

## European Residual Mixes 2011

### Results of the calculation of Residual Mixes for purposes of electricity disclosure in Europe for the calendar year 2011

Version 1.1, 18 May 2012

#### Introduction

A country's residual mix represents the shares of electricity generation attributes available for disclosure after explicit tracking of generation attributes has been accounted for. Due to international trade of both electricity and generation attributes the amount of available generation attributes in the domestic residual mix differs from the volume of untracked consumption<sup>1</sup>. Thus, the calculation needs to be harmonized for the entire Europe, which is achieved through the European Attribute Mix (EAM). After the attribute balancing via EAM (Figure 2), the available generation attributes of each country match with the untracked consumption of the country. This is an absolute precondition for the shares of different energy sources in the residual mix to be reliably used for disclosure of untracked consumption.

Table 1 and Figure 1 represent the national residual mixes for 2011 as calculated by the RE-DISS project for 27 European countries (EU27 without Cyprus and Malta, but including Norway and Switzerland). In Figure 1, colours indicate different energy sources as elaborated by the legend, and the solid black line illustrates the share of untracked consumption out of the total electricity consumption. Note that for countries without recorded explicit tracking, untracked consumption equals the total electricity consumption and thus the residual mix is applicable for the disclosure of the entire electricity consumption.

Based on the national onsite CO<sub>2</sub> emission factor, the CO<sub>2</sub> content of the residual mix was also calculated for each country (Table 1 and Figure 3). Note that these figures are destined for electricity disclosure purposes only. Any use of these figures in corporate or product carbon foot-printing is not recommended due to unresolved data inconsistencies and open issues regarding carbon footprint methodologies.

The total supplier mixes (TSMs) are presented in Figure 4. The total supplier mix represents the shares of energy sources in the tracked and untracked part of consumption. Thus, both available and explicitly tracked attributes are included in the TSM, which equals in physical volume the country's total electricity consumption and should be equivalent to the total of the disclosure statements of all suppliers in the respective country.

Figure 5 presents the comparison between the production and residual mix of different countries and Figure 6 that of production and total supplier mix. Figure 7 shows the contrast between residual mixes of 2010 and 2011 and Figure 8 the contrast of residual mixes 2011 when calculated with the regular and Nordic approach. In the Nordic approach, Denmark, Finland, Norway and Sweden are considered as a

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<sup>1</sup> Electricity consumption not explicitly disclosed through tracking instruments such as Guarantees of Origin.

single country in the calculation.. Finally, Figure 9 and Figure 10 disclose the volumes of EECS and National GO transactions, recorded for the calculation.

**Please note: Any use of the data presented in this document should include a reference to the RE-DISS project and the title and version number of this document.**

For more information regarding the concept of Residual Mix calculations and its application, please refer to the website of the RE-DISS project and the Best Practice Recommendation published on this website: <http://www.reliable-disclosure.org>

Disclaimer on data quality:

Because of unavailability of consistent data, the residual mixes were calculated based on all recorded transactions during calendar year 2011. This means that transactions of all GOs that occurred during 2011 were considered, irrespective of the production year of the underlying electricity generation. Given the current availability of data, this is the best available information. RE-DISS will work with the providers of this data to improve data quality in the future.

Residual mixes disclosed in this document are not final and may change due to later data updates regarding contract-based tracking and National GO systems. This is especially relevant for Austria and Sweden. Note that through the European Attribute Mix, this might affect also the residual mixes of other countries.

**Table 1: European Residual Mixes for 2011**

	RES	NUC	FOS	% CONS	g of CO <sub>2</sub> per kWh	mg of RW per kWh
AT	57,6 %	0,0 %	42,4 %	34,1 %	133,2	0,00
BE	3,3 %	57,6 %	39,2 %	58,8 %	94,2	1,73
BG	7,0 %	34,4 %	58,7 %	100,0 %	492,6	1,03
CZ	5,5 %	33,3 %	61,1 %	100,0 %	446,7	1,00
DK	18,3 %	6,7 %	75,0 %	95,0 %	510,4	0,20
EE	10,0 %	0,4 %	89,5 %	100,0 %	1094,1	0,01
FI	23,8 %	32,9 %	43,3 %	93,3 %	317,7	0,99
FR	8,1 %	81,9 %	10,0 %	38,7 %	34,2	2,46
DE	2,3 %	22,0 %	75,7 %	74,7 %	676,7	0,66
GB	1,9 %	6,9 %	91,2 %	30,7 %	522,5	0,21
GR	14,7 %	1,1 %	84,2 %	100,0 %	926,7	0,03
HU	6,4 %	43,2 %	50,4 %	100,0 %	373,5	1,30
IE	15,2 %	3,0 %	81,7 %	47,4 %	410,1	0,09
IT	12,4 %	4,2 %	83,5 %	75,1 %	358,5	0,13
LV	46,1 %	3,1 %	50,8 %	100,0 %	205,1	0,09
LT	15,2 %	12,5 %	72,3 %	100,0 %	513,8	0,37
LU	13,8 %	22,2 %	64,0 %	92,6 %	338,9	0,67
NL	0,9 %	4,0 %	95,1 %	71,5 %	385,9	0,12
NO	7,4 %	38,8 %	53,8 %	79,5 %	368,0	1,16
PL	3,4 %	0,0 %	96,6 %	100,0 %	1022,4	0,00
PT	30,2 %	0,8 %	69,1 %	55,0 %	347,0	0,02
RO	28,0 %	19,0 %	53,0 %	100,0 %	568,4	0,57
SK	16,7 %	55,5 %	27,8 %	100,0 %	162,7	1,67
SI	0,0 %	52,3 %	47,7 %	79,0 %	636,9	1,57
ES	28,1 %	22,8 %	49,0 %	94,7 %	250,6	0,68
SE	50,3 %	43,2 %	6,5 %	51,4 %	25,5	1,30
CH	24,6 %	62,4 %	13,0 %	70,9 %	77,5	1,87
<b>EAM</b>	7,82 %	40,81 %	51,36 %	67,66 %	368,09	1,22

