



# EXPERIENCES FROM BELGIUM ACROSS THE 3 REGIONS

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### ➤ Directive 2001/77/EC

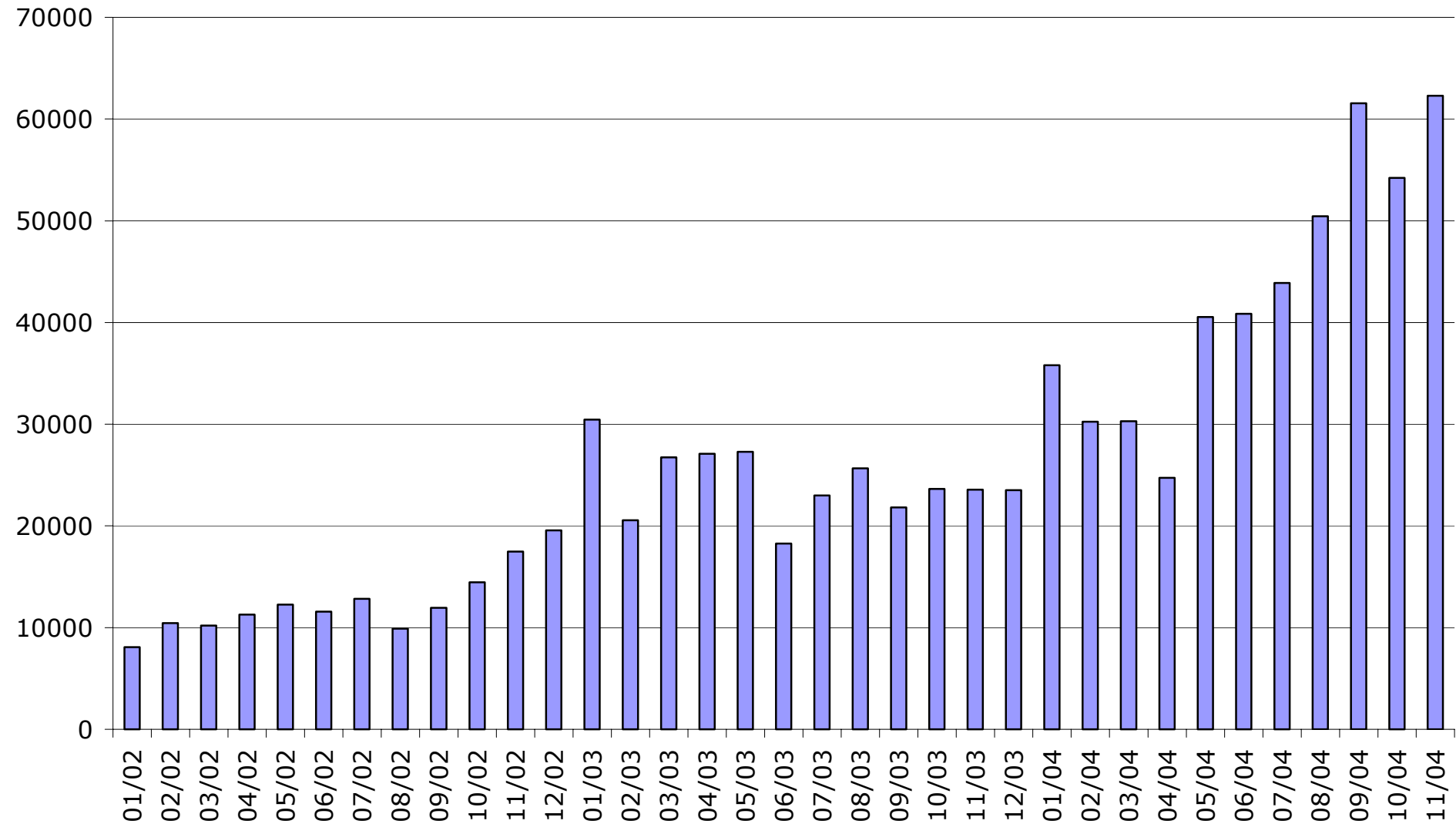
- Support mechanism in order to reach national indicative target
- Guarantee of origin of electricity produced by RES



- Support mechanisms operated in Belgium
  - Federal level
    - Green certificate system (GCS) : off shore wind only
    - First GC : Expected for 2007
    - Certificates : recognised in the whole Belgium
  - Flanders
    - GCS is working from January 2002
    - CHP certificate system is working from January 2005
    - Certificates from other regions or countries : no accepted

