

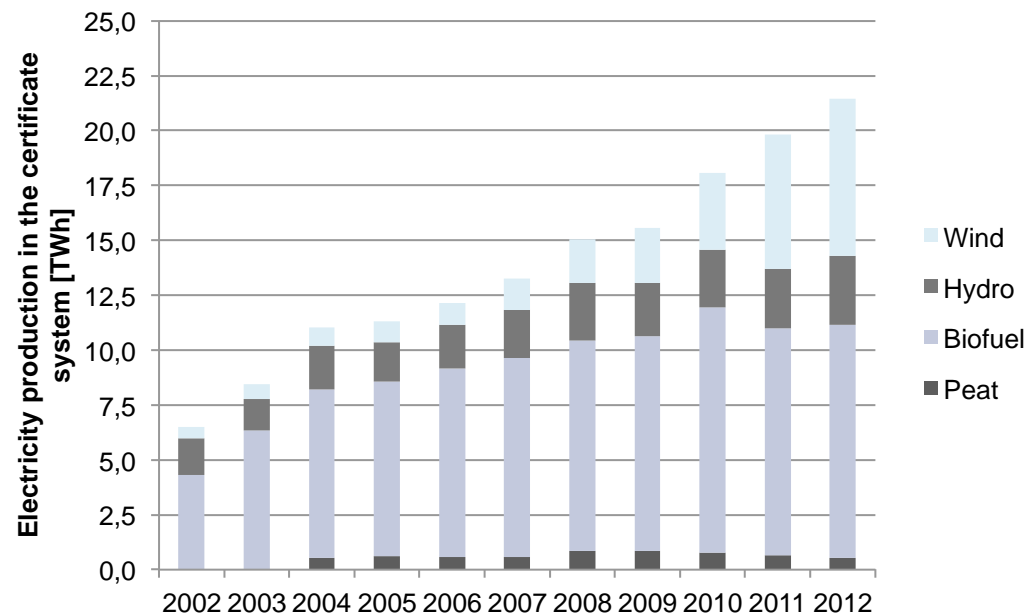


Electricity certificates and guarantees of origin from waste

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Electricity Certificate System

- A marked-based support system that will increase the production of renewable electricity
- Introduced in May 2003 and will proceed until 2035
- The cost for electricity certificates is passed on to consumer by the electricity suppliers
- Common market with Norway since 2012
- Common goal on 26 TWh renewable electricity



Elements of the electricity certificate act

- Promote production of electricity from renewable energy sources
- Owner to eligible plants can obtain certificates from the Government
- Obligation for suppliers and end-users to acquire certificates (quota obligation) in proportion to supplied or consumed electricity

Opportunities for renewable electricity 1

- 1 certificate for 1 produced MWh of renewable electricity
- Utilities made operational **after** May 1st 2003 receives electricity certificates for **15 years**
- Utilities operational **before** May 1st 2003 receives electricity certificates until the end of 2012 or 2014

Opportunities for renewable electricity in Sweden 2

Energy sources eligible for electricity certificates:

- Wind
- Hydro
- Solar
- Geothermal
- Wave
- Peat (in CHP plants)
- Biofuels (according to the ordinance SFS 2011:1480)
 - Liquid biofuels has to be sustainable according to Act (2010:598) concerning sustainability criteria for biofuels and bioliquids

In the ordinance (SFS 2011:1480) of certificates § 2 , biofuels are defined as:

material of biological origin used as fuel.

Biofuel does not include:

1. fossil material or peat
2. unsorted waste, regardless of content, or
3. object or substance referred to in 2 which has ceased to be waste after a recycling operation

Waste that receive certificates today:

- Recovered wood fuel
- Paper and cardboard that has been sorted out
- Sewage sludge
- Reject from parks and gardens

Ongoing trials in court

- **Combustible waste** that has been sorted out from construction and demolition waste
- **Rubber from tyres**
- **Plastic reject** from cardboard recycling

The plant owners opinion is that since the fuel has been sorted out, it should entitle to electricity certificates. Thereafter the owners have established the biological proportion by analysis

