

OICA proposal for amendments to GRE/2013/3 (Regulation No. 10)

The text reproduced below was prepared by the expert from OICA, in order to amend document GRE/2013/3, extending the scope of Regulation No. 10 to all kinds of power train systems above a certain working voltage level, when they are in charging mode. The modifications are marked in bold for new or strikethrough for deleted characters.

I. Proposal

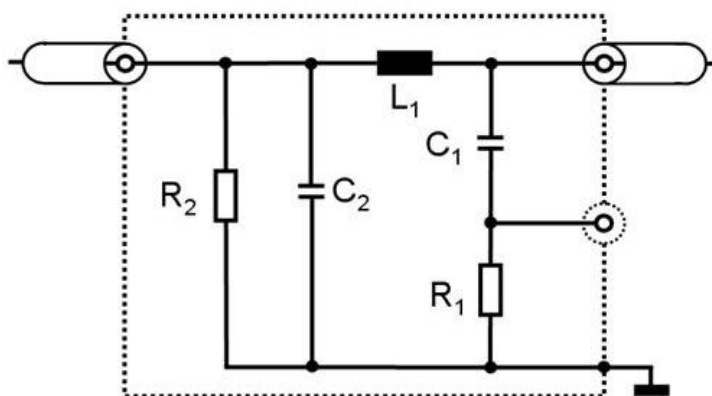
Para. 4.2.4, to be deleted:

~~"4.2.4. In case an ESA is (part of) a light source and if:~~
~~(a) this ESA is subject to approval according to Regulation No. 37, Regulation No. 99 or Regulation No. [128]; and/or,~~
~~(b) this ESA is mechanically interchangeable with any (replaceable) approved light source according to Regulation No. 37, Regulation No. 99 or Regulation No. [128];~~
~~then approval according to Regulation No. 10 shall be refused if no approval according to Regulation No. 37, Regulation No. 99 or Regulation No. [128] was granted."~~

Appendix 8, figure 1, HV artificial network, R2 value, amend to read:

"HV artificial network

Figure 1: HV artificial network

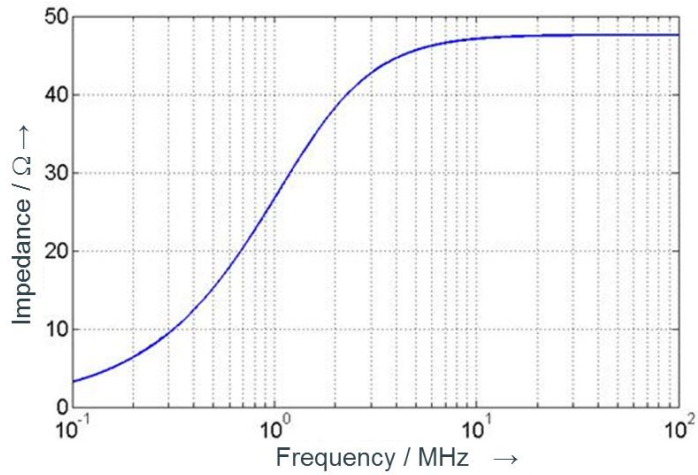


<i>Key</i>	<i>C₂: 0.1 μF</i>
<i>L₁: 5 μH</i>	<i>R₁: 1 kΩ</i>
<i>C₁: 0.1 μF</i>	<i>R₂: 1 MΩ 100 kΩ (discharging C₂ to < 50 V_{dc} within 60 s)</i>

"

Appendix 8, figure 2, delete and replace by:

Figure 2: Impedance of HV artificial network



Para. 6.7.1. Table 1, para. 7.17.1 Table 17, amend to read:

"Table 2 1

Maximum allowed pulse amplitude

Polarity of pulse amplitude	Maximum allowed pulse amplitude for	
	Vehicles with 12 V systems	Vehicles with 24 V systems
Positive	+75 V	+150 V
Negative	-100 V	-450 V

Para. 7.15.2.2., amend to read:

"7.15.2.2. The ESA representative of its type shall be considered as complying with immunity requirements if, during the tests performed in accordance with Annex 4S21, there shall be no degradation of performance of "immunity related functions", according to paragraph 2.2. of Annex 9."