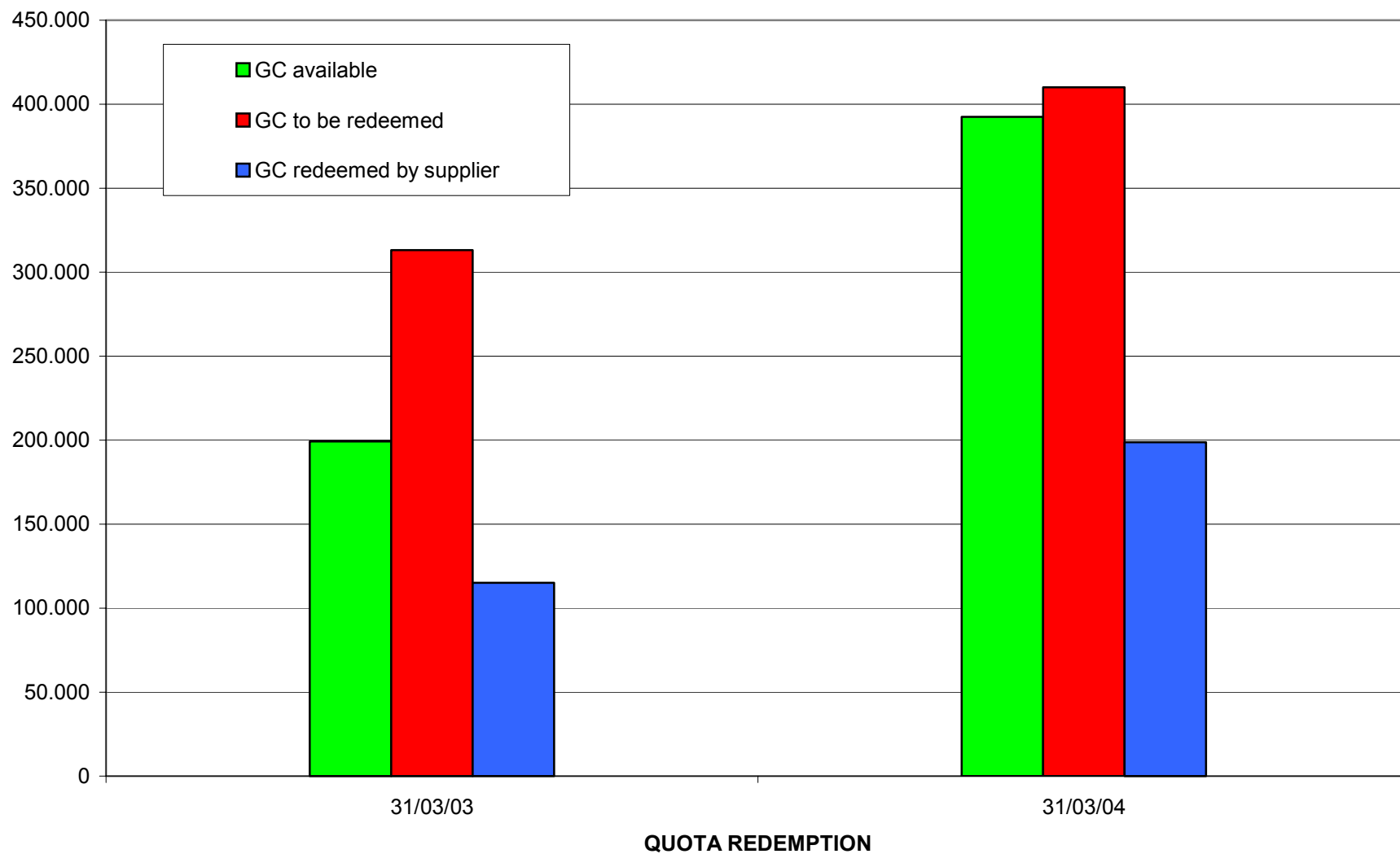


- Support mechanisms operated in Belgium
  - Wallonia
    - GCS is working from January 2003
    - Certificates issued by another Belgian region : automatically accepted if reciprocity
    - Certificates issued by another country : accepted if mutual recognition
  - Brussels
    - GCS is working from July 2004
    - Recognising certificates from other regions or countries : possible if approval and mutual recognition





