Reliable Disclosure Systems for Europe (Phase II)

European Residual Mixes 2012

Results of the calculation of Residual Mixes for purposes of electricity disclosure in Europe for the calendar year 2012

Version 1.0, 8 May 2013

Introduction

Note: For background information regarding the concept of Residual Mix calculations and its application please refer to the website of the RE-DISS project http://www.reliable-disclosure.org, where you can find the final report of Phase I of the project and the RE-DISS Best Practice Recommendations.

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[1]. Thus, the calculation needs to be harmonised 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 2012 as calculated by the RE-DISS II project for 29 European countries (EU27 without Cyprus and Malta, but including Norway, Switzerland, Iceland and Croatia). 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_2 emission factor for fossil fuel, the CO_2 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. This does not imply any recommendation by the RE-DISS project team of these figures to be used in corporate or product carbon foot-printing. This is due to unresolved data inconsistencies and open issues regarding carbon footprint methodologies. For the calculation of radioactive waste content in the residual mix (Figure 3) a default factor of 3 mg was used for radioactive waste per kWh of nuclear power generated.

[1] Electricity consumption not explicitly disclosed through tracking instruments such as Guarantees of Origin.

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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 (in TWh in Figure 7). Figure 8 shows the contrast between residual mixes of 2011 and 2012. Finally, Figure 9 and Figure 10 disclose the volumes of EECS and National GO transactions which have been taken into account for the calculation.

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

Disclaimer on data quality:

Because of unavailability of consistent data, the residual mixes were calculated based on all recorded GO transactions during the assumed time period for transactions for disclosure of 2012 consumption (1.4.2012 – 31.3.2013), irrespective of the underlying production year of these GOs. Given the current availability of data, this is the best available information. Volumes which have been explicitly tracked without the use of transparent tracking instruments, e.g. by so-called contract based tracking, self-declarations etc., cannot be taken into account at all. RE-DISS will continue to work with the providers of this data to further improve data quality and consistency in the future.

Residual mixes disclosed in this document are not final and may change due to later data updates, particularly regarding contract-based tracking and National GO systems. This is especially relevant for Austria, Switzerland and Sweden, because these countries are currently in the process of implementing a full disclosure system. Furthermore, input data for Italy might be updated.
Note that through the European Attribute Mix, this might affect also the residual mixes of other countries.

Table 1: European Residual Mixes for 2012

	RES	NUC	FOS	% CONS	g CO_2/ kWh	mg RW/ kWh
AT	40.7 %	0.5 %	58.9 %	55.1 %	220.6	0.01
BE	7.2 %	53.1 %	39.8 %	56.7 %	147.1	1.59
BG	10.1 %	35.8 %	54.0 %	99.9 %	551.2	1.07
HR	28.0 %	19.8 %	52.2 %	100.0 %	388.3	0.59
CZ	5.9 %	35.6 %	58.5 %	100.0 %	401.0	1.07
DK	20.8 %	12.2 %	67.0 %	94.1 %	487.1	0.37
EE	13.0 %	0.0 %	87.0 %	99.9 %	1071.1	0.00
FI	19.5 %	40.2 %	40.3 %	87.1 %	322.0	1.20
FR	14.1 %	76.8 %	9.1 %	99.0 %	37.3	2.30
DE	3.0 %	20.9 %	76.1 %	68.8 %	739.5	0.63
GB	10.3 %	9.6 %	80.1 %	39.5 %	563.4	0.29
GR	16.4 %	0.0 %	83.6 %	99.1 %	948.1	0.00
HU	8.3 %	44.6 %	47.0 %	99.7 %	412.5	1.34
IS	55.4 %	19.2 %	25.4 %	99.3 %	205.1	0.58
IE	3.7 %	0.0 %	96.3 %	44.8 %	399.1	0.00
IT	15.9 %	5.5 %	78.6 %	87.8 %	392.9	0.16
LV	56.4 %	4.8 %	38.9 %	99.9 %	188.4	0.14
LT	17.2 %	14.3 %	68.4 %	99.8 %	496.5	0.43
LU	34.8 %	9.8 %	55.4 %	80.3 %	277.5	0.29
NL	11.8 %	4.1 %	84.1 %	66.7 %	436.4	0.12
NO	27.2 %	30.0 %	42.8 %	88.8 %	331.9	0.90
PL	9.2 %	0.3 %	90.5 %	99.8 %	1016.7	0.01
PT	15.1 %	8.5 %	76.3 %	72.1 %	479.6	0.26
RO	27.3 %	19.9 %	52.7 %	100.0 %	539.1	0.60
SK	20.5 %	56.4 %	23.1 %	99.9 %	121.0	1.69
SI	5.1 %	48.8 %	46.1 %	98.5 %	546.0	1.46
ES	15.7 %	26.0 %	58.3 %	79.8 %	313.3	0.78
SE	38.3 %	57.0 %	4.7 %	54.6 %	37.5	1.71
CH	47.8 %	47.7 %	4.6 %	73.5 %	16.9	1.43
EAM	10.88%	38.35%	50.77%	78.09%	409.92	1.15

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

% CONS: share of Residual Mix in total consumption; RW: radioactive waste; EAM: European Attribute Mix

Note: CO_2 and radioactive waste figures reported are destined for purposes of electricity disclosure only (rf. page 1).