Annex 4 Table 1, Annex 5 Table 1, Annex 7 Table 1, Annex 8 Table 1, Annex 13 Table 1, Annex 14 Table 1, Annex 19 Table 1, Annex 20 Table 1, amend to read:

"Note: ~~If a spectrum~~ **If a spectrum analyser**"

Annex 7, para. 4.4., amend to read:

"4.4. Measurements

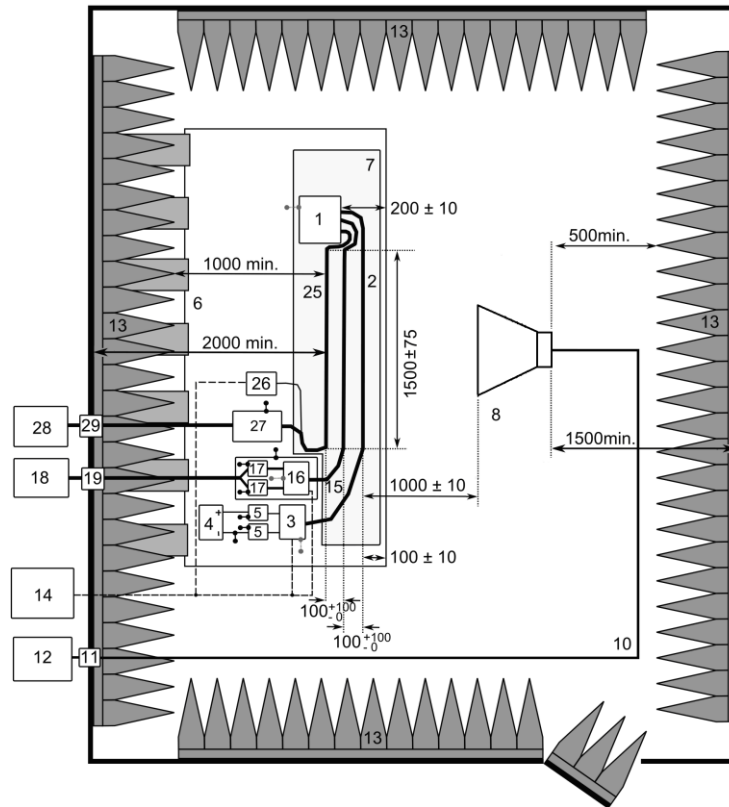
Unless otherwise specified the configuration with the LV harness closer to the antenna shall be tested.

The phase centre of the antenna shall be in line with the centre of the longitudinal part of the wiring harnesses for frequencies up to 1'000 MHz.

~~The phase centre of the antenna for frequencies above 1'000 MHz shall be in line with the ESA.~~

Annex 9, Appendix 3, delete figure and replace by:

Top view (Vertical polarization)



Annex 9, Appendix 3, Legend, amend to change:

"Legend

- | | |
|---|--------------------------------------|
| 1 ESA (grounded locally if required in test plan) | 12 RF signal generator and amplifier |
| 2 LV Test harness | 13 RF absorber material |
| 3 LV Load simulator (placement and ground connection according to CISPR 25 paragraph 6.4.2.5) | 14 Stimulation and monitoring system |
| 4 Power supply (location optional) | 15 HV harness |
| 5 LV Artificial network (AN) | 16 HV load simulator |
| 6 Ground plane (bonded to shielded enclosure) | 17 HV AN |
| 7 Low relative permittivity support ($\epsilon_r \leq 1,4$) | 18 HV power supply |
| 8 Biconical Horn antenna | 19 HV feed-through |
| 10 High-quality coaxial cable e.g. double-shielded (50 Ω) | 25 AC/DC charger harness |
| 11 Bulkhead connector" | 26 AC/DC load simulator (e.g. PLC) |
| | 27 50 μ H LISN (AC) or HVAN (DC) |
| | 28 AC/DC power supply |
| | 29 AC/DC feed-through |

"

Annex 9, Appendix 4, amend to read:

"Top view (horizontal polarization) (example of substitution method)"

Annex 11 para. 2.1, Annex 12 para. 2.1, Annex 15 para. 2.1, Annex 16 para. 2.1, amend to read:

"2.1. The vehicle shall be in configuration "REESS charging mode coupled to the power grid".

The state of charge (SOC) of the traction battery shall be kept between 20 per cent and 80 per cent of the maximum SOC during the whole frequency range measurement (this may lead to split the measurement in different sub bands with the need to discharge the vehicle's traction battery before starting the next sub bands) during the whole time duration of the measurement (this may lead to split the measurement in different time slots with the need to

discharge the vehicle's traction battery before starting the next time slot).
If the current consumption can be adjusted, then the current shall be set to at least **80** per cent of its nominal value."

Annex 11, para. 3.1., amend to read:

"3.1. The observation time to be used for the measurements shall be as for quasi-stationary equipment as defined in IEC 61000-3-2, Table ~~34~~."

