars or the interests of stakeholders such as end users (companies and households) and small and independent RE-producers.

Key words

renewable energy, tradable green certificates, guaranteed selling prices, regulatory impact assessment

*Corresponding author. Tel: +32 2 20 90 111
E-mail address: pvhumbeeck@serv.be
peter.vanhumbeeck@ua.ac.be

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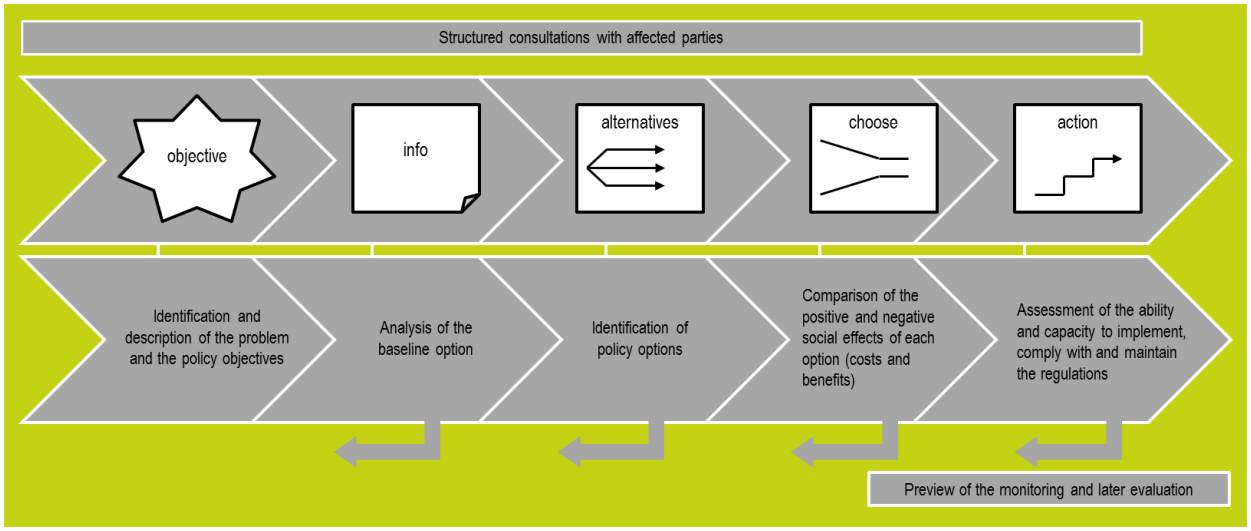
1. Introduction

The Flemish tradable green certificates (TGC) system in Belgium has had a rough time. It has required very frequent modifications and corrections: more than 20 in 10 years' time. Unfortunately, this has not resulted in a stable regulatory environment. Growth in renewable energy production has been accompanied by a parallel increase in problems and critique. This is true to such an extent that today – with the exception of PV owners and Electrabel (the dominant, incumbent electricity company in Belgium) – no one appears to be satisfied: renewable energy companies complain about the legal uncertainty[1], major consumers of energy about the high cost[2], citizens about the socially unjust financing[3]… The reason is that this policy has been characterised for years by an ad hoc treatment of symptoms, despite repeated requests for a fundamental evaluation and modification. Even the most important changes were never underpinned with a solid problem analysis and a study of alternatives and their effects.[4]

Nevertheless, it was precisely for this reason that the *regulatory impact analysis* (RIA) was implemented in Flanders.[5] Consequently, in this paper we use the steps in a common RIA process (see figure 1)[6] to investigate how best to correct the TGCsystem.[7]. We therefore also show that RIA provides a good framework for evaluating legislation both ex ante and ex post. It allows situating and comparing all relevant aspects in a structured and transparent way, so that decisions based on partial considerations or populist pronouncements can be avoided. Such decisions after all always result in weak solutions and an unstable regulatory environment. Ten years of Flemish renewable energy policy provide a good example of that.

Figure 1: standard RIA process



2. Current system and reform objectives

2.1 The Flemish TGC system today

In addition to the selling price for their electricity, producers of renewable energy receive an TGC per generated MWh.[8] The electricity suppliers are obliged to purchase these certificates. They are required to submit enough TGCs per year, or pay a penalty. The imposed quota is increased yearly, and will reach 13% in 2020. Hence, this is also referred to as a quota system. The suppliers pass on the costs of the quota obligation to their customers. Producers are able to sell their TGCs not only on the certificate market, but in certain cases also to the distribution system operators. They are required to pay a minimum price that differs depending on the technology. The producer will make use of this purchase obligation on the part of the distribution system operators if this minimum price is greater than the price on the certificate market, as is the case for *solar energy* (PV). The distribution system operators later place the purchased TGCs on the market, and thus are able to partly recuperate the costs associated with their purchase obligation. The net cost is passed on to consumers via the utility rates.

2.2 Reform objectives

In view of the ongoing critique of the system, the Flemish government finally agreed to a study to look into possible reforms.[9] This study provided useful information, but contained no analytical framework to structure and balance this information.

In our further analysis, we use an analytical framework with three basic criteria to select and assess policy instruments: efficacy, efficiency and equity[10]. We further subdivide each of these criteria to obtain six objectives for

assessing support options (see table 1). We add a seventh to these since the policy with respect to the TGC system also strives for sustainable economic activities and jobs.