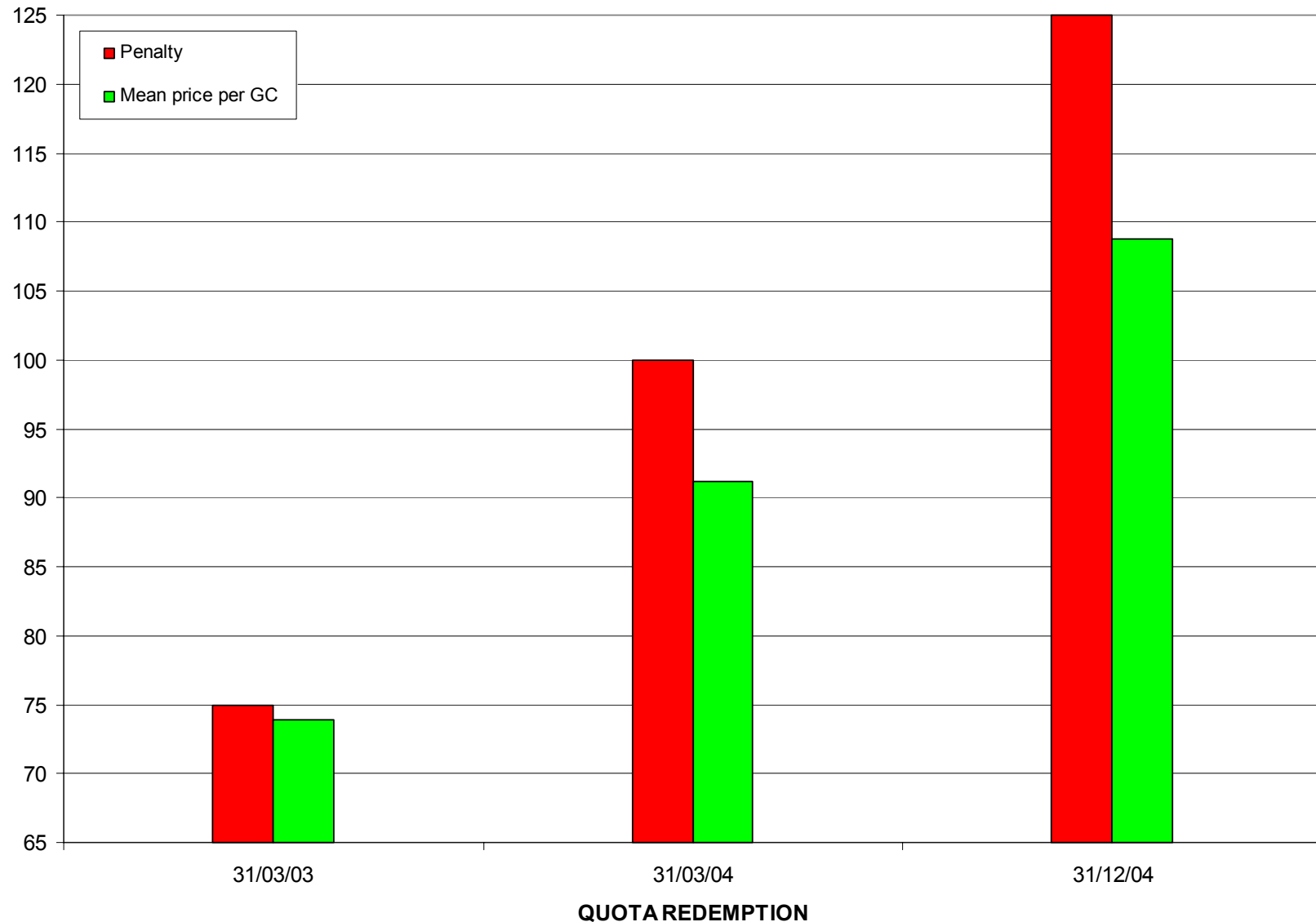
GC



# Facts and figures - Green certificates in Flanders - Results quota 2002 - 2003



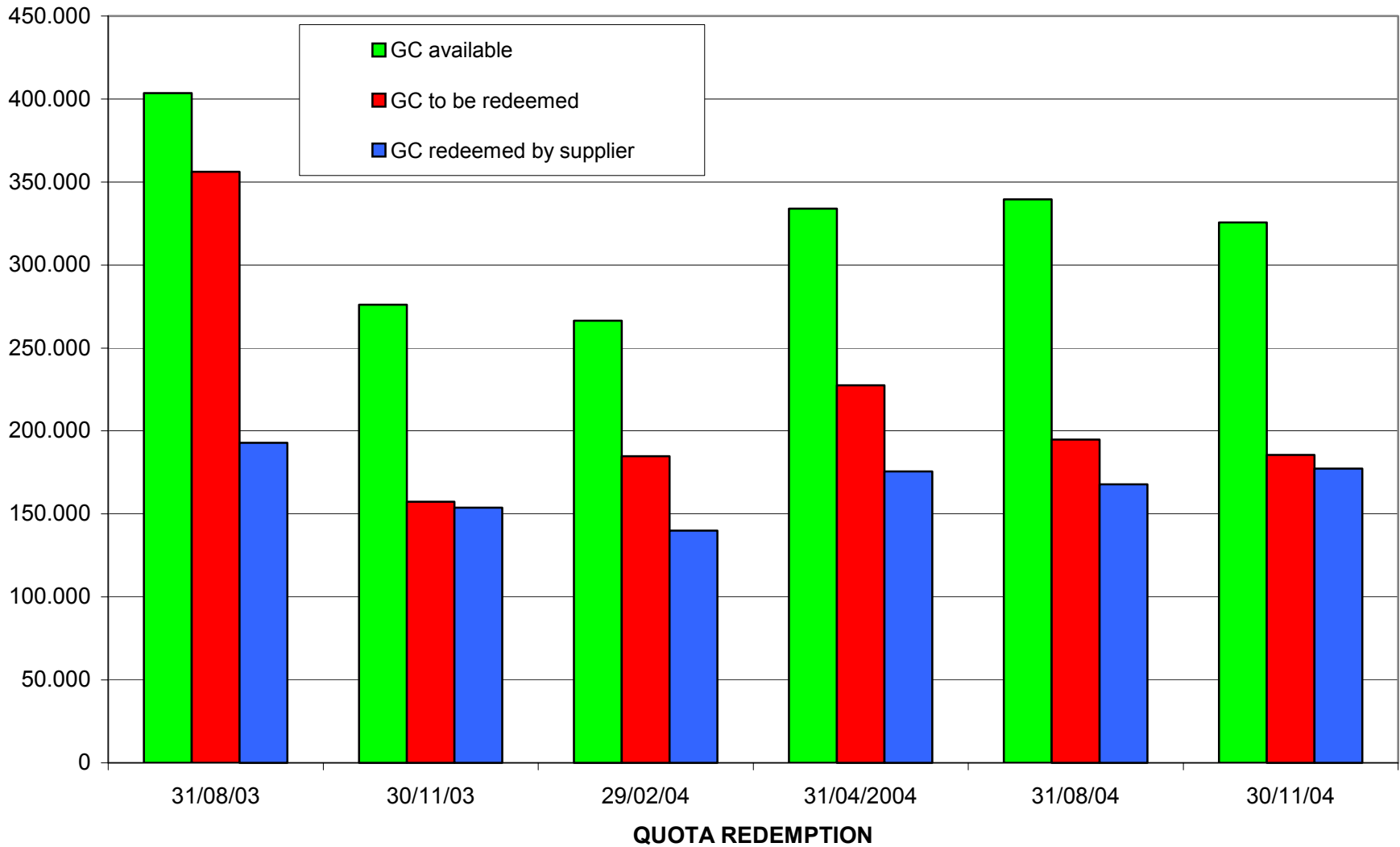