Waste that has been decided not to receive certificates – not appealed

- KEO (mixed oilwaste, some vegetable some fossil)
- Fuel pellet pressed out of mixed wood, paper, plastic and textile

Opportunities for Waste in Norway

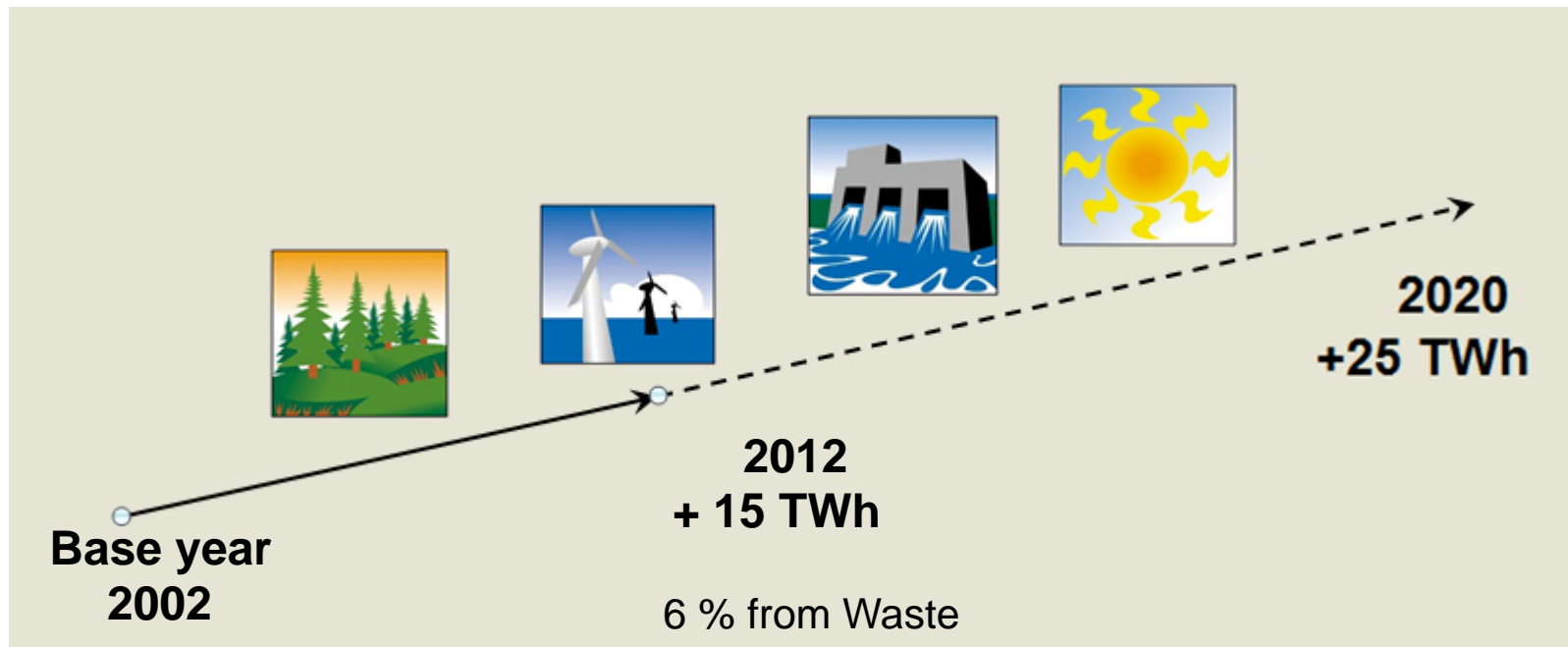
Is regulated in the ordinance (FOR 2011-12-16 nr 1398) of electricity certificates:

- The renewable part and the energy content in waste can be determined by average values
- Norges vassdrags- og energidirektorat (NVE) determine average values based on analyses in collaboration with industry for different categories of waste