RES = renewable energy sources; NUC = nuclear energy, FOS = fossil and other energy sources

% CONS = share of the Residual Mix in total consumption, RW = radioactive waste

Note: the CO<sub>2</sub> and RW figures reported are meant for purposes of electricity disclosure only (see page 1).

Graphs with detailed calculations results

Figure 1: European Residual Mixes for 2011

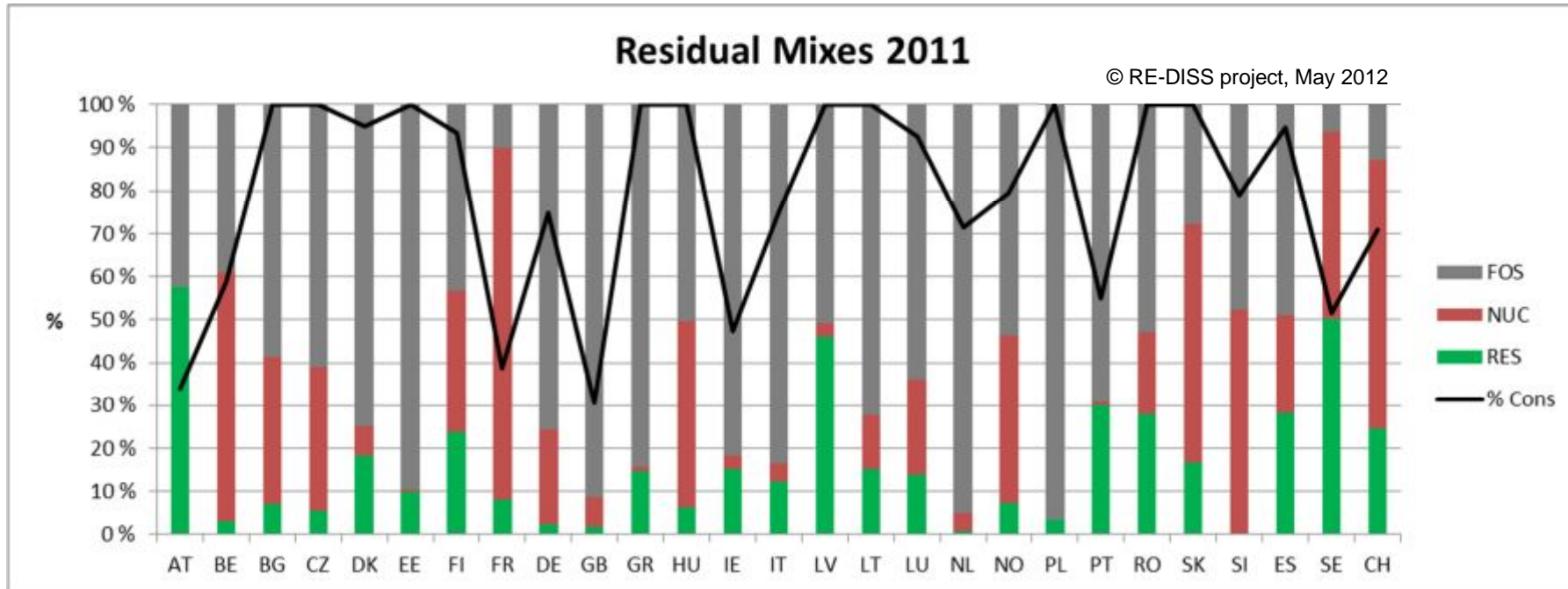


Figure 2: Attributes to the EAM (+) and from the EAM (-) in 2011

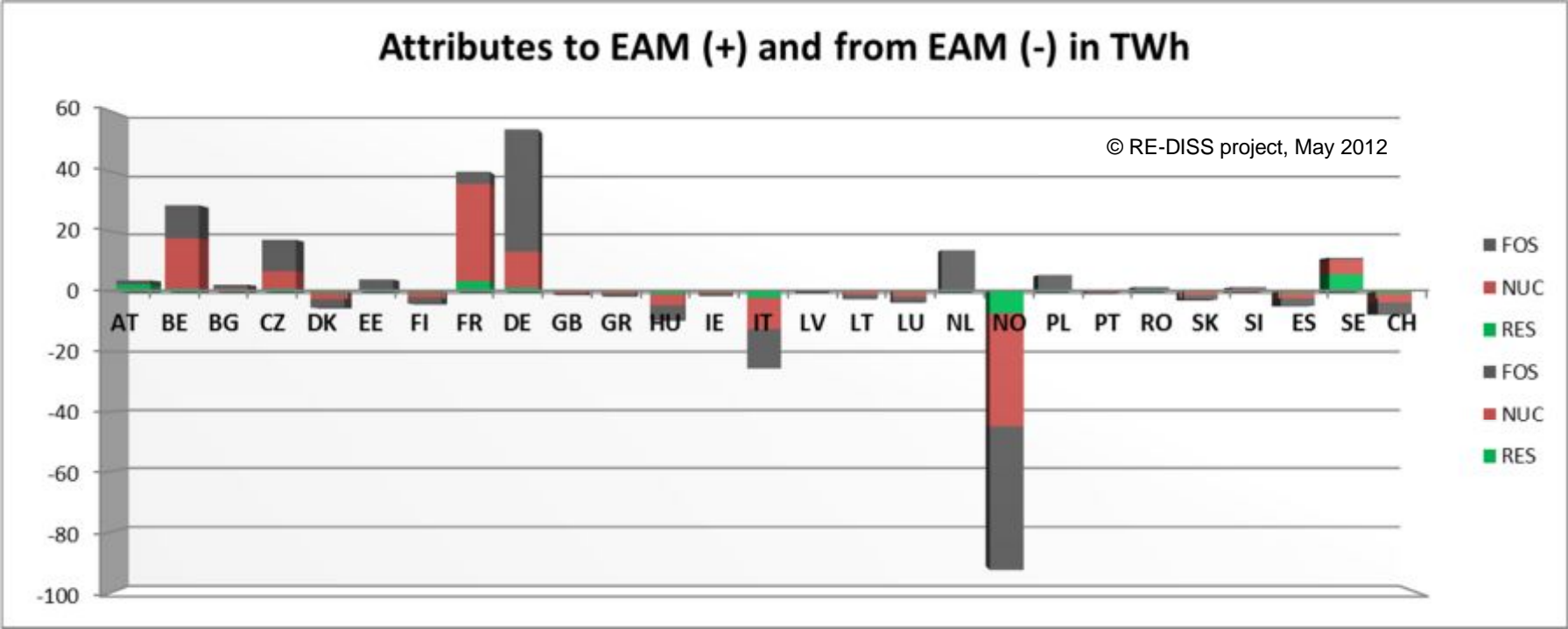
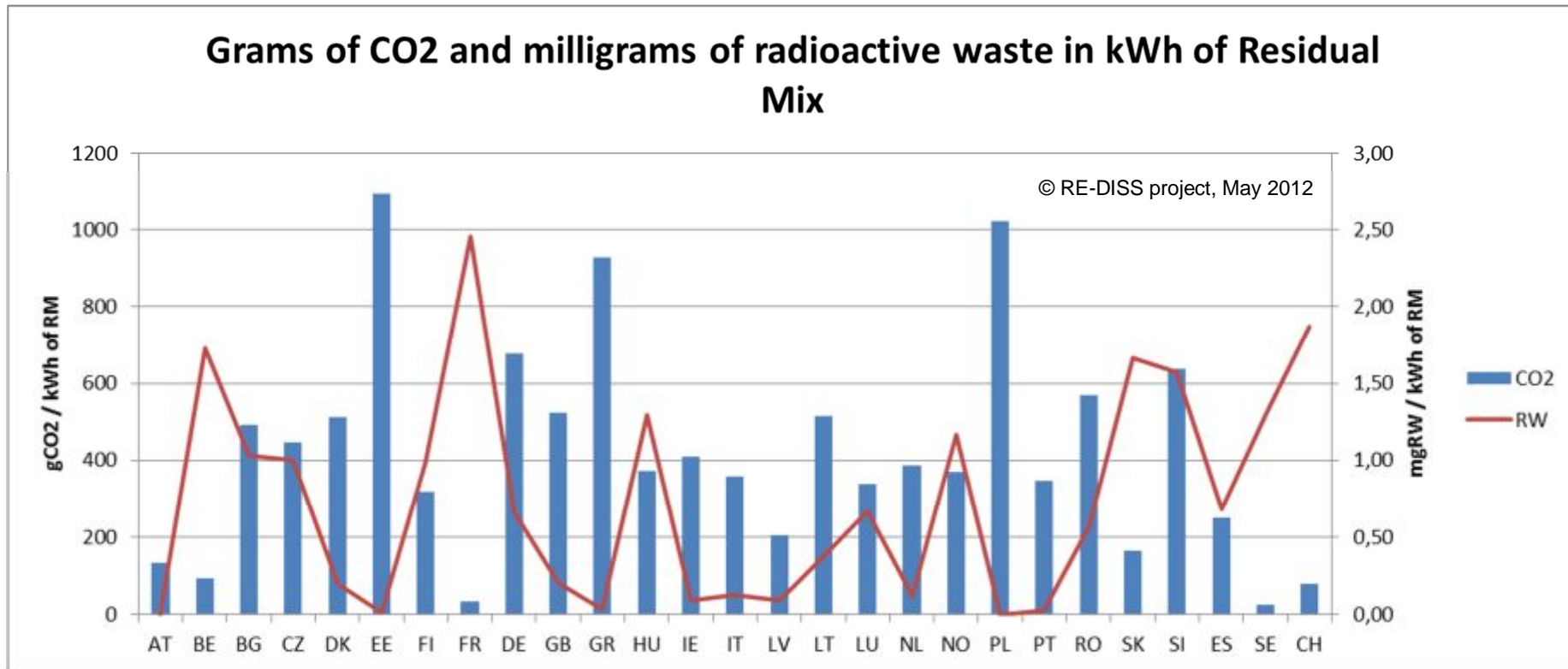