Graphs with detailed calculations results

Figure 1: European Residual Mixes for 2012

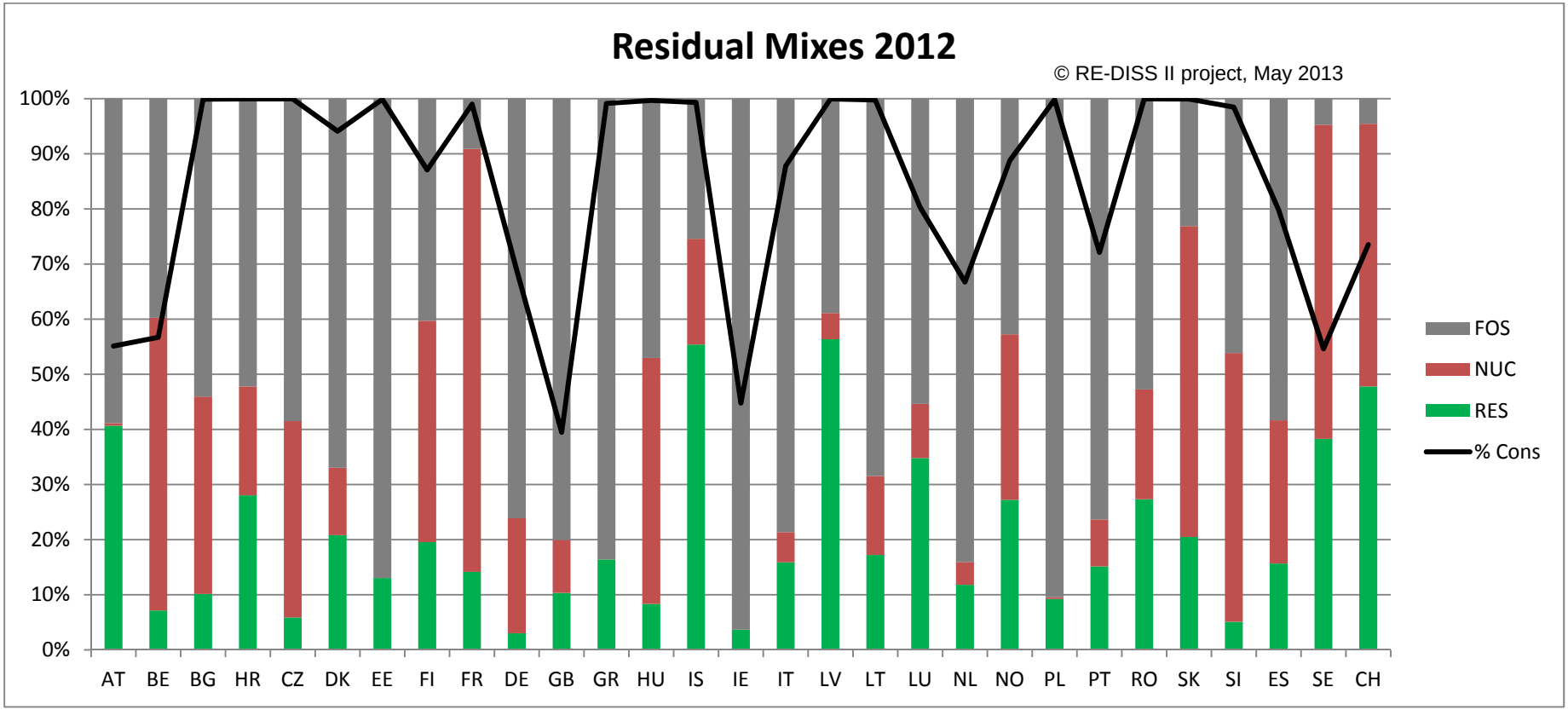


Figure 2: Attributes to the EAM (+) and from the EAM (-) in 2012