Table 1: assessment criteria

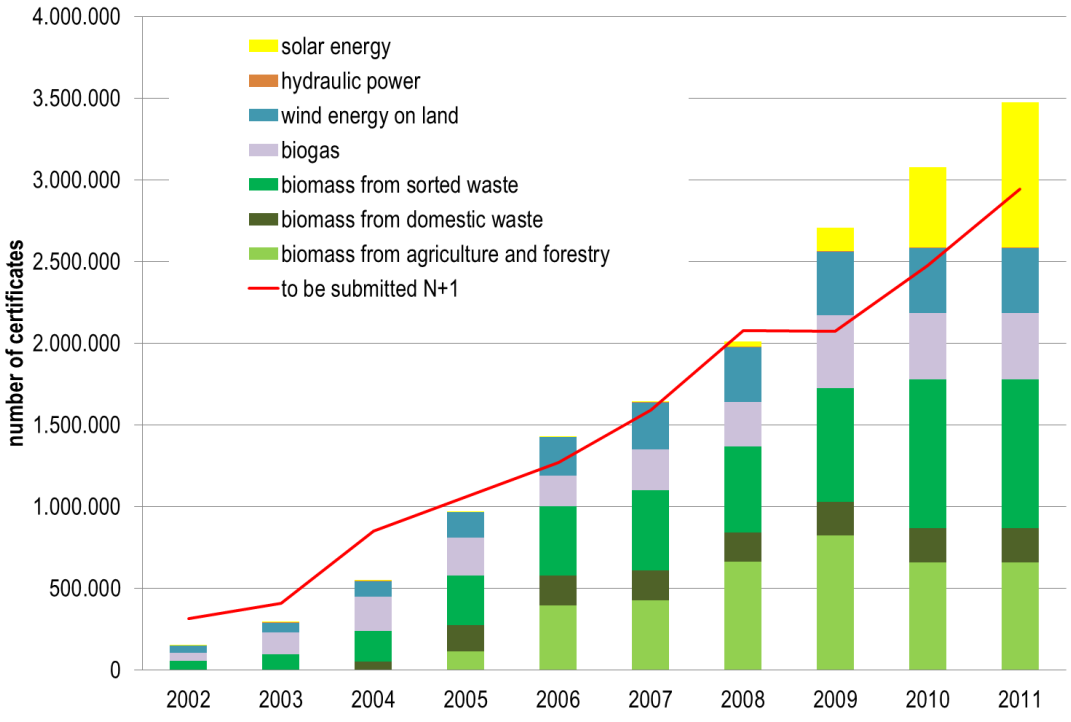
Efficacy	Efficiency	Equity
Macro efficacy: Does the system contribute to realising the renewable energy (RE) objectives (MWh production)?	Cost efficiency: Are the costs to society as low as possible?	Distribution: Does the system result in a fair distribution of costs and benefits?
Micro efficacy: Does it provide sufficient certainty with regard to investment and operation?	Administrative efficiency: Are the management costs for the government feasible and as low as possible?	Impact on market processes: Does the system avoid a negative impact on free market processes?
Secondary benefits: Does the system realise the ambition of new sustainable activities and jobs?		

3. Analysis of the current system

3.1 Macro efficacy

In the past 10 years, the certificate system has contributed significantly to the development of RE in Flanders. It provides a sufficient investment stimulus for many applications, allowing the quota to be reached in recent years. Which only makes sense: a quota system ensures that the intended quota are realised in principle, unless – as was the case in the early years – major non-financial obstacles exist (e.g. permits, network connection…). Especially the number of PV installations has increased substantially in recent years due to the high level of minimum support. In terms of production, however, biomass installations are still the most important (see figure 2).

Figure 2: Evolution in the number of TGCs granted, compared to the number of TGCs to be submitted (N+1)



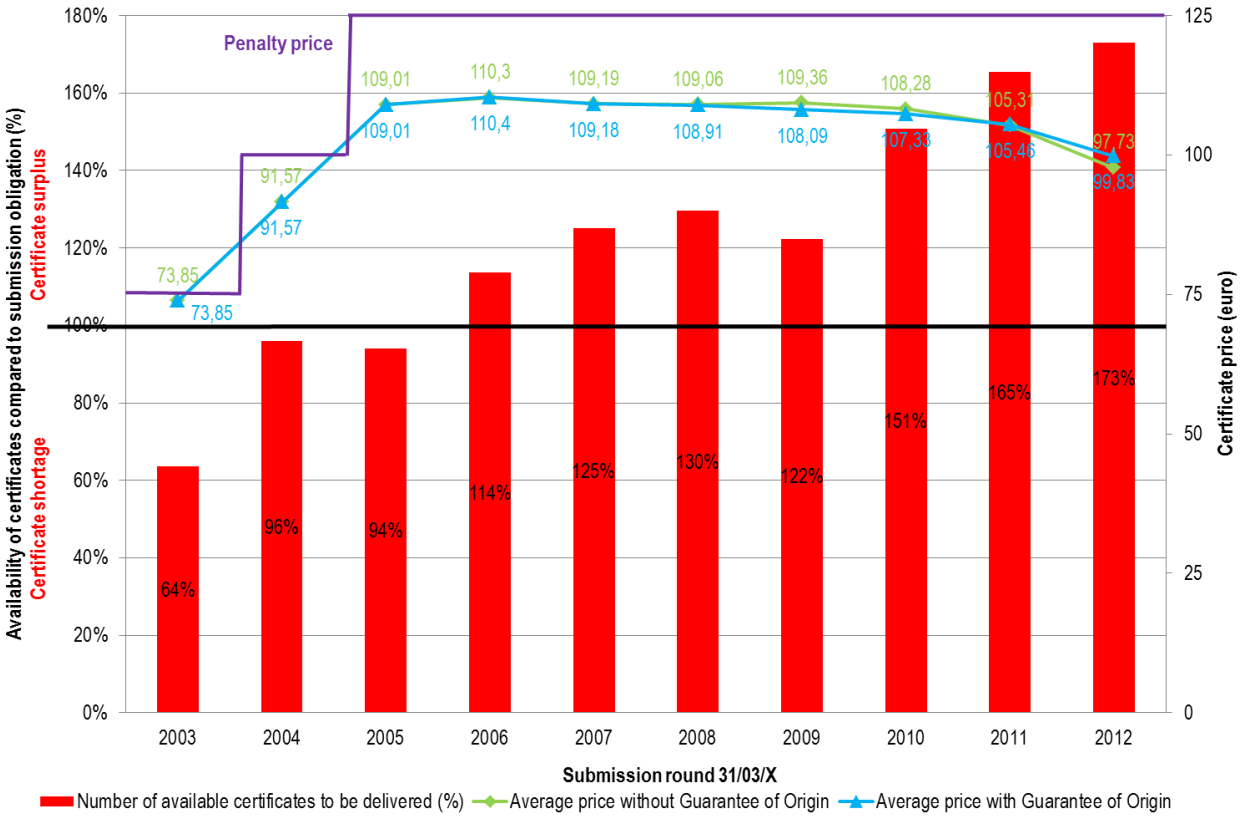
The quota system, however, has difficulties in effectively continuing to create extra MW since the real objectives decrease in the case of decreasing electricity consumption[11] and because it creates an upper limit on the development of RE applications (see also below). Moreover, efficacy in the short term does not necessarily mean that the TGC system also supports the needed *long-term* transition. In fact, the opposite is the case. Gradually increasing the quota each year primarily supports existing and easily applicable technologies that can achieve quick results, such as the large-scale co-firing of biomass in coal-fired power stations. Innovative (process) integrated applications and system-supporting components are given much less attention and resources. Yet these are crucial to facilitating a greater share of RE in the longer term.[12]