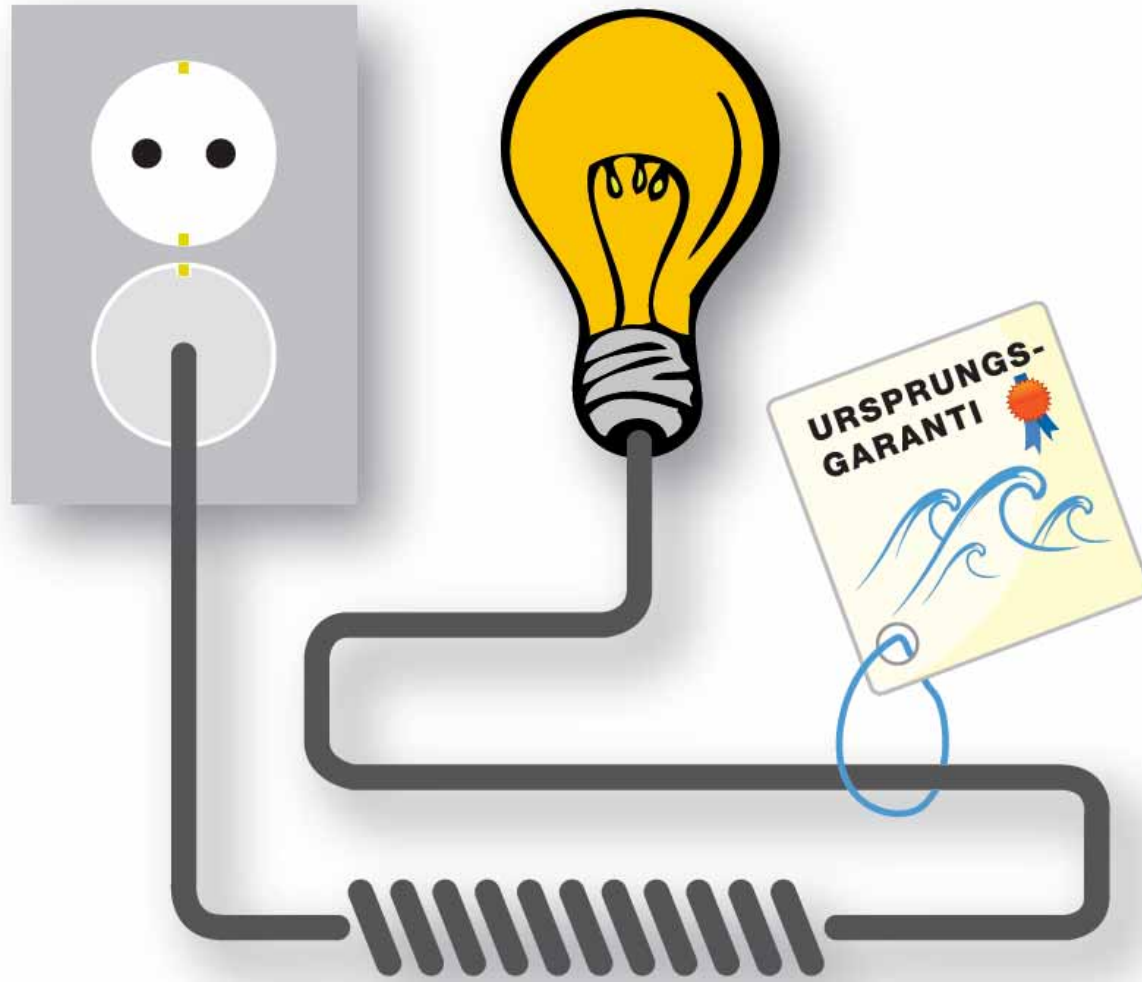
Price of certificates at major brokers



Renewable electricity by certificates – progress so far...