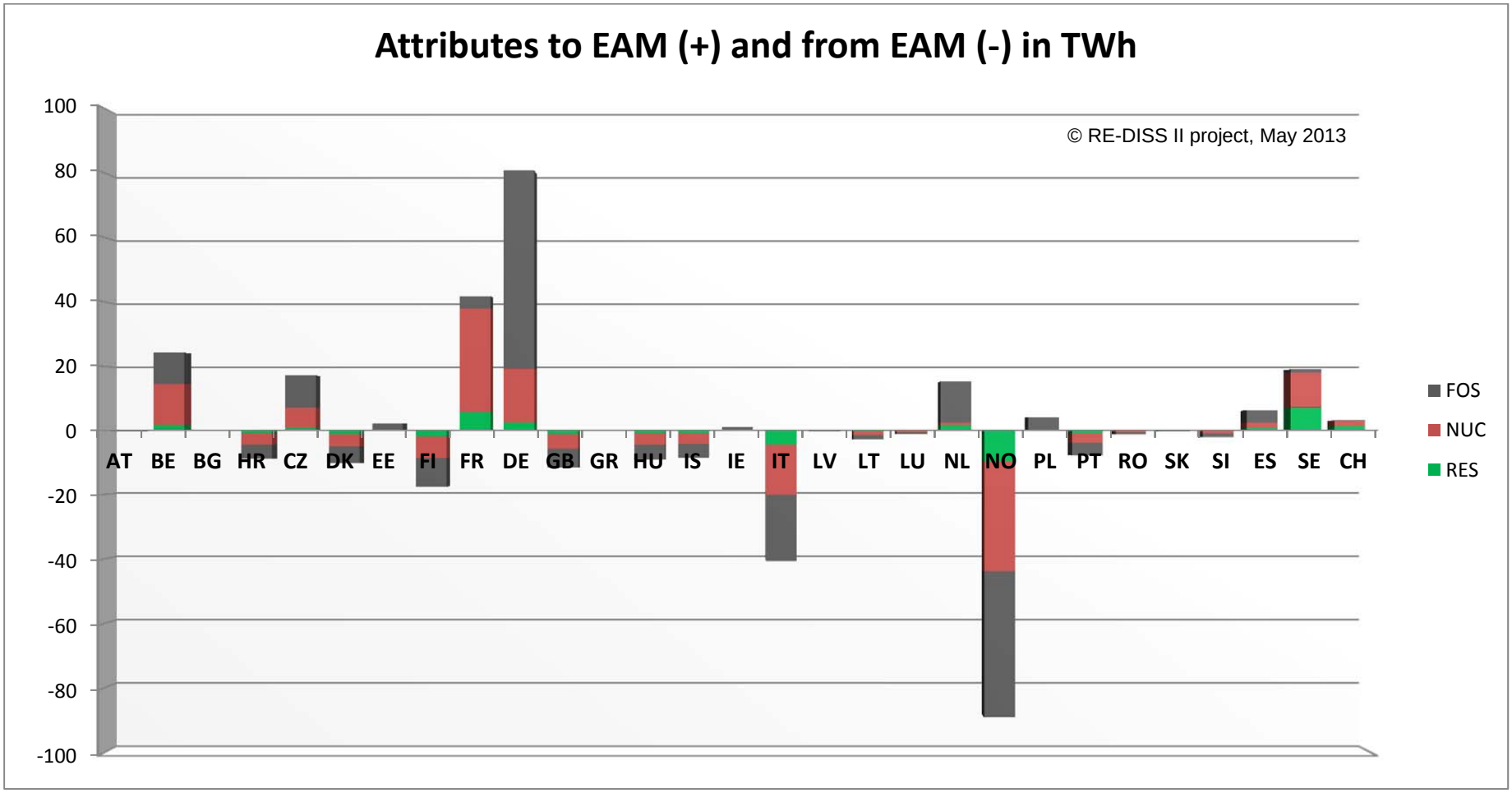
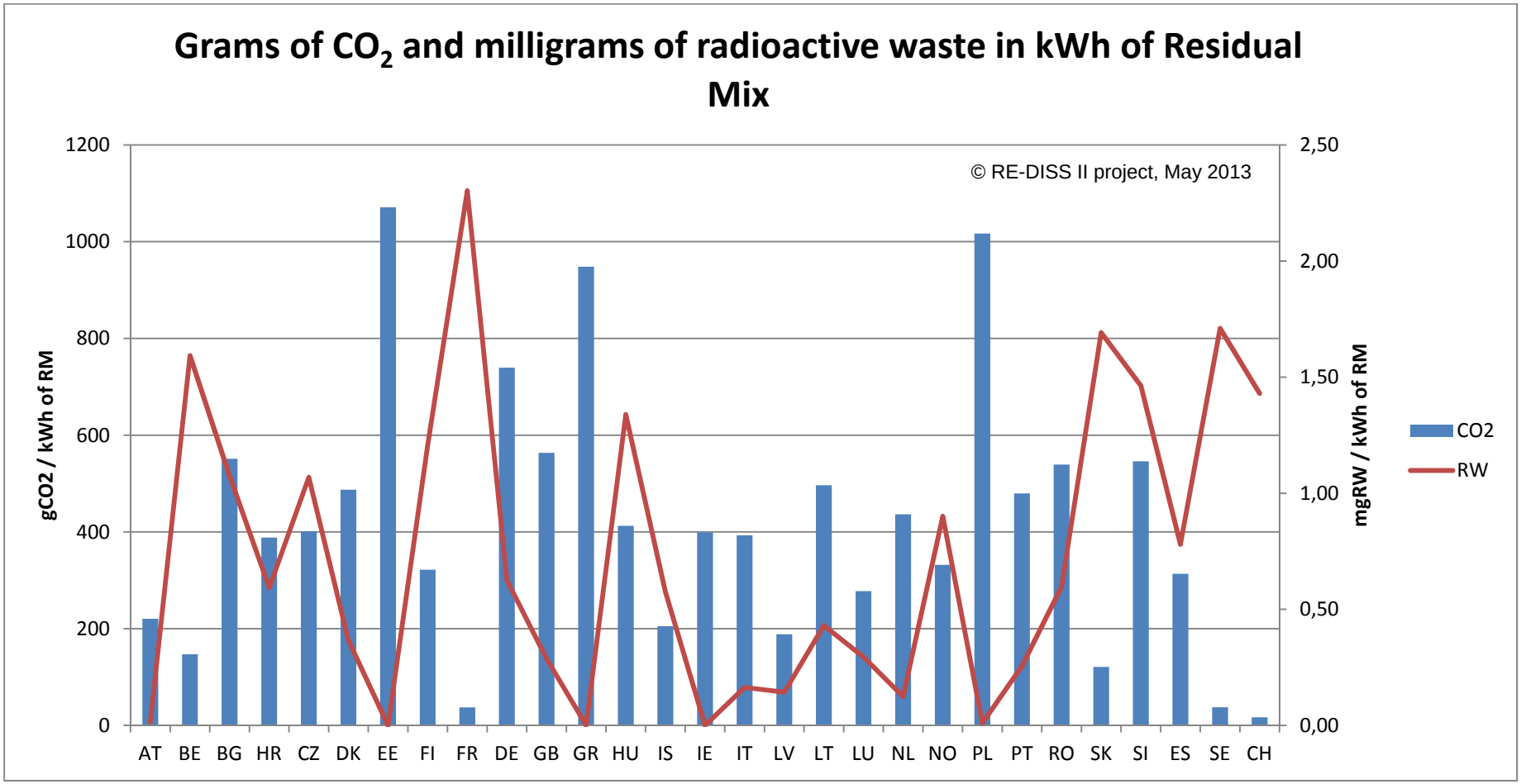
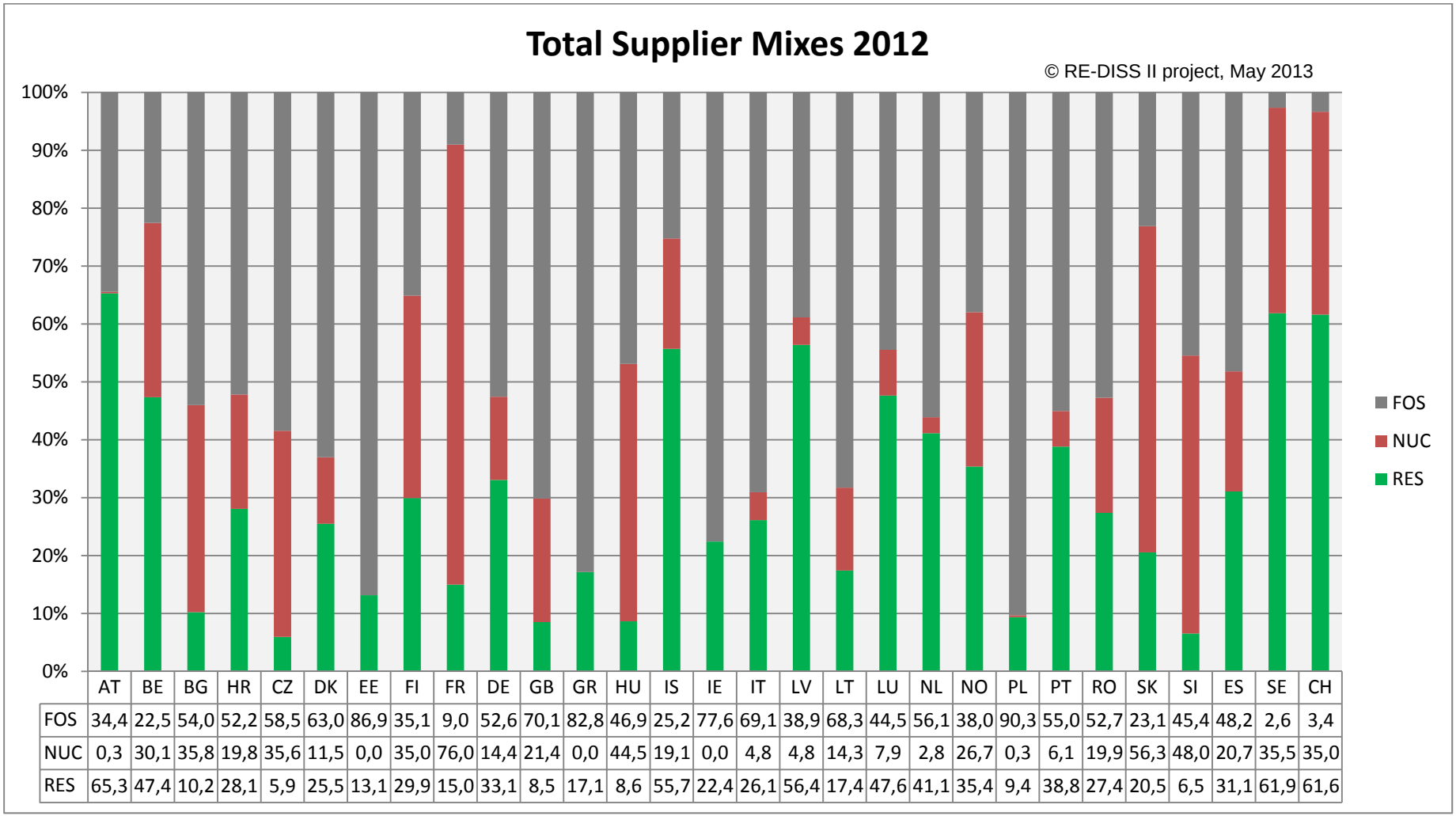