EUR/GC



# Facts and figures - Green certificates in Wallonia - Results quota 2003 - 2004



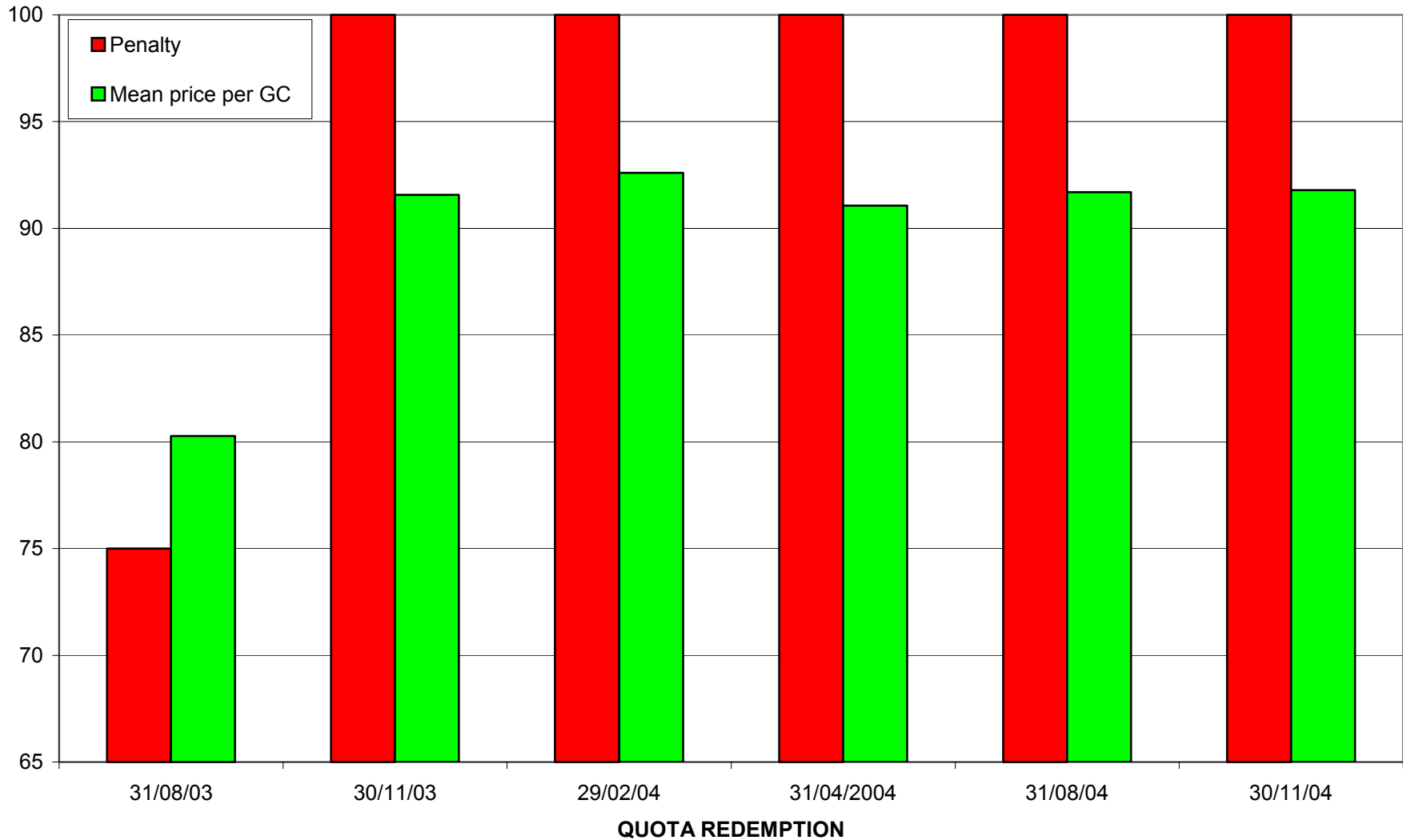