Figure 3: CO<sub>2</sub> and radioactive waste content in Residual Mixes of 2011



Note: the CO<sub>2</sub> and RW figures reported are meant for purposes of electricity disclosure only (see page 1).

Figure 4: Total Supplier Mixes of 2011

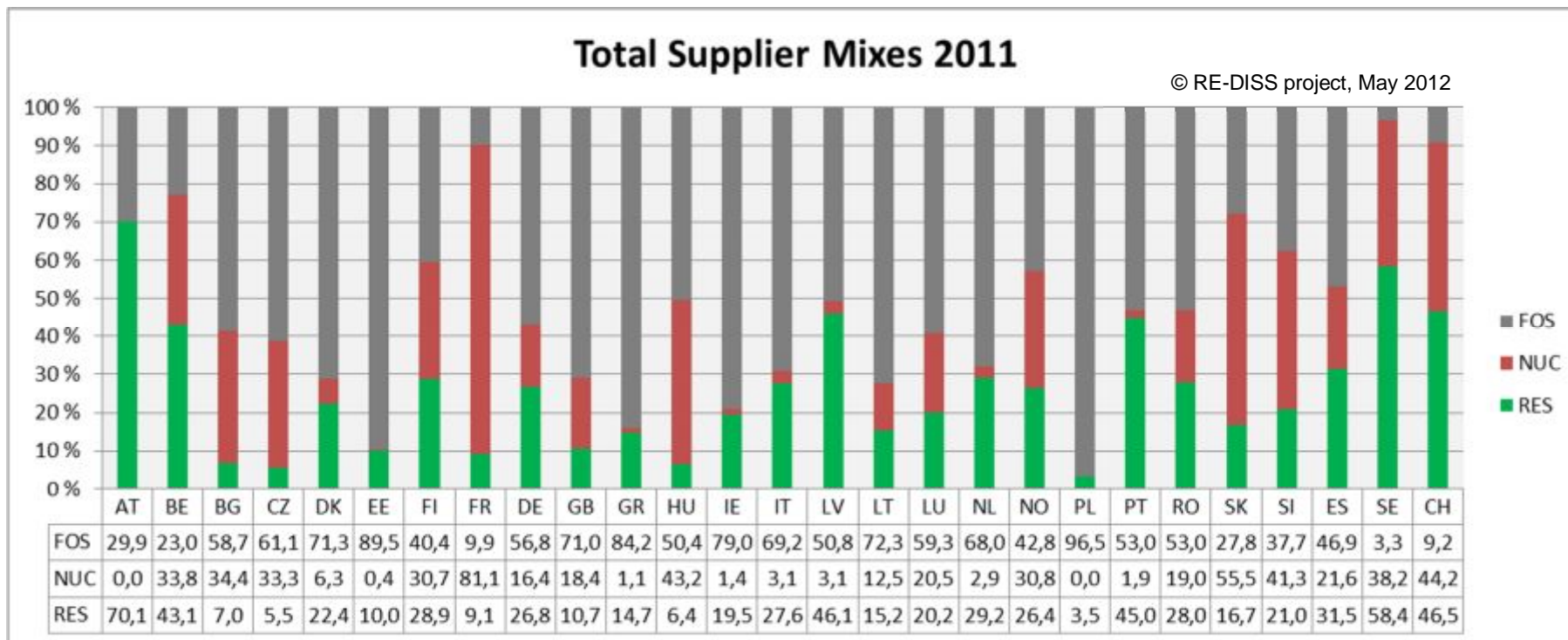


Figure 5: Comparison of country's production and residual mix in 2011