Figure 3: CO_2 and radioactive waste content in Residual Mixes of 2012



Note: the CO_2 and radioactive waste figures reported are destined for purposes of electricity disclosure only (see page 1).

Figure 4: Total Supplier Mixes of 2012



	AT	BE	BG	HR	CZ	DK	EE	FI	FR	DE	GB	GR	HU	IS	IE	IT	LV	LT	LU	NL	NO	PL	PT	RO	SK	SI	ES	SE	CH
FOS	34,4	22,5	54,0	52,2	58,5	63,0	86,9	35,1	9,0	52,6	70,1	82,8	46,9	25,2	77,6	69,1	38,9	68,3	44,5	56,1	38,0	90,3	55,0	52,7	23,1	45,4	48,2	2,6	3,4
NUC	0,3	30,1	35,8	19,8	35,6	11,5	0,0	35,0	76,0	14,4	21,4	0,0	44,5	19,1	0,0	4,8	4,8	14,3	7,9	2,8	26,7	0,3	6,1	19,9	56,3	48,0	20,7	35,5	35,0
RES	65,3	47,4	10,2	28,1	5,9	25,5	13,1	29,9	15,0	33,1	8,5	17,1	8,6	55,7	22,4	26,1	56,4	17,4	47,6	41,1	35,4	9,4	38,8	27,4	20,5	6,5	31,1	61,9	61,6