3.2 *Micro efficacy*

The certificate system also has problems retaining its effectiveness from the standpoint of the individual investor. New investments are discouraged if the quota is reached and the supply of certificates exceeds demand. This is a logical consequence of a quota system, but it results in a *stop-and-go* effect. In practice, there have been excess certificates for a number of years, but this phenomenon has become structural in recent years. The most important cause is the boom in PV certificates[13] that resulted in a development that was not anticipated when the quota was set. This has resulted in declining prices[14] and decreasing revenue from the sale of certificates, causing difficulties for existing installations and sometimes even leading to their shutdown (figure 3).

For an investor, it is not only the level of support that counts, but also the certainty of receiving a specific level of support. In the quota system, there is uncertainty concerning future demand and concerning the market price of certificates[15]. This uncertainty adds to the uncertainty caused by the inherent repeated changes to fundamental components such as the quota, the penalties and the allocation and submission of certificates. Hence, in practice, investment security comes not so much from the certificate market but from the minimum support.[16]

Figure 3: TGC prices and surpluses



3.3 *Cost efficiency*

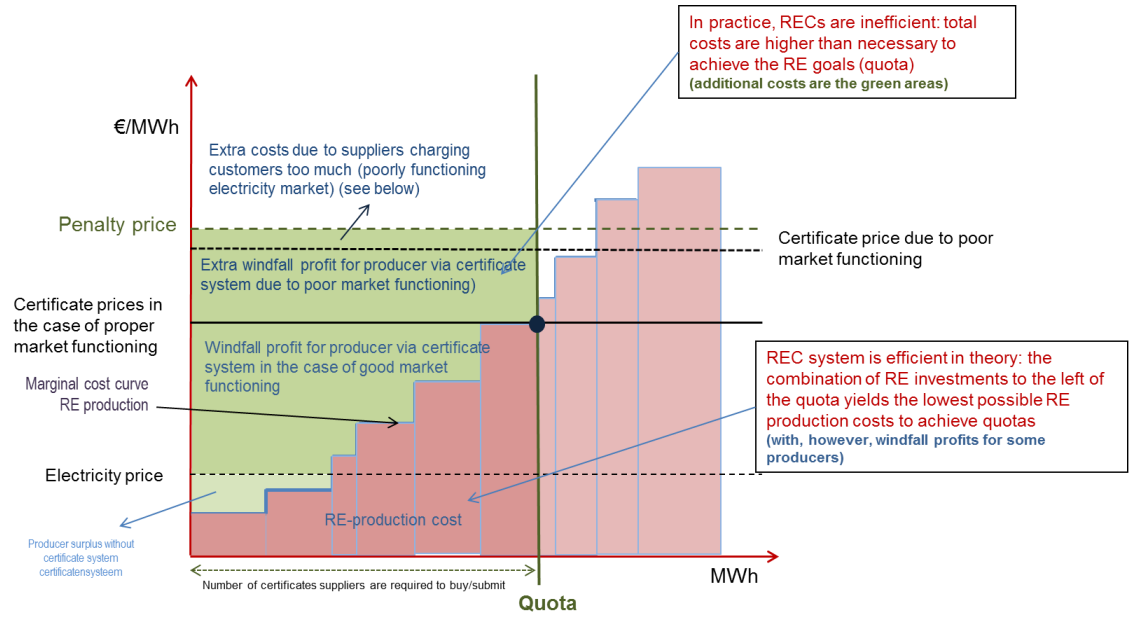
A quota system in theory leads to a minimisation of the total cost required to realise a given quota, since the competition between suppliers ensures that they will wish to achieve their quota as cheaply as possible, thereby indirectly stimulating the use of the most cost-efficient applications. At least if a number of preconditions are met such as (1) limited cost differences between the technologies, (2) the proper functioning of the electricity market, and (3) if no influence is exerted on the choice of technologies. *Quod non*. As a result, the advantages of a quota system cannot occur in the Flemish TGC system and, on the contrary, it costs (much) more than is necessary:

(1) Due to large cost differences between technologies, the unique certificate price on the certificate market gives some applications (much) more support than is needed (so-called windfall profits due to the fact that the market price of the certificates is higher is than the *unprofitable top* (UT) or, in other words, than what is required to make the investment economically viable (see figure). This is the situation, for example, for specific large-scale biomass installations.

(2) Due to concentration on the Flemish electricity market, there is not enough true competition between suppliers. Because of this, they by definition do not opt for the cheapest RE technologies, and moreover, under the guise of a

renewable energy fee, they are able to charge more to end users than the real costs incurred in meeting their quota obligation (see figure 4).