Guarantees of origin (GOs) and electricity disclosure

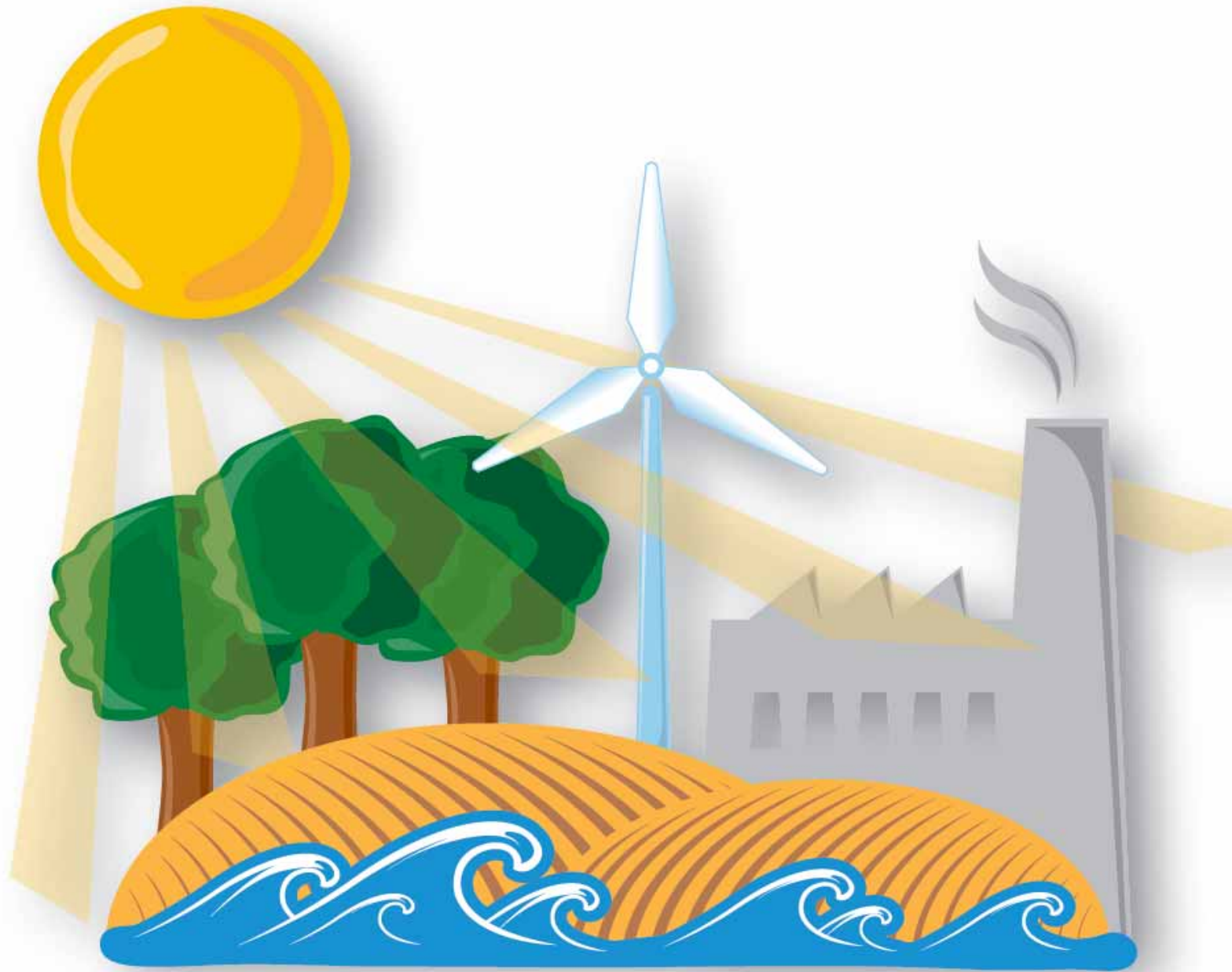


Guarantees of origin

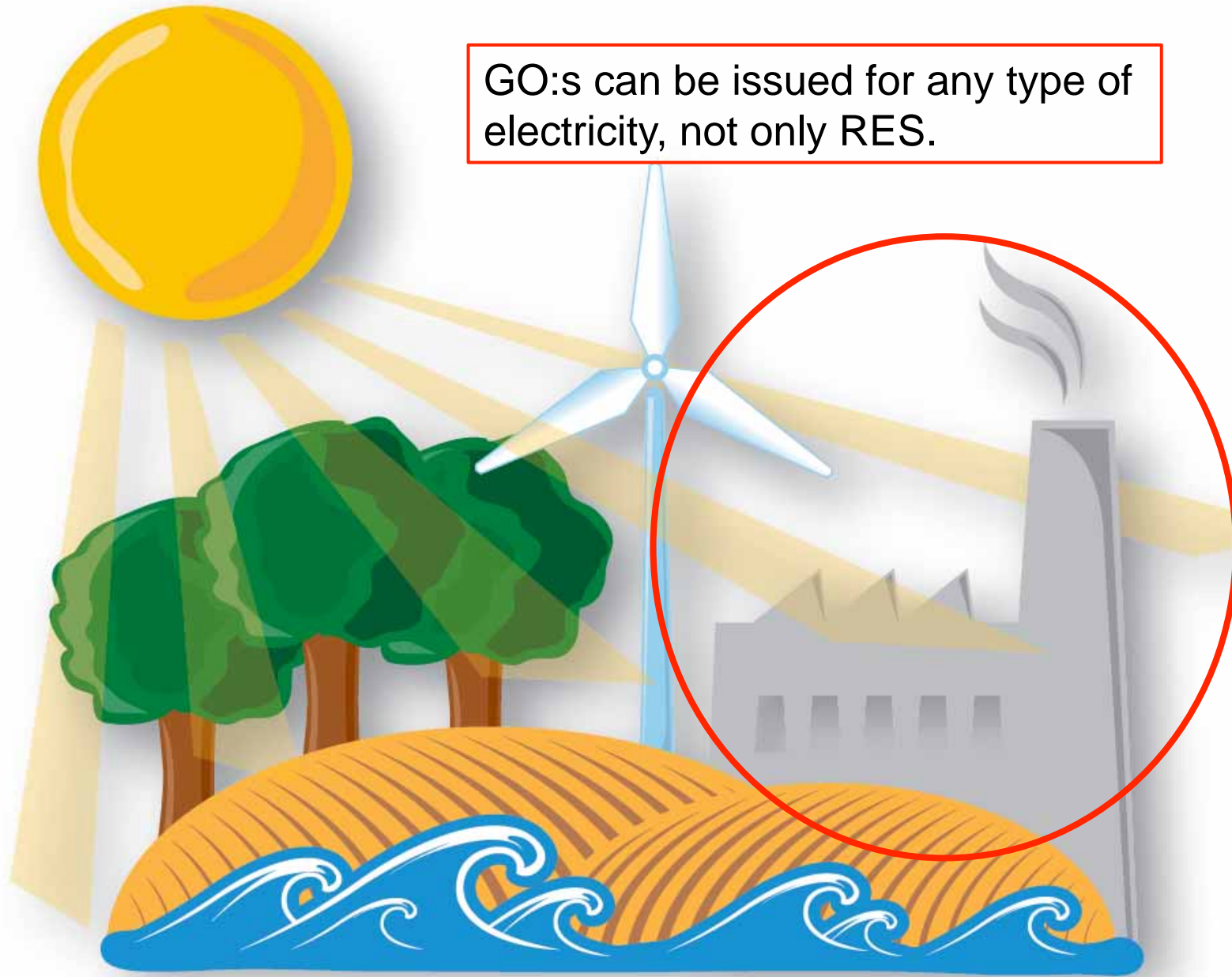
- Not primarily a support scheme
- 100 % voluntary
- Helps the consumer to choose a certain type of electricity, for example hydro power
- Added income for producers
- Pan-european

Actors and process for GO and disclosure

- Swedish Energy Agency: Approves and registers plants for receiving GOs.
- Swedish National Grid (Svenska Kraftnät): collects metering values and issue GOs to producers
- The producer sell the GO to an electricity supplier
- The supplier use them when selling electricity with disclosure
- Energy Markets Inspectorate: Monitors the energy market and disclosure