Figure 5: Comparison of country's production and residual mix in 2012

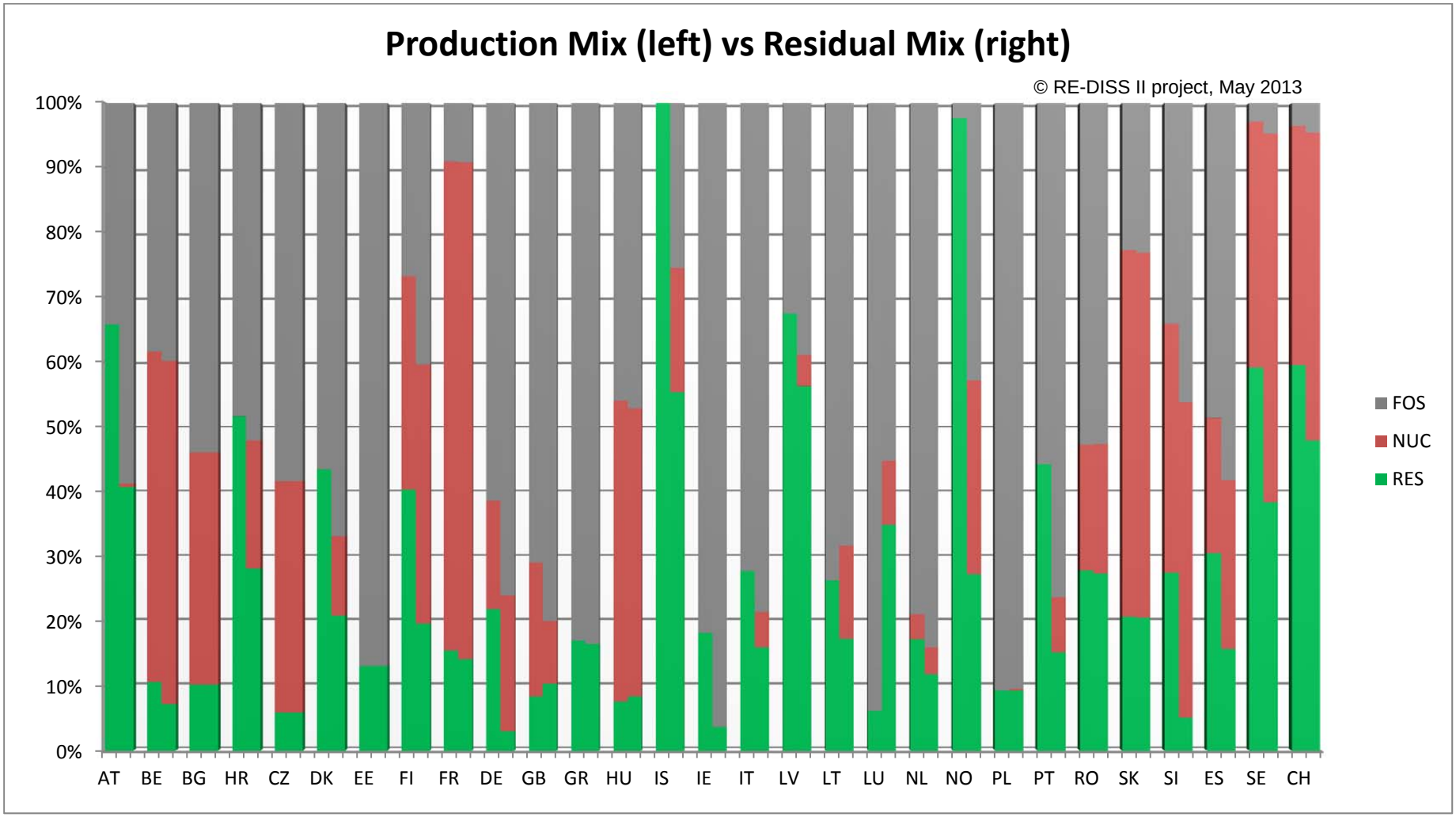


Figure 6: Comparison of country's production and total supplier mix in 2012

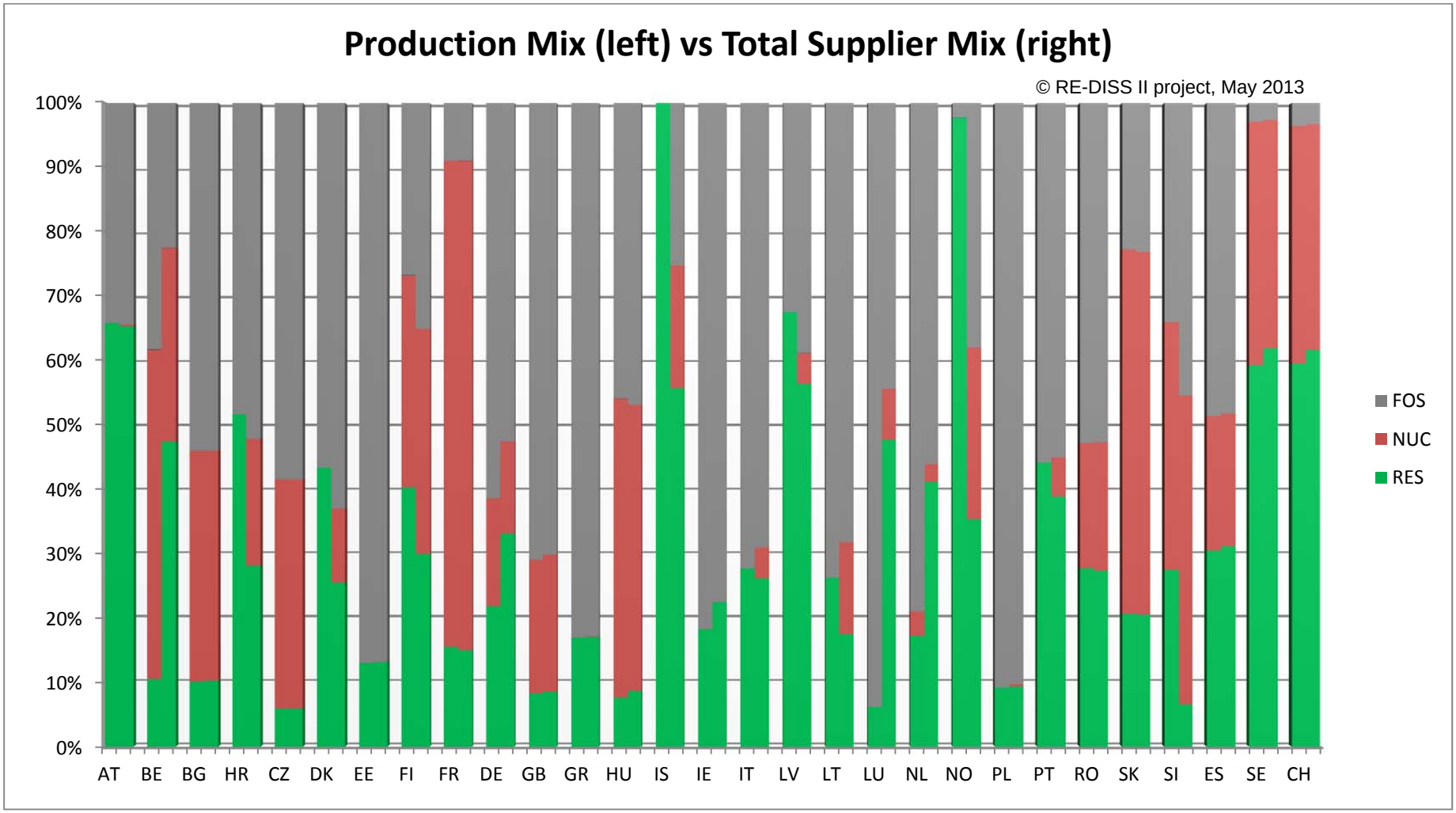


Figure 7: Comparison of country's production and total supplier mix in 2012 (in TWh)