Figure 4: Losses in efficiency due to windfall profits and poor market functioning



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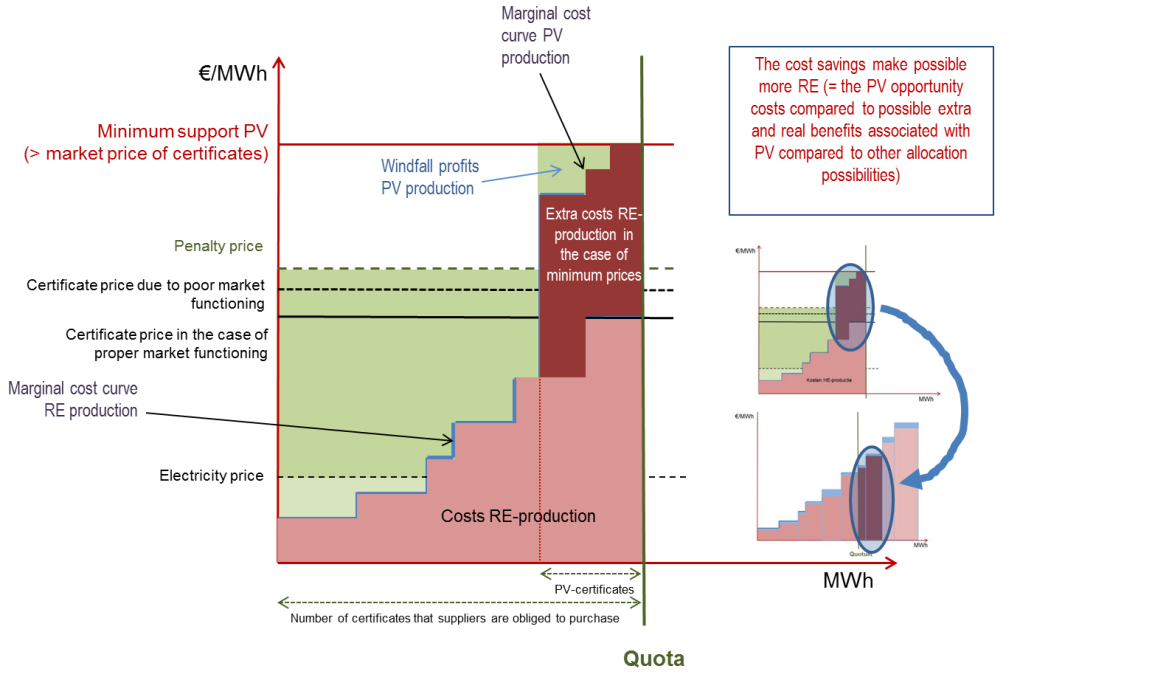
(3) The policy decision to (already) support a (still) expensive technology – such as solar panels (PV) – via minimum prices that are (far) above the market prices for certificates, strongly increases the costs of achieving the quota (see figure 5). The high minimum prices result in a more expensive RE mix than would be the case in a pure quota system, and in combination with a quota, lead to a displacement by PV installations of other, cheaper investments, certainly if the quota is almost or fully met.

Figure 5: Extra costs due to minimum prices for PV above the market price of certificates



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Furthermore, there is over-subsidisation because the minimum prices are sometimes higher than what is needed to make the investment economically viable (higher than the UT). This has long been the case for example for PV, and

(due to the decrease in the price of PV panels) remains so for many PV installations after the recent lowering of the minimum prices (allowing the PV boom to continue and even increase in 2011[17]) and after the dropping of the federal tax deduction. The cost of installations is paid back after a few years, but the installations continue to receive high minimum support for 20 years[18] and thereafter continue to receive certificates that can be sold. During this period, support does not evolve with the increasing energy prices that of their own accord make the investments more profitable.

In addition to these inefficiencies, the TGC system creates a number of extra costs for the market parties. The transaction costs associated with the trade in certificates make the system expensive (despite the efforts to simplify the procedures and automate the formalities) because supply and demand must be coordinated, agreements must be concluded, etc. Furthermore, there are the risk premiums (high financial returns that banks and financial institutions require) as compensation for the uncertainties that the quota system implies for investors and suppliers. The higher the risk, the more expensive the capital. Finally, there are the pre-financing costs of the distribution system operators. They after all cannot include the full net TGC costs of buying PV certificates in the utility rates charged to end users. These rates are established for periods of four years in multi-year rate agreements with the energy regulation commission CREG, and at that time the distribution system operators severely underestimated their costs because they could not foresee the changes to the regulatory environment (with the boom in PV installations). This means that these costs can only be charged at the following rate change, together with the financing costs connected with the amounts paid in advance. These pre-financing costs increase if, as is the case today[19], the distribution system operators must buy up more certificates, receive lower prices on the certificate market and must wait longer before they can pass on their costs to the end user.

Because some information is lacking and because Flemish electricity and gas regulator VREG does not keep or release all relevant information, it is difficult to exactly calculate the inefficiencies. The indications in any case are that they are quite substantial. The loss of efficiency associated with the more expensive RE mix (because the PV minimum support is higher than the market price for the certificates) and the over-subsidisation (because the PV minimum support is higher than the UT) can be estimated at approximately 15% compared to a pure quota system that meets the 13% renewable energy objectives in 2020. The loss of efficiency due to the windfall profits in the quota system (because of the unique certificate price) amounts to roughly 30% compared to what would be adequate in a system that only compensates the UT for each technology. Finally, the system costs (due to risk premiums and transaction costs) that the suppliers charge extra to end users can be estimated at 10 to 15% of the pure certificate costs.

3.4 Administrative efficiency

Managing a quota system properly requires much information. It is very difficult, if not impossible, to set good quotas because the attainable and expected development of RE in line with electricity consumption is almost impossible to predict. Yet the quotas are crucial. If quotas are too low, investments could (temporarily) come to a halt. Quotas that are too high result in high costs and senseless penalties. Automatic quota adjustments in turn result in an unstable framework and put at a disadvantage new suppliers and suppliers without their own RE production capacity. The result is that, in practice, frequent ad hoc modifications to the system take place in order to manage the costs and guarantee the profitability of existing projects and new investments. These modifications also require considerable resources on the part of the government. In addition, the implementation also entails costs: for processing applications for renewable energy certificates, updating and improving the certificate database, answering questions, the monitoring and enforcement tasks, etc. For this, VREG has already repeatedly asked for – and partially received – an increase in its budget and workforce.