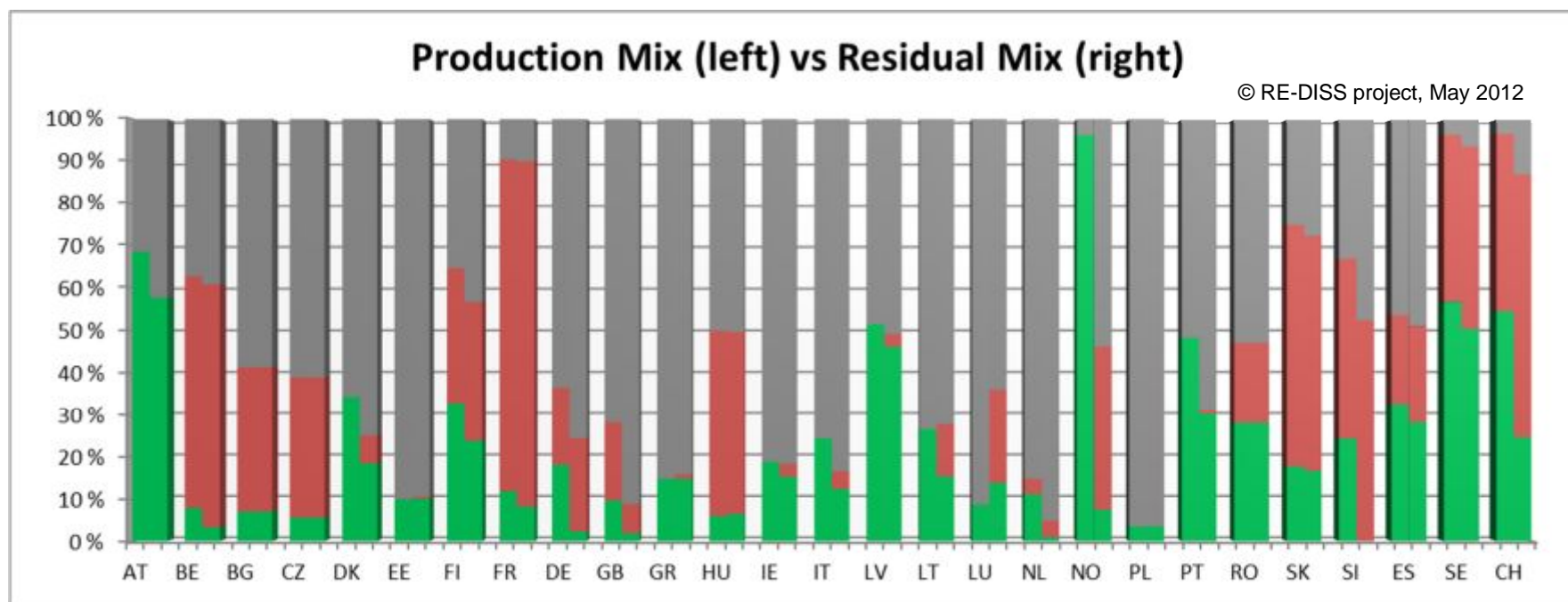




Figure 6: Comparison of country's production and total supplier mix in 2011

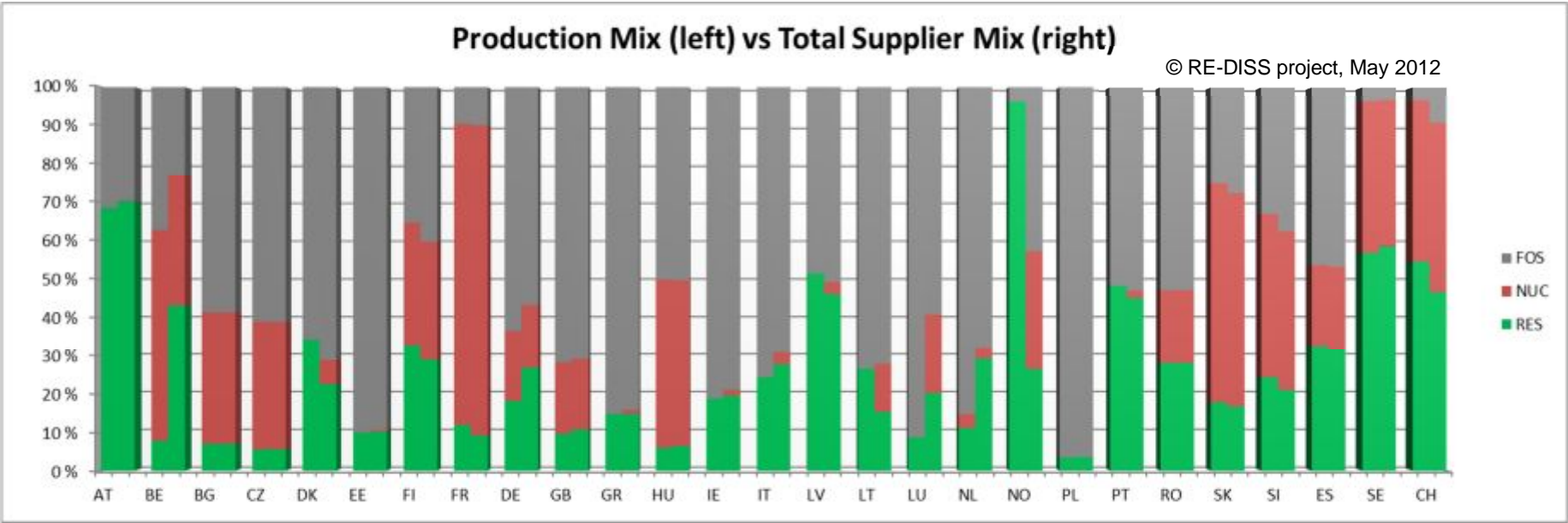