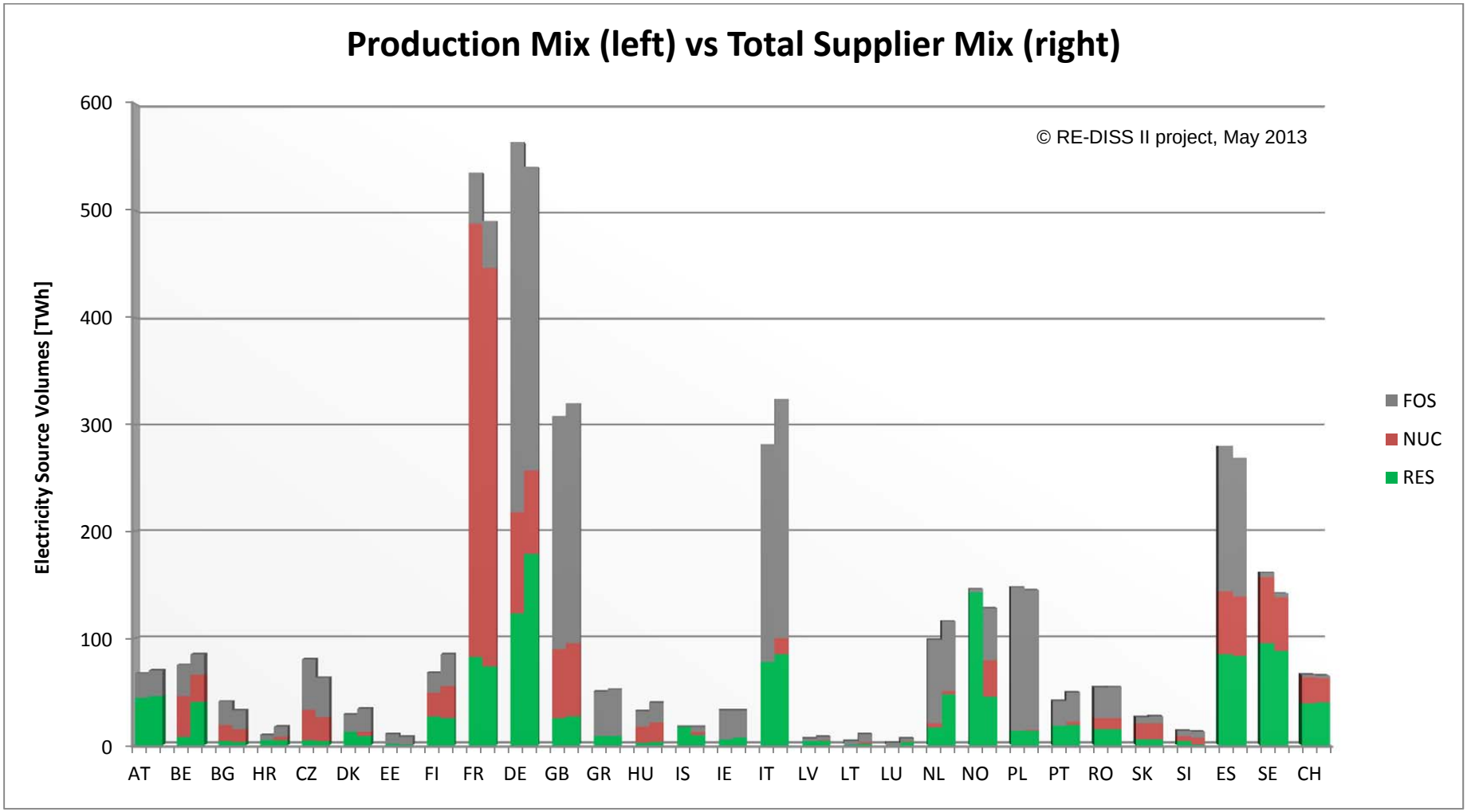


Figure 8: Residual Mixes 2011 and 2012

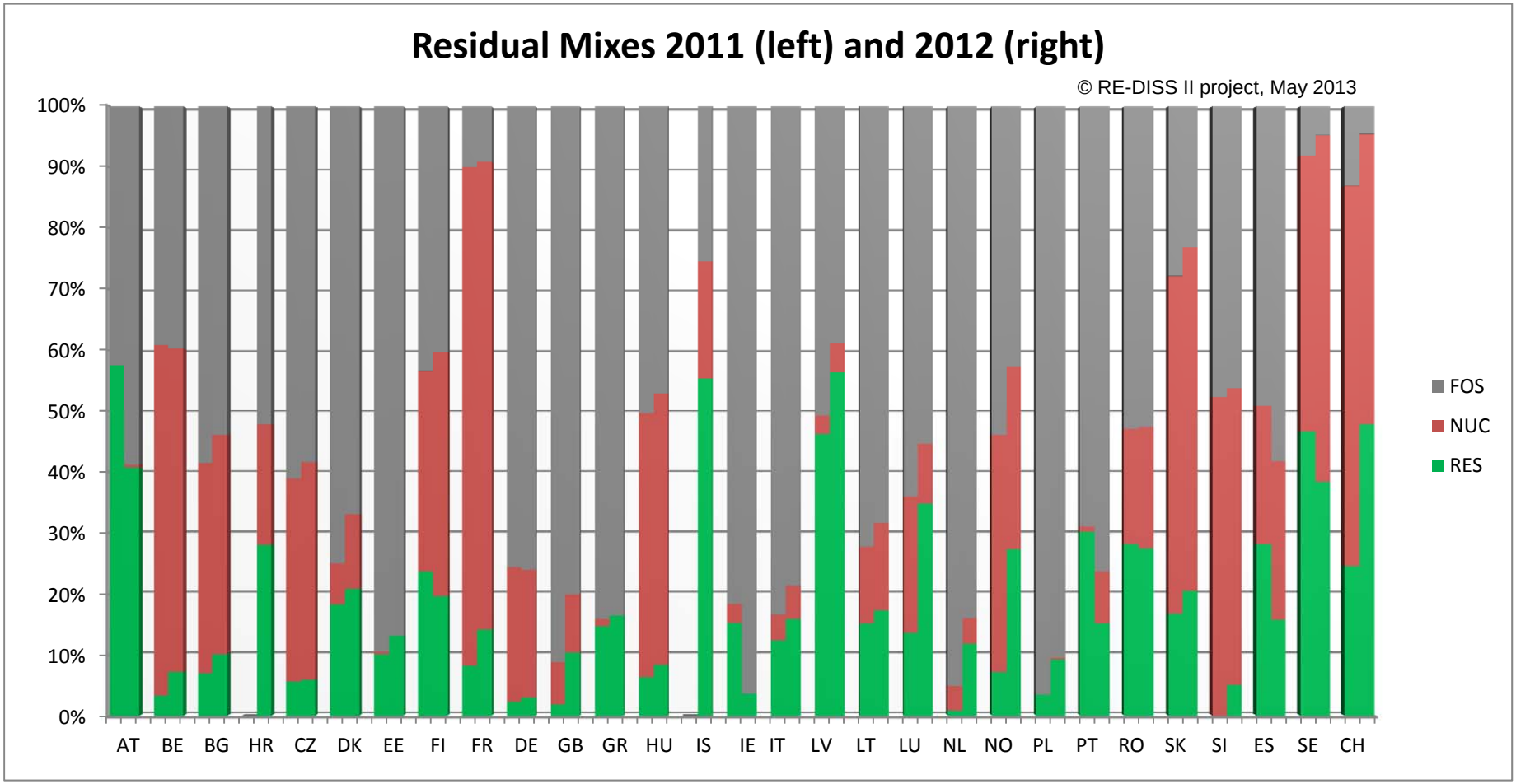


Figure 9: Recorded cancellations of EECS and National GOs in 2012
(Note that ex-domain cancellations are counted as cancellations in the beneficiary country. Note that in