3.5 Distribution/Equity

There is no transparency concerning who receives how much via the certificate system and who contributes how much. All costs (including unnecessary costs) are passed on to end users (households and companies) via the electricity rates. The distribution of costs, however, is subject to little control: the distribution system operators and suppliers themselves decide whom they will charge and how much. This results in differences among network regions, and leads to an unjust distribution between and within target groups. Thus, it is quite possible that a greater proportion of the costs of the certificate system financed via the suppliers is borne by the distribution network customers than by transmission network customers due to the better negotiating position of transmission customers (very large companies). In any case, the transmission customers bear relatively less of the costs of the system due to the degressivity of the certificate obligation[20] and due to the fact that the purchase obligation does not apply to transmission network operators, and the costs for the purchase of certificates are not passed on by the distribution system operators to the transmission network customers but only to the distribution network customers. Owners of RE systems in any case pay nothing or pay less. An increasingly greater burden must be borne by increasingly fewer shoulders, and financing via rates becomes untenable over time. In addition, a huge financial burden is passed on to

the future: 95% of the subsidy costs in the case of a 20-year subsidy. The benefits of the inefficiencies especially go to the traditional energy sector and to the RE sector (see below).

3.6 Impact on market processes

The quota system combined with a concentrated electricity market is to the advantage of the dominant integrated supplier and affiliated renewable energy producers. This supplier after all can generate certificates at cost (they do not appear in the statistics, are not traded) from installations that, moreover, are cheap (among others via co-firing of biomass in existing coal-fired power stations). This provides a cost advantage and the benefit of a guaranteed supply. Other suppliers must either pay the higher price on the certificate market, or obtain permits and build their own (often substantially more expensive) installations. This makes the increasing quota obligation an ever greater obstacle for (the addition of) new suppliers without production capacity. Moreover, the dominant supplier also has a dominant position on the certificate market, on the demand as well as the supply side[21]. As a result, it has the best view of the evolutions in the market and can strategically manage its certificate portfolio. It has the best negotiating position with respect to prices and quantities. Small or independent producers have a weaker negotiating position. For them, the administrative effort required to contact electricity suppliers, explore and monitor the certificate market, negotiate a price and sell, is too great in proportion to the amount they receive in the end. This results in especially suppliers-buyers dominating the certificate market and obtaining lower prices.

In the past, VREG has made diverse attempts to improve the market's functioning, including publication of lists of buyers and sellers of certificates, publication of average prices and volumes, and the establishment of Belpex as trading platform for certificates. This, however, has not substantially improved the certificate market's functioning, because the fundamentals of the market are left unchanged. This probably also applies to other proposals in circulation: the stimulation of extra users on the market by allowing companies themselves to submit certificates, the introduction of a clearing house, or the bundling of smaller players.[22] Market fundamentals are very difficult to change.

3.7 Secondary benefits

Support of expensive technologies can be justified if benefits other than simply more RE are realised. This is explicitly the purpose of the high minimum support (higher than the market price for certificates) for PV in Flanders: "We must promote domestic companies (…) and ensure that they can receive a first market here".[23] Globally, RE is indeed a major growth market with many opportunities for new economic activities and sustainable employment. Especially production companies with innovative activities and a chance of export success will ensure continuing growth and employment in this sector. For example, the expectation for PV is that applications will evolve to 'intelligent' variants with modules, sensors, switches and convertors that can be integrated into buildings more aesthetically. Flemish companies are active in all of these domains, and can provide added value in the European and international markets.

The TGC system, however, does not target these innovative products and services in which Flemish production companies specialise. In the quota system, the choice of which renewable energy to use is largely left up to the suppliers, and the high minimum support for PV has primarily led to the large-scale installation of imported standard panels[24]. The installation of solar panels offers limited export possibilities, except in the case of very large or specialised projects, but these are not/no longer supported. Due to a lack of export possibilities, the many jobs that the installation sector has created are strongly dependent on Flemish subsidy policy and thus unsustainable.

4. Policy options

Current policy focuses on stimulating investments in RE with operating subsidies via the TGC system, but there are also other ways: investment aid, innovation aid, tendered concessions, public investments, participation in large projects etc. These alternatives are better suited in some cases and for some applications. Hence, a more diversified set of tools than that available today is recommended. This also means a reduction in the scope of application of an TGC system.

We will limit our further analysis below, however, to the two basic options to reform the existing TGC system formulated by diverse organisations:

0. Baseline: the present hybrid system (as the reference for the assessment).
1. Q option: retention of the quota obligation for suppliers but with a thoroughgoing *banding* of certificates. Banding means that some technologies will receive less or more certificates than their actual production of renewable energy would justify, in order for example to correlate the support better with the UT and prevent over-subsidisation due to windfall profits. Banding is already partially used in the current regulations[25], but is more thoroughgoing in the Q option. The purchase obligation at minimum support levels remains and is applied more generally in order to provide investment certainty.

2. NQ option: abolition of the quota obligation for suppliers and of the corresponding market for certificates. The support via certificates remains, as does the sale of the generated electricity via the electricity market. The price of a certificate, however, is not determined by the market, but is a guaranteed selling price that differs per application depending on the UT, similar to the current system of minimum prices. To ensure the goals are attained, there is strict monitoring and periodic fine-tuning of the subsidy levels.

Figure 6 illustrates how these options are related to the properties of a pure quota and feed-in-system.

Figure 6: comparison of systems

For both options, we propose that the government makes a well-founded strategic choice concerning which technologies and applications deserve support (a so-called strategic mix) and that the minimum or selling prices for these technologies and applications – and the duration of the support – match the correctly calculated UT (no more over-subsidising or under-subsidising, and thus a drastic and accelerated lowering of the PV minimum support) and evolve with the energy prices and possibly the biomass prices. The buying up of certificates in both options is done at the guaranteed prices by the distribution system operators or a purchasing body, and the financing (temporarily) via the electricity rates. The passing on of costs in the net rates occurs immediately (no pre-financing costs) in both the distribution and the transmission network rates. The passing on of costs is also more closely regulated, with the government determining the distribution of costs between companies and families (see justice). Complete solidarity among distribution system operators ensures a uniform passing on of costs throughout Flanders.