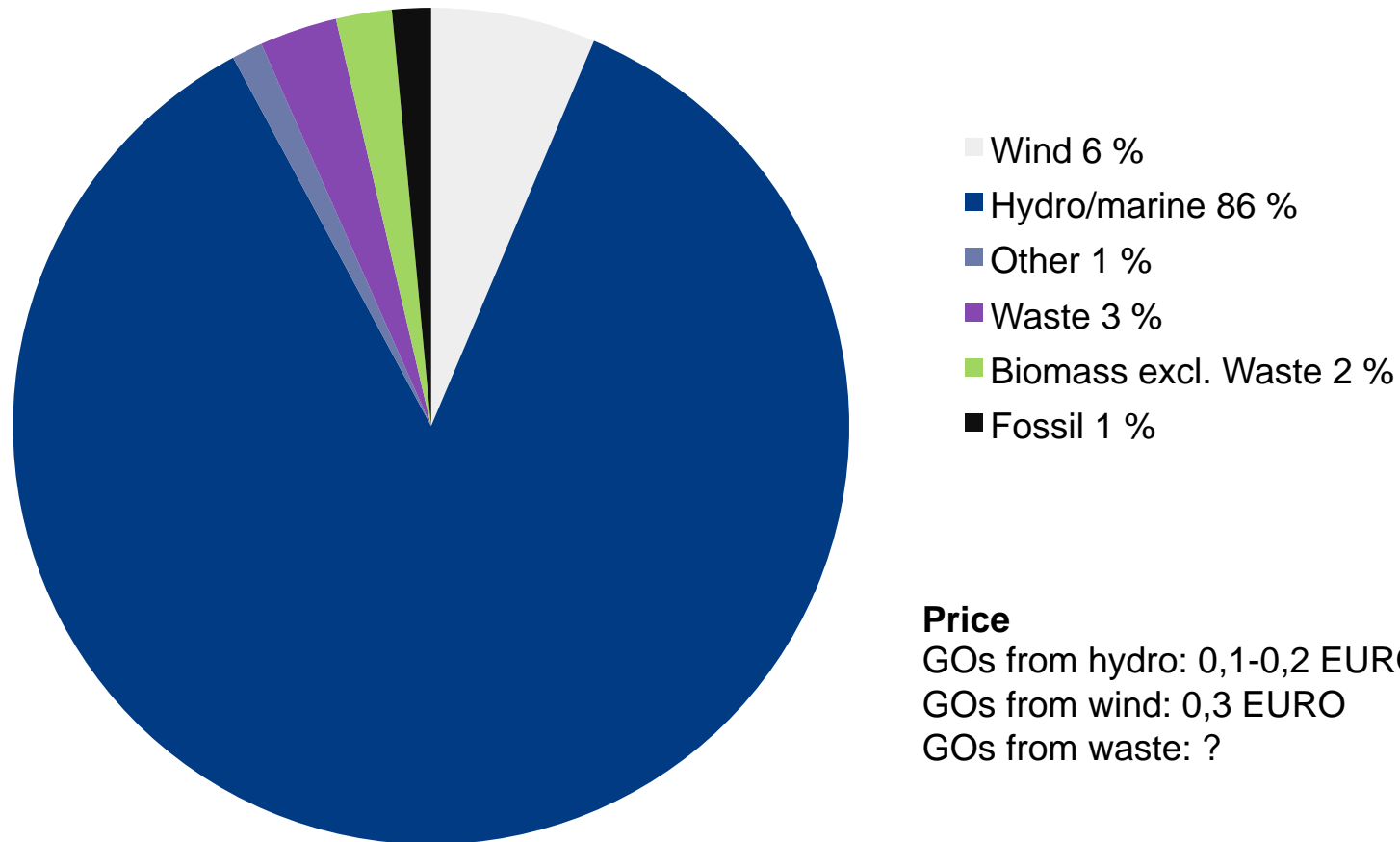
GO:s can be issued for any type of electricity, not only RES.



How to allocate in Sweden (GO):

- **Household/municipality waste:** 60 % of the output can be considered as renewable, without measurement
- **Other waste:** Assessment of the RES/fossil share can be done according to EU ETS rules, e.g. carbon-14-metering of exhaust gases

In 2012 GOs where issued for 255 TWh in EU





Thank you for listening!

The Swedish-Norwegian
Electricity Certificate Market
ANNUAL REPORT 2012



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