Spain, the volume of cancelled national GOs reflects the volume issued minus expired or exported.)

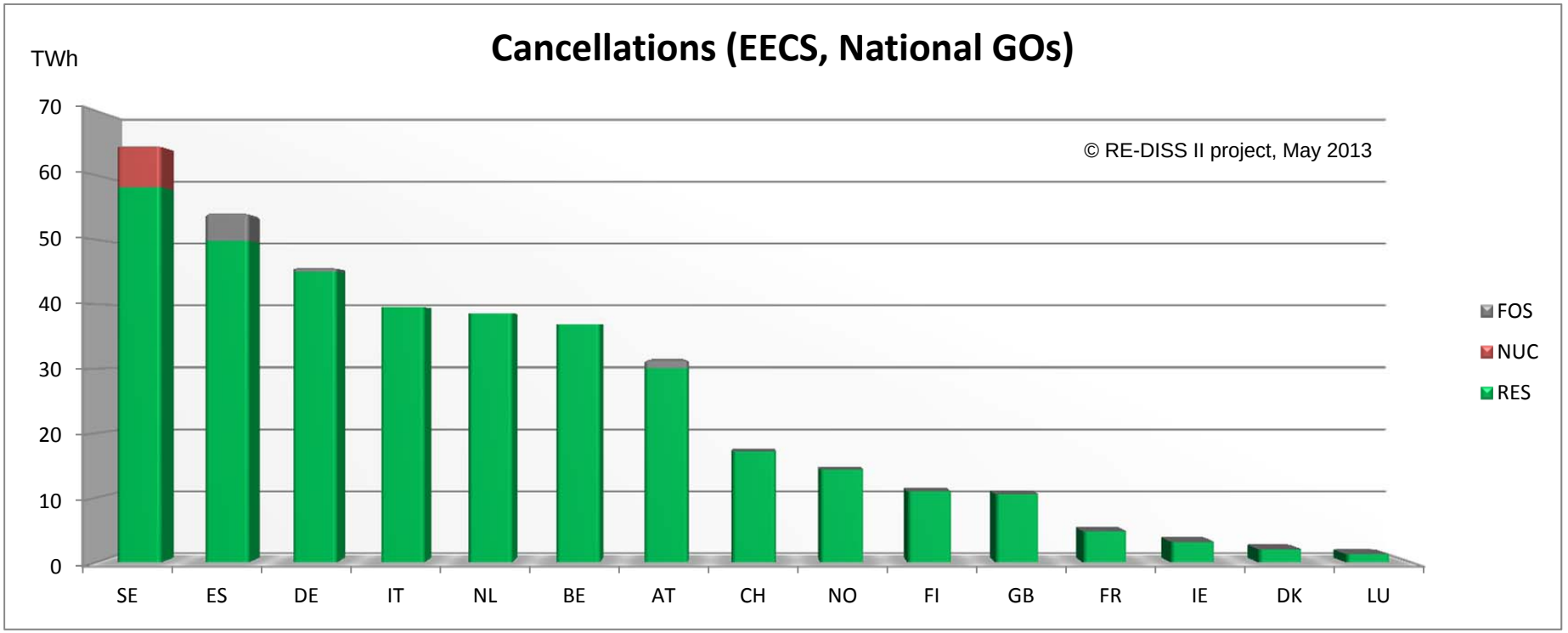


Figure 10: Recorded imports and exports of EECS and National GOs in 2012
(Note that ex-domain cancellations (EDCs) are counted as exports for the source country)