Figure 7: Residual Mixes 2010 and 2011

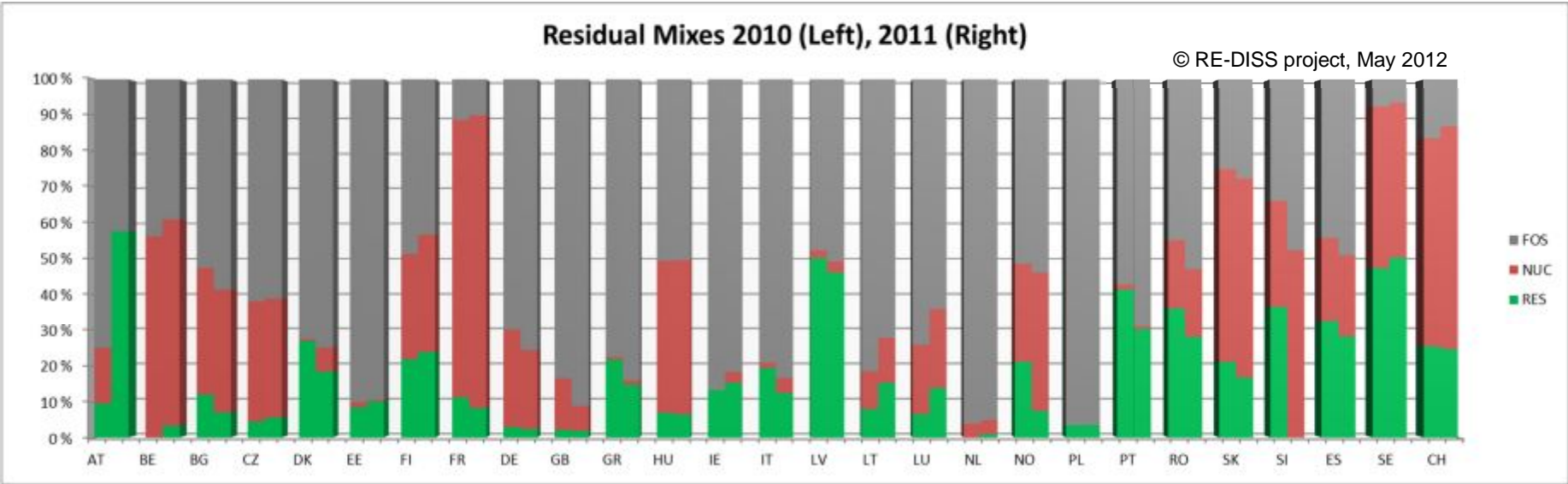
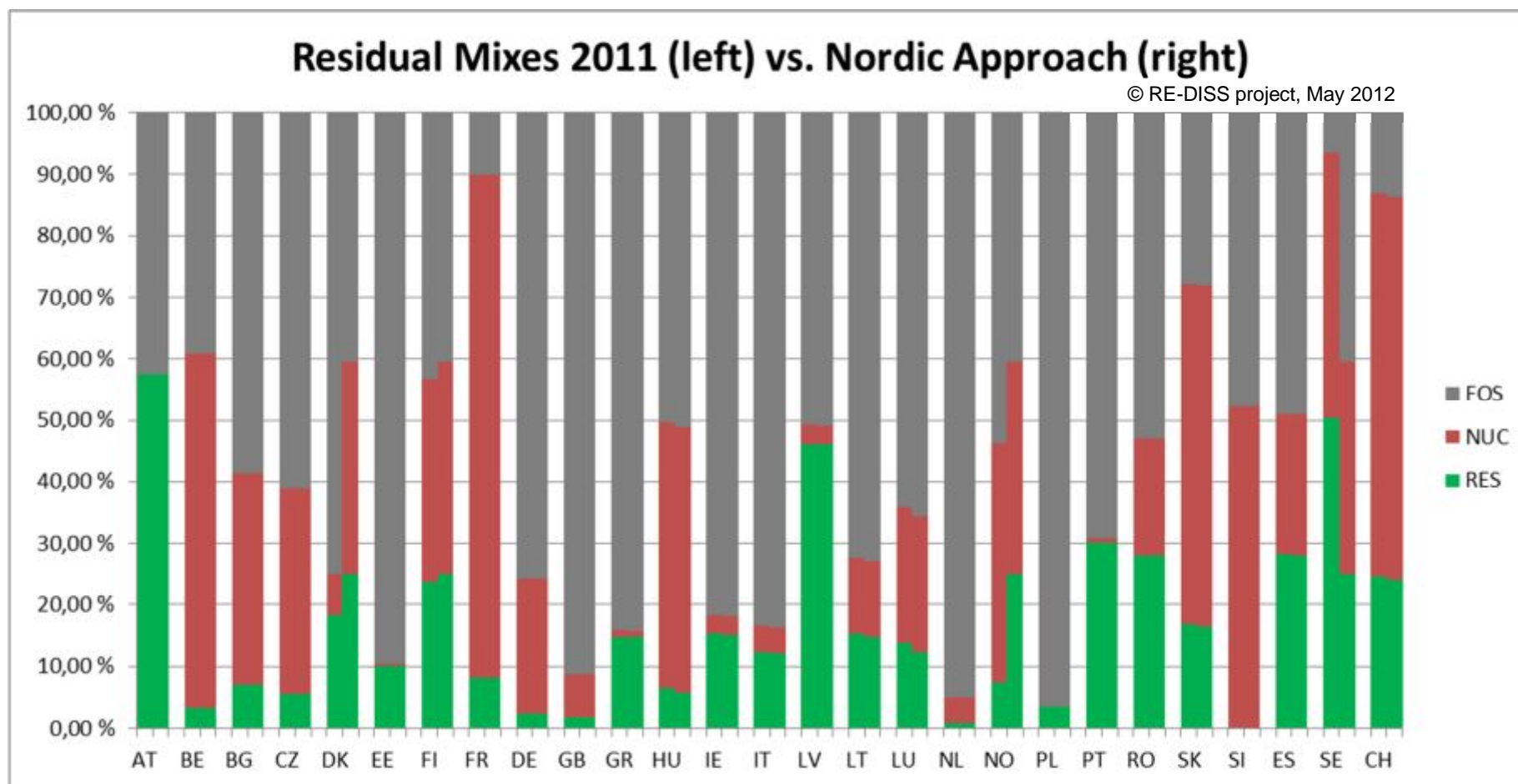
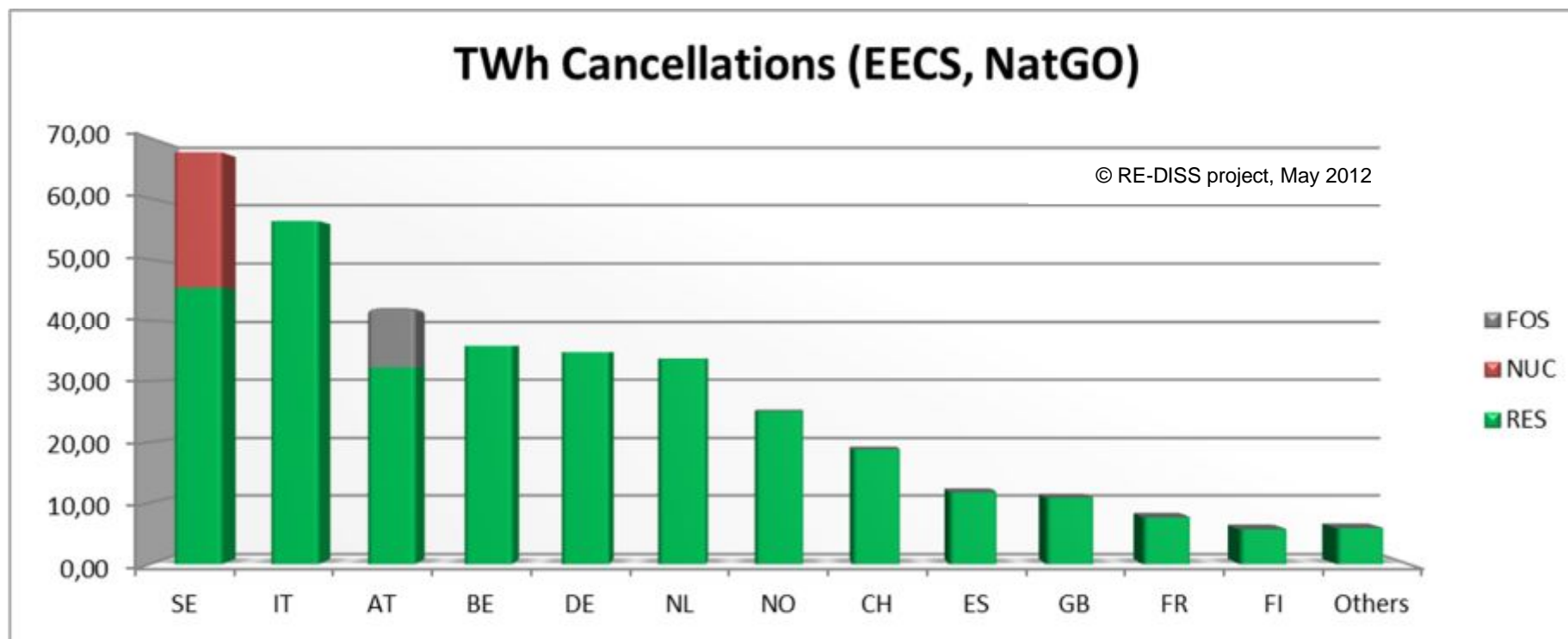