Annex 13, para. 13.3., amend to read:

"3.3. The test set-up for the connection of the vehicle in configuration "REESS charging mode coupled to the power grid" is shown in figure ~~1a to 1d~~ of Appendix 1 to this Annex."

Annex 17 para. 2.1., Annex 18 para. 2.1., amend to read:

"2.1. The ESA shall be in configuration "REESS charging mode coupled to the power grid".

The state of charge (SOC) of the traction battery shall be kept between 20 per cent and 80 per cent of the maximum SOC ~~during the whole frequency range measurement (this may lead to split the measurement in different sub-bands with the need to discharge the vehicle's traction battery before starting the next sub-bands)~~ **during the whole time duration of the measurement (this may lead to split the measurement in different time slots with the need to discharge the vehicle's traction battery before starting the next time slot).**

~~If the test is not performed with a REESS the ESA should be tested at rated current.~~ If the current consumption can be adjusted, then the current shall be set to at least 80 per cent of its nominal value."

Annex 19, para. 3.1., amend to read:

"3.1. The test shall be performed according to CISPR 16-2-1, Clause 7.4.1. as ~~table standing~~ **floor-standing** equipments."

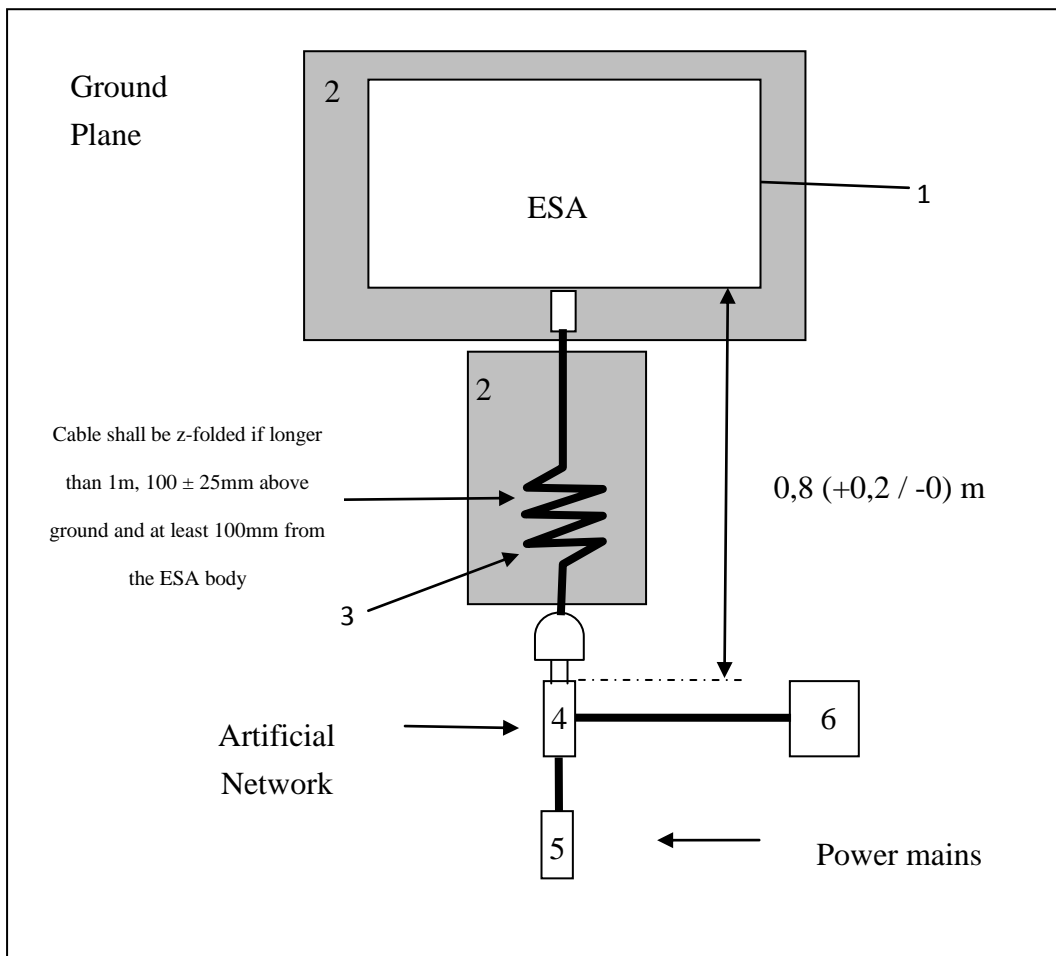
Annex 19, para. 3.3., amend to read:

"3.3. The test set-up for the connection of the ESAs in configuration "REESS charging mode coupled to the power grid" is shown in ~~Figure 2~~ **Figure 1** of Appendix 1 to this annex."