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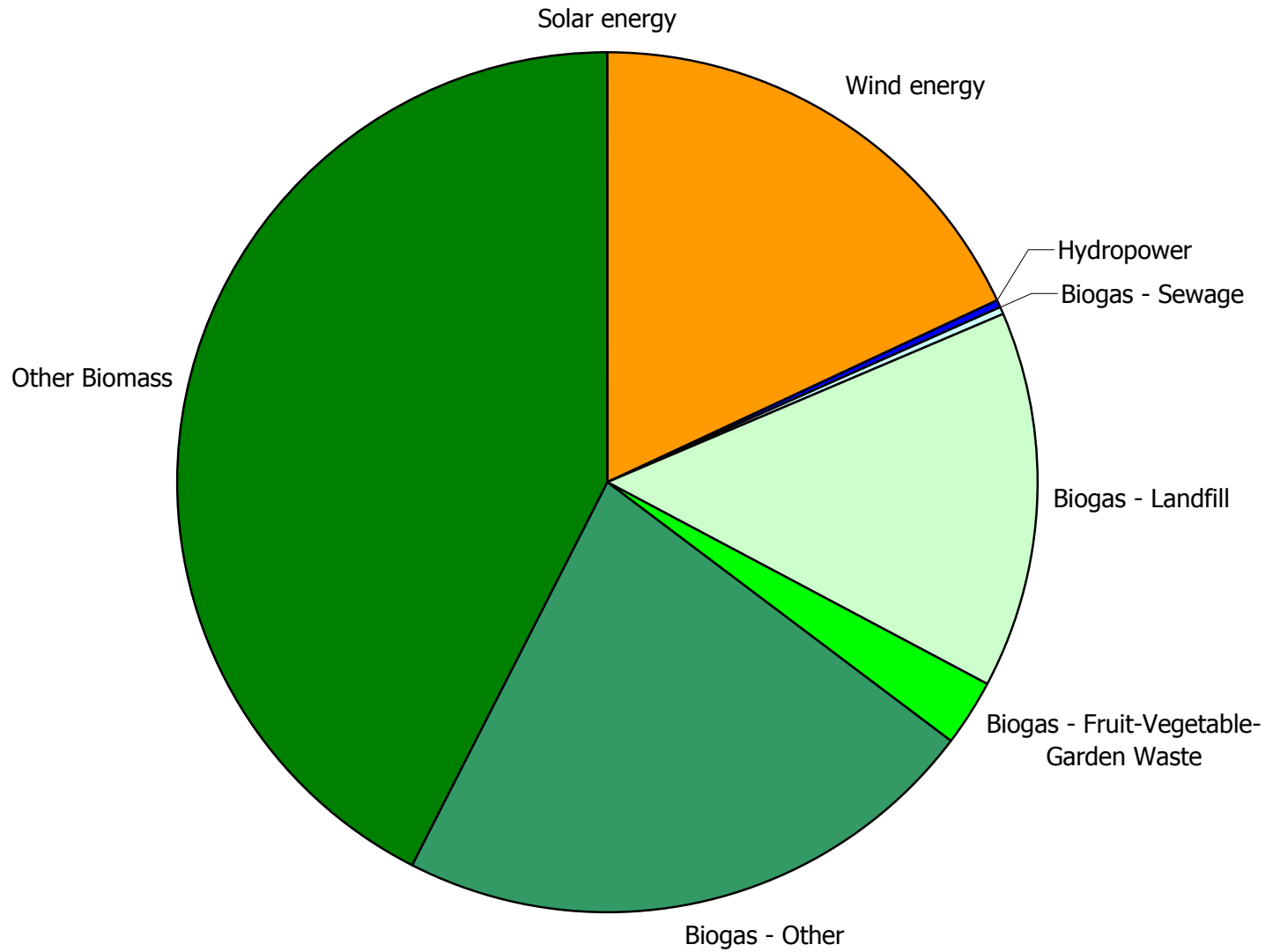
# Facts and figures - Green certificates in Wallonia - Results quota 2003 - 2004