5. Impact assessment

Table 2 summarises the effects of Q and NQ compared to the baseline.

Table 2: Effect analysis results

Criteria	Positive elements in the present system	Q	NQ
Macro efficacy	Relative certainty concerning the realisation of objectives	0	0
Efficiency	Stimulates lowest cost options (excl. PV)	-	-
	Weak points in the present system		
Macro efficacy	Hampers long-term transition	+	+
	Quota can have an inhibiting effect	0	++
Micro efficacy	Insufficient certainty concerning the price of certificates. Demand is unpredictable. Surpluses are a problem.	+	++
	Many modifications to quota fundamentals result in instability	0	++
Cost efficiency	Windfall profits due to unique certificate price and large cost differences	++	++
	Limited cost competition between suppliers, allowing them to charge more than necessary for the quota obligation	0	++
	Expensive RE mix (minimum support for PV > market price)	(++)	(++)
	Minimum price > UT, Duration of certificate period > lifetime of the technology in UT; Minimum support does not vary in function of the underlying parameters	(++)	(++)
	Risk costs and transaction costs	0	++
	Purchase obligation results in purchase costs and administrative costs for distribution system operators (or purchasing body)	0	-
	Pre-financing costs for distribution system operators due to multi-year setting of net rates	(++)	(++)
Adm. efficiency	Management costs for government	-	+/-
Distribution/Equity	Unclear which end user contributes what to the costs of the supplier quota obligation	0	++
	Unclear which end user contributes what to the buy-up costs of distribution system operators and how suppliers pass on the costs of the distribution system operators, passing on of costs is not uniform	(++)	(++)
	Transmission network customers contribute less	(+)	(+)
	Losses in efficiency at the expense of end users and to the benefit of (especially integrated) players on the electricity market and RE producers	0	++
Impact on free market processes	Quota system strengthens the position of dominant producers and suppliers on the electricity market, and is to the advantage of larger vertically integrated players	0	++
Secondary benefits	The supported mix inadequately targets applications with opportunities for continuing growth and employment in Flanders	(++)	(++)

Legend: + Better than in the current system; - Worse than in the current system; ++ Problem solved; 0 Problem remains (no difference); ( ) hypothesis that is the same for both policy options (see description of policy options)

5.1 Efficacy

In Q and NQ, the realisation of the RE objectives can be guaranteed similar to the current system, albeit with strict monitoring and regular fine-tuning. In Q, the problem remains that the quotas inhibit investments when the quota is obtained, and the setting of the quotas becomes more difficult because the one-to-one relationship between (acceptable) certificates and realistic production disappears. In both options, due to the strongly differentiated banding or pricing, better control of the system becomes possible depending on the desired strategic energy mix and long-term transition. Q, however, contains more uncertainty due to a fluctuating certificate price and a varying surplus or shortage.

5.2 Efficiency

Q and NQ eliminate over-subsidisation due to windfall profits by working with strongly differentiated banding or prices. Q, however, leads to greater risk premiums due to a more complex system design. Moreover, under Q, suppliers themselves decide how much of the cost they will pass on and how (unregulated segment of the electricity market), and in a concentrated electricity market, the risks of excessive charges remain. In NQ, however, regulation is possible: network management is a monopoly, thus regulation of the network rates is allowed under European regulations. Moreover, NQ results in lower administrative costs for suppliers and producers (no marketing research, negotiation…), but does result in extra administrative costs for distribution system operators or a purchasing body (greater purchase obligation) and in new management costs for the government (determining the strategic mix and the corresponding levels of support, monitoring). Many management costs, however, are eliminated: determining quota and penalties, monitoring the certificate market, monitoring the quota obligation, levying and collecting penalties… In Q, management costs also increase due to the thoroughgoing banding and the required monitoring. The costs of managing the quota obligation and the certificate market remain. This is also the case for the administrative costs for suppliers and producers.

5.3 Equity

Winners in NQ are the end users (companies and families, except for self-producers) that under the current system and in Q finally pay for the inefficiencies due to windfall profits and inadequate market functioning, and the RE producers (other than the large or affiliated players) that become less dependent on the major suppliers and for whom the certainty and stability of the support are important. Losers under NQ are especially the large, existing integrated players on the electricity and RE market and – if the demand for certificates is sufficiently high (shortage and thus greater profit margins) – the RE sector.

5.4 Conclusion

The conclusion is that Q (like NQ) prevents windfall profits, but (contrary to NQ) is unable to eliminate a number of fundamental disadvantages of a quota obligation: the difficulty in establishing proper quota, which has ramifications for the stability of the system; the losses in efficiency as a result of market risk premiums and the use of market forces on the certificate market; the reinforcing of the concentration on the electricity market; the inhibiting effect on investments in the case of certificate surpluses; and the lack of transparency and the ability to control the passing on of costs by suppliers. Thus, our analysis points clearly in the direction of NQ as the best option.

6. Implementation and monitoring

Four preconditions are essential to implementing the NQ option:[26]

- The evolution of costs and investments must be properly monitored. The regulatory environment offers the best explicit guarantees in this regard.
- Commitments with respect to existing installations must be respected. For this reason, the purchase obligation must apply to all currently acceptable certificates, regardless of their holder (producers, suppliers, traders...) and the level of support for existing installations must correspond to the historical minimum prices or average market prices.
- The powers of the energy authorities must be strengthened. Even today, the Flanders Energy Agency (VEA) and VREG are incapable of properly following up the functioning of the TGC system and preparing the necessary policy adjustments.
- Consideration must be given to alternative sources and methods of financing (e.g. capacity tariff, CO_2 levy, general remedies, other forms of degressivity…). Due to the growing number of self-producers, the basis for passing on costs in the electricity rates is decreasing.