Annex 19, Appendix 1, Figure 1, delete and replace by:

Figure 1

ESA in configuration "REESS charging mode coupled to the power grid"



Annex 20, para. 3.2., amend to read:

“3.2. The impedance stabilization to be used for the measurement on ESA is defined in CISPR 22, paragraph 9.6.2.

Impedance Stabilization

Communication lines shall be applied to the ~~vehicle~~ ESA through IS(s).

The impedance stabilization (IS) to be connected in the network and communication cables is defined in CISPR 22 paragraph 9.6.2.

The IS(s) shall be mounted directly on the ground plane. The case of the IS(s) shall be bonded to the ground plane.

The measuring port of each IS shall be terminated with a 50 Ω load.

The IS shall be placed in front, aligned and on the same side of the vehicle power charging plug.”

Annex 20, para. 3.5., renumber to para. 3.4:

Annex 20, Table 2, amend to read:

"Note: ~~For emissions generated by brush commutator motors without an electronic control unit, the maximum step size may be increased up to 5 times the bandwidth.~~"

Annex 21 para. 2.1., Annex 22 para. 2.1.2, amend to read:

"2.1. Basic ESA conditions

The paragraph defines minimum test conditions (as far as applicable) and failures criteria for ESA immunity tests.

<i>"REESS charging mode" ESA test conditions</i>	<i>Failure criteria</i>
<p>ESA shall be in configuration "REESS charging mode coupled to the power grid".</p> <p>The state of charge (SOC) of the traction battery shall be kept between 20 per cent and 80 per cent of the maximum SOC during the whole frequency range measurement (this may lead to split the measurement in different sub-bands with the need to discharge the vehicle's traction battery before starting the next sub-bands).</p> <p>If the test is not performed with a REESS the ESA should be tested at rated current. If the current consumption can be adjusted, then the current shall be set to at least 20 per cent of its nominal value.</p>	<p>Incorrect charging condition (e.g. over-current, overvoltage)</p>

Annex 21, Appendix 1, Figure 1, amend to read:

- "Legend
- 1 ESA under test
 - 2 Insulating support
 - 3 Charging / communication cable
 - 4 AC or DC Artificial Network(s) grounded
 - 5 Power mains socket
 - 6 Impedance Stabilization(s) grounded
 - 7 Charging Station"

Annex 22, para. 4.3., amend to read:

"4.3 The Technical Service shall perform the test as specified in paragraph 7.8.2.17.16.2.1."

Annex 22, Appendix 1, Figures 1-4, deleted and replace by:

Figure 1: ESA in configuration "REESS charging mode coupled to the power grid" – Coupling between lines for DC or AC (single phase) power lines.

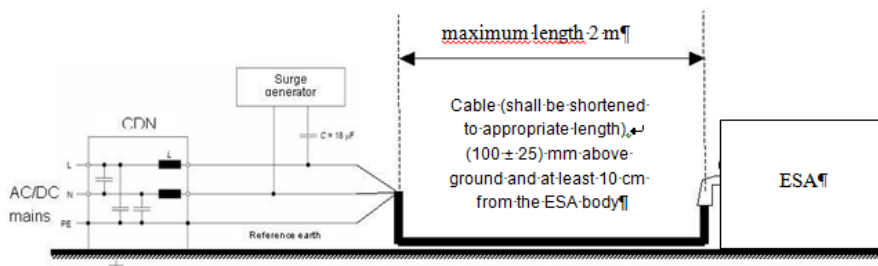


Figure 1: ESA in configuration “REESS charging mode coupled to the power grid” - Coupling between each line and earth for DC or AC (single phase) power lines

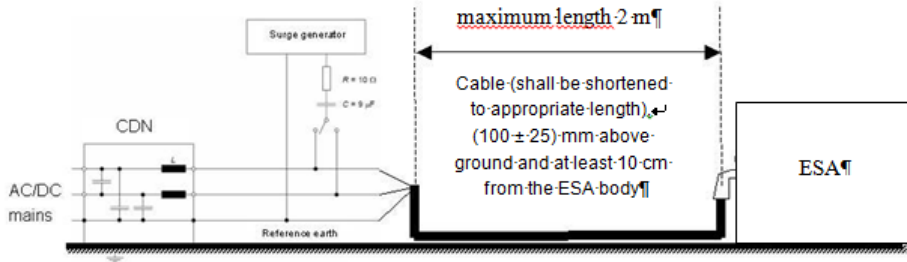


Figure 2: ESA in configuration “REESS charging mode coupled to the power grid” - Coupling between lines for AC (three phases) power lines