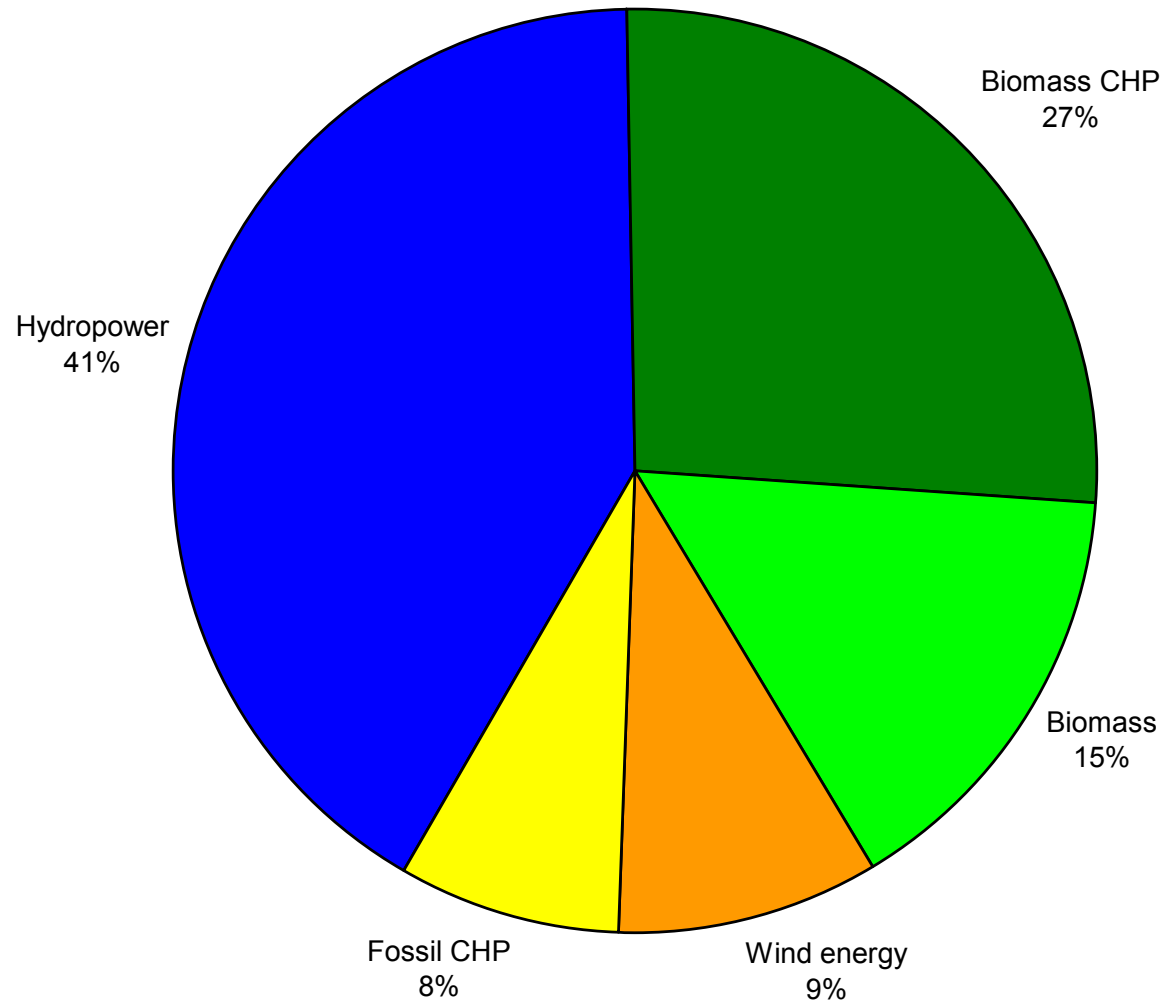
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# Facts and figures - 475.000 Green certificates issued in Flanders - 2004