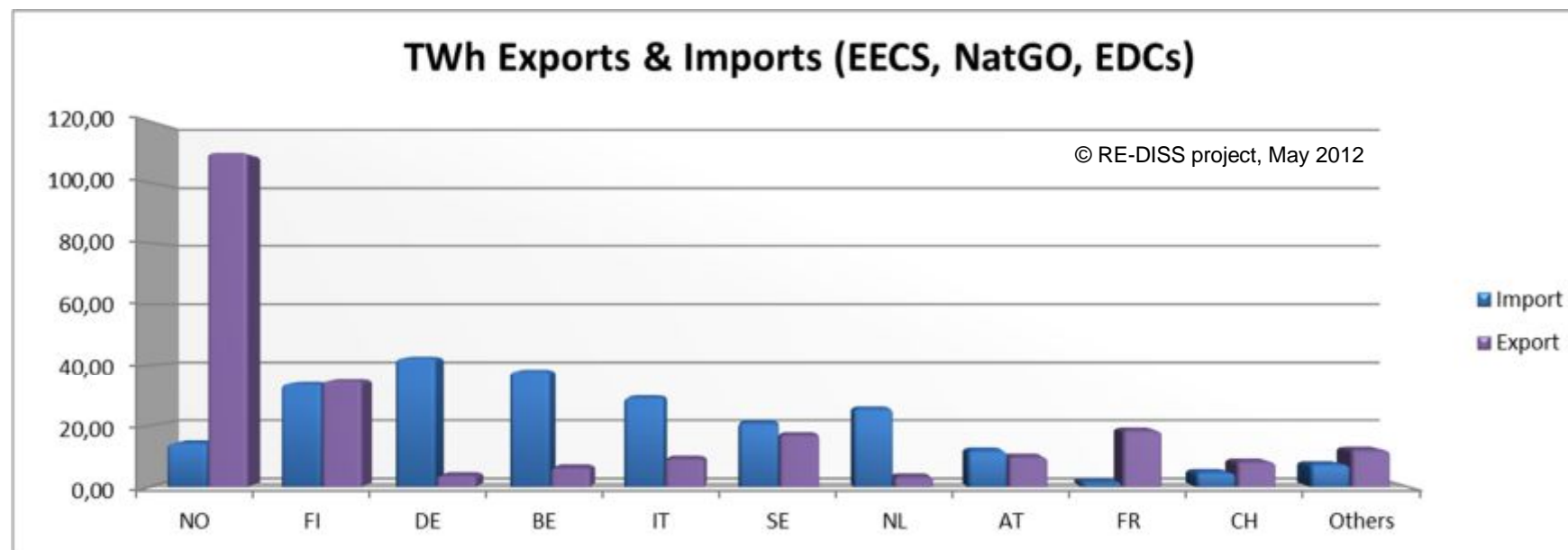
Figure 8: Residual Mixes of 2011 with regular and Nordic approach



**Figure 9: Recorded cancellations of EECS and National GOs in 2011**  
 (Note that ex-domain cancellations are counted as cancellations in the beneficiary country)



**Figure 10: Recorded exports and imports of EECS and National GOs in 2011**  
(Note that ex-domain cancellations are counted as exports for the source country)



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