7. Consultations

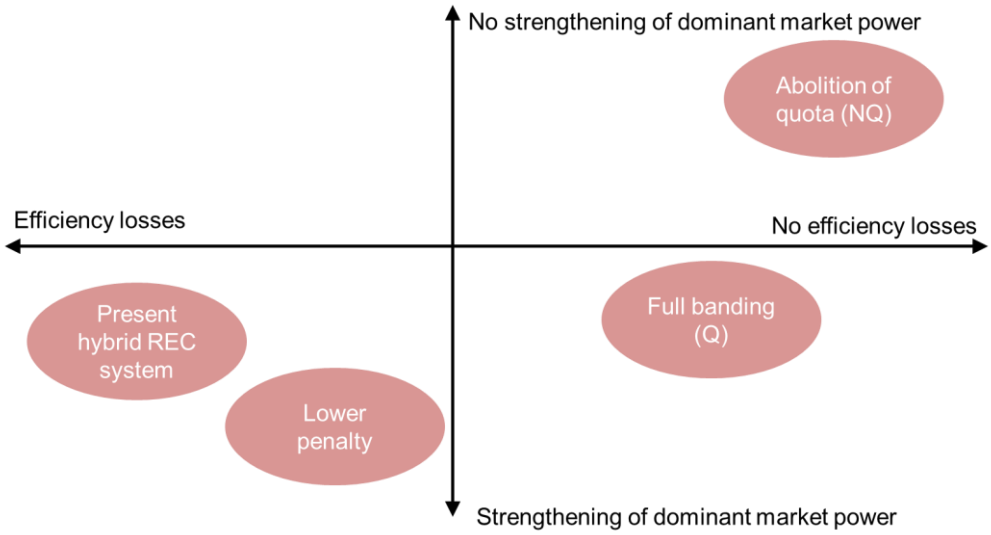
It should not be surprising that the coalitions have been formed along the dividing line of winners and losers[27]. End users (representatives of companies and families) opt for NQ. The same also applies to a few scholars[28]. Environmental associations attach much importance to certainty with respect to the realisation of the RE objectives, which is possible in both options. For obvious reasons, the large, existing integrated players on the electricity market and affiliated RE producers opt for Q. It perhaps is surprising that the RE sector also does so. Evidently, the RE sector attaches more importance to the prospect of Q's higher potential profit margins (especially strict quota and high penalties are demanded) than to a stable investment climate. What also stands out is the smoke screens thrown up in the debate by the opponents of NQ (see table 3). In the opinion they issued, the advisory bodies SERV and Minaraad (Flanders' social-economic council and environmental council) jointly asked for serious consideration of NQ. The VREG has long defended a third alternative, namely a lowering of the penalty, but in the meantime has realised that this is not a good option (see figure 7).[29] And the Flemish government? It had been quietly working in the background the previous months on the implementation of … Q. The final modifications were submitted to Parliament as a decree proposal (by members of parliament of the parties involved in the council of ministers) [30] instead of a draft decree (by the council of ministers), thereby circumventing the obligatory RIA…[31]

Table 3: Some stubborn myths

Myth	Reality
"NQ results in system shock"	The relevance of the certificate market has been diminishing for some time: more and more certificates are being offered to distribution system operators for minimum support and not to the market. Moreover, NQ is capable of perfectly honouring the support commitments for existing installations.
"All countries are evolving to a hybrid system"	In 2000, the Flemish government opted for a hybrid quota system based on the expectation that a trading system in TGC would emerge in Europe. Afterwards, it quickly became clear that there would be no European trading system. Consequently, most countries opted for a different system without a certificate market, such as feed-in or tender. The countries that did opt for a quota system or where suppliers hope for quota (e.g. the Netherlands) have a moderately concentrated electricity market. With the exception of

	Belgium/Flanders... Our market is among the most concentrated in Europe.
"There is no best 'system'; it all depends on the terms and conditions"	The best system also depends on the circumstances. In Flanders, these circumstances are less suited to a quota system due to the poor functioning of the electricity market and due to the small size of the certificate market (without the prospect of a Belgian or broader system) with a concentration on both the demand and the supply side that cannot quickly be resolved.
"Investments will come to a halt"	NQ indeed encourages suppliers to produce less renewable energy than today's system or than under Q. In the meantime, however, suppliers have become major players on the renewable energy market and a different profile is desired: it is now important to also stimulate other players such as companies (to become self-supporting) and smaller RE producers. For this, it is primarily the level of support (guaranteed prices) that is determinative.

Figure 7: Comparison of the current system, Q, NQ and a reduction in penalty levels



8. Conclusion

The Flemish TGC system has its merits but especially suffers from numerous problems. The conclusion of our analysis is that in the Flemish context, even a radically modified quota system (Q option) would be unable to alleviate a number of fundamental disadvantages of the existing system. Moreover, in a quota system, the proper functioning of the electricity and certificate market is an essential precondition, which is very difficult to realise in Flanders. A system without quota (NQ option) is more effective, more efficient and more just, and can also work in a concentrated market. In the meantime, however, the Flemish government has chosen the Q option. Modifications to the existing regulations have been submitted to parliament as a draft decree, without RIA…

REFERENCES

[1] See for example the joint letter of 4 January 2011 from Aspiravi, A&S Energy, Colruyt Group, Electrawinds and Stora Enso Langerbrugge NV to Minister-President of Flanders Kris Peeters on the occasion of the planned modifications to the TGC system.

[2] See e.g. Parl. St. Vl. Parl. 2010-11, no. 948/6; 948/7 and 948/8

[3] See e.g. Facebook groups such as "I don't want to pay for my neighbour's solar panels".

[4] See e.g. Parl. St. Vl. Parl. 2010-11, no. 948/1

[5] VAN HUMBEECK, Peter (2007) Best practices in regulatory impact analysis: a review of the Flemish Region in Belgium, Working paper for European Network for Better Regulation, Brussels, http://www.enbr.org; VAN HUMBEECK, Peter (2009). Regulatory impact analysis in Flanders and Belgium: an update on the experience and challenges. ICW Working Paper nr. 2 www.centrumwetgeving.be

[6] VAN HUMBEECK, P. and G. STEURS (2004). *Guide to regulatory impact analysis*. Brussels, Regulatory Management Unit; VAN HUMBEECK, P. (2012) *Updated guide to regulatory impact analysis*. Brussels, Regulatory Management Unit.

[7] For more details, we refer to BOLLEN, A., P. VAN HUMBEECK and A. LAMOTE (2011). *Energie voor een Groene Economie [Energy for a Green Economy]*. Ghent, Academia Press; SERV/MINARAAD (2011). *Advies hernieuwbare energie [Opinion on renewable*

energy]. SERV/MINARAAD (2012). *Advies over de overschotten op de groenestroom– en warmte-krachtkoppelingscertificatenmarkt [Opinion on the surpluses on the renewable energy and cogeneration certificate market]*.

[8] Decree of 8 May 2099 containing general provisions on energy policy, Title VII, chapter 1.

[9] http://www.energiesparen.be/evaluatie_steunmechanismen

[10] See also: VERBRUGGEN Aviel, LAUBER Volkmar.- Assessing the performance of renewable electricity support instruments. Energy Policy 45 (2012): 635-644

[11] The TGC quotas are relative quotas calculated with respect to the electricity supply. If the electricity supply decreases, the incentive based on the quota also decreases. In 2008 and 2009 for example, due to the economic crisis, electricity consumption decreased so strongly that the number of certificates to be submitted on 31/03/2010 was lower than the previous year.

[12] BOLLEN, A. and P. VAN HUMBEECK (2012a), Meer groene stroom vergt meer dan meer groene stroom. [More renewable energy requires more than more renewable energy.] *Samenleving en politiek*, 2012, no. 2, p. 46-63.

[13] These PV certificates to be sure are purchased by the distribution system operators at minimum prices, but the distribution system operators put these on the market.

[14] While there have been surpluses since 2006, on average the price has only recently undergone any meaningful decrease. This is because many transactions are the result of bilateral long-term contracts.

[15] Consequently, it is uncertain how electricity demand and thus the absolute number of certificates to be submitted will evolve, how electricity prices will change and how they will affect the profitability of the projects and thus investments, how other RE producers will behave, etc.

[16] This especially applies to producers that are not suppliers. Supplier-producers or producers affiliated with suppliers are exposed to less risk.

[17] In 2011, 592,340 kW additional PV capacity was installed in Flanders, on top of the existing 883,473 kW.

[18] 15 years for installations put in service during or after 2013.

[19] The distribution system operators have long been offered only PV certificates for purchase. Due to the price reduction of the certificates as a result of the certificate surplus, however, this is now also the case for other technologies, leading to a rise in the costs of the purchase obligation. At the same time, the distribution system operators must sell their PV certificates on the certificate market at lower prices, causing their net costs to increase and requiring them, sooner or later, to pass on the costs via utility rates. Moreover, the freezing of electricity prices and utility rates by the federal government in 2012 meant a postponement in the passing on of these costs.

[20] Now the certificate obligation for the tranche between 20 and 100 GWh is reduced by 25% and the tranche above 100 GWh by 50%. It is assumed that large customers have sufficient negotiating power to obtain a discount from suppliers that corresponds with this exemption. The degressivity after all applies to the supplier. We estimate that one third of the supplies on the transmission network are exempt from the certificate obligation. It is unclear to what extent this advantage also benefits the affected companies in practice.

[21] The majority of all awarded certificates are granted to a single renewable energy producer, namely Electrabel. Up-to-date figures in this regard are not available because VREG only publishes figures on installed power output, not on real production, and releases no information on the share of the dominant player with respect to certificates allocated. There are a few other large certificate recipients besides Electrabel, and many smaller ones. In addition, Electrabel is a dominant player on the demand side of the certificate market, along with a limited number of other major players.

[22] BOLLEN, A.P. VAN HUMBEECK (2012b). Werkt de Vlaamse markt voor groenstroomcertificaten? [Is the Flemish market for renewable energy certificates working?] *Gids op maatschappelijk gebied* , 2012, no. 2, p. 35-40.

[23] Vl. Parl. Hand. 12 May 2010.

[24] In 2010, Flanders imported 500 mil euro of solar panels, especially from China, the Netherlands and Germany, good for one third of Belgium's trade deficit.

[25] Decree of 8 May 2099 containing general provisions on energy policy, art. 7.1.5. § 4.

[26] These also apply in the case of Q. Moreover, there are many more preconditions to be fulfilled, see SERV (2011), o.c.

[27] Our information is based on a full series of bilateral discussions held in 2011 and 2012, and a joint debate and feedback moment at SERV during the middle of 2011.

[28] E.g. Verbruggen, A. (2011). *Groen Vlaams beleid voor Vlaamse groene stroom [Green Flemish policy for Flemish green electricity]*. www.avielverbruggen.be.

[29] VREG/VEA (2011). *Advies inzake de evaluatie van de certificatensystemen* [Opinion on evaluating the certificate systems]. This option is also intended to reduce the certificate price and thus to limit windfall profits due to the unique certificate price. A lowering of the penalty, however, affects the profitability of existing projects, leads to more applications being compensated for via minimum support, and results in only low cost options remaining in the trading system. These are probably largely in the hands of the dominant players, which further increases their

market power. The VREG evidently has also realised this in the meantime. See VREG (2012). *Advies over het certificatenoverschot [Opinion on the certificate surplus]*.

[30] Vl. Parl. Document 1639 (2011-2012) - No. 1. For reactions from among others SERV, see Vl. Parl. Document 1639 (2011-2012) - No. 2.

[31] RIA in Flanders is mandatory for all primary and secondary legislation that is being prepared by the executive, but not for legislation that originates from parliament itself. For more information see e.g. VAN HUMBEECK, Peter (2007) Best practices in regulatory impact analysis: a review of the Flemish Region in Belgium, Working paper for European Network for Better Regulation, Brussels, http://www.enbr.org.