# Facts and figures - 700.000 Green certificates issued in Wallonia - 2004





## ➤ Similarities

- A same model with regionally fixed parameters :
  - Production sites (RES-E and CHP) certification;
  - Quota obligation for electricity suppliers: all related to the indicative target from EU RES directive - 6% RES-E in 2010 in Belgium;
  - Penalties for missing certificates;
  - TRECs issuing : regional (federal) regulator body;
  - Data base foreseen for future interconnection between the regions;
  - Supported electricity : net produced electricity **Enet**, grid-injected and self-consumed electricity;
  - Issuing certificates (RES-E and CHP):  
**Number of certificates issued for a defined period**  
**= Enet(MWhe) x k**  
With k = regional (federal) ratio (strategies regarding eligibility, technologies, references, etc.)
  - “TRECS-unlinked-systems”;
  - Banking for 5 years



## ➤ Differences

- Differences come mostly from regionally parameters as :

- quota;
- penalties;
- k-ratio between **Enet**(MWh<sub>e</sub>) and the number of certificates issued;

**k = f (allocation methodology, eligibility, references)**

- issuing period;
- redemption period.



- Allocation methodology

	Flanders RES	Flanders CHP	Wallonia	Brussels	Federal
Basic computing of 1 certificate	Produced 1 MWh $E_{net}$	Avoided 1 MWh $E_{prim}$	Avoided 456 kg CO <sub>2</sub> (= emission when producing 1 MWh $E_{net}$ by STAG)	Avoided 217 kg CO <sub>2</sub> (emission when burning 1 MWh $E_{prim}$ of NG)	Produced 1 MWh $E_{net}$
<b>When converted into “k=Number of certificates by MWh net produced”</b>					
	Flanders RES	Flanders CHP	Wallonia	Brussels	Federal
Wind, sun	K=1		K=1	K=1,82	K=1
Hydraulic	K=1		K=1	K=1,82	K=1
Biomass	K=1		K=1	K=1,3	K=1
CHP-fossil		K=0,6	K=0,3	K=0,6	-
CHP-biomass		K=0,3	K=1,7	K=3	-



Resulting in :

Max 2005 incomes for MWhe net produced “k x Penalty (euro/MWhe)” (tax effects not included)					
	Flanders RES	Flanders CHP	Wallonia	Brussels	Federal
Wind, sun	125		100	136,5	-
Hydraulic	125		100	136,5	-
Biomass	125		100	~97,5	-
CHP-fossil		-24	~33	~45	-
CHP-biomass		~12	~170	~225	-



- Regional eligibility differences

### RES-E

- Flanders and Brussels : hydraulic systems with Power<10MW
- Wallonia : hydraulic systems with Power>20MW are accepted but with a number of GC limited to 20/Power

### CHP

- Flanders : minimal primary energy gain of 35% is required for household refuse
- Wallonia : biomass CHP systems with P>5MW are accepted but with a number of GC limited to 1GC for 1 produced MWhe.

### Already existing systems before coming into force of the legislation:

- Wallonia and Brussels : all are eligible
- Flanders : CHP operating before 1.1.2002 are not eligible



- Impacts

Different regional parameters  $\Rightarrow$  different impacts on the electricity market actors

Final consumer cost :

$$C_{\max} = Q \times P / \text{MWh}_{\text{consumed}}$$

With  $C_{\max}$  = max cost that should be passed on the consumer

Q = quota

P = penalty

RES producer (CHP) incomes :

$$I_{\max} = k \times P$$

With  $I_{\max}$  = max income of de producer

k = regional ratio between the number of issued certificates and the produced  $E_{\text{net}}$

P = penalty



- **Stability of TRECS systems**
  - Unbalancing between supply and demand of TRECS systems.
  - Start of the system : definition of a transient period in order to get sufficient liquidity.
  - Temporary unbalancing : modifying the quota and/or the penalties  $\neq$  good way of practice.
  - Possible flexibility tools are rather:
    - guaranteed minimum prices;
    - banking;
    - borrowing;
    - exchangeability between regions (countries);
  - Interest of the exchangeability: TRECs liquidity, better stability of the different systems with respect to the common global EC target.



### ➤ Exchangeability between regions

Belgian regulators are studying relevance of organizing exchangeability of TRECs between the different regions.

- Advantages of exchangeability have been pointed out :
  - Solving structural unbalancing between 2 regions, i.e. Brussels;
  - Solving temporary unbalancing between supply and demand of TRECs in a region.
- Barriers to exchangeability have been pointed out :
  - Control requirements from one region on the other;
  - Certificates flow from region A to region B even if balancing is realised in region A;
  - Difficult acceptance of supporting development of RES-E (CHP) of other regions (countries).



- Methodologies for exchangeability
  1. Technical equivalence

Region A re-computes the number of certificates that has been issued by region B.

Temptation or region A to exclude certain kinds of generators. Undesired certificates flows from one region to another could not be prevented.

Financial value of the certificates not taken in account.

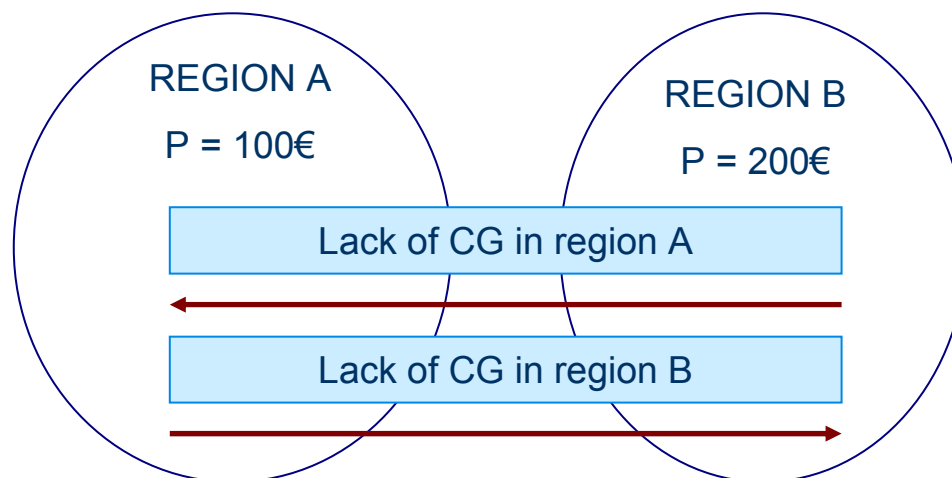


## 2. Market equivalence

Objective : a green producer gets everywhere a same certificate price.

Factor of conversion from region B to A

$$N_A = N_B \times P_B / P_A$$



1. Lack of CG in region A

$N_A = 2 N_B$  : a supplier of region A buys 2  $N_B$  for the price of  $N_A$

2. Lack of CG in region B

$N_B = \frac{1}{2} N_A$  : a supplier of region B buys  $\frac{1}{2} N_A$  for the price of  $N_B$



In this way :

- Different allocation methodologies not taken in account; no “cross-border” controls; possible but undesirable limited eligibility;
- certificates vendors can sale their certificates attending a same price in several regions;
- electricity suppliers can present certificates of a region A to fulfil their obligations of region B;
- the political strategy of RES-E (CHP) promoting will be supported by the initiating region;

Necessary condition for a good working of exchangeability : the ratings of the quota and their time evolutions have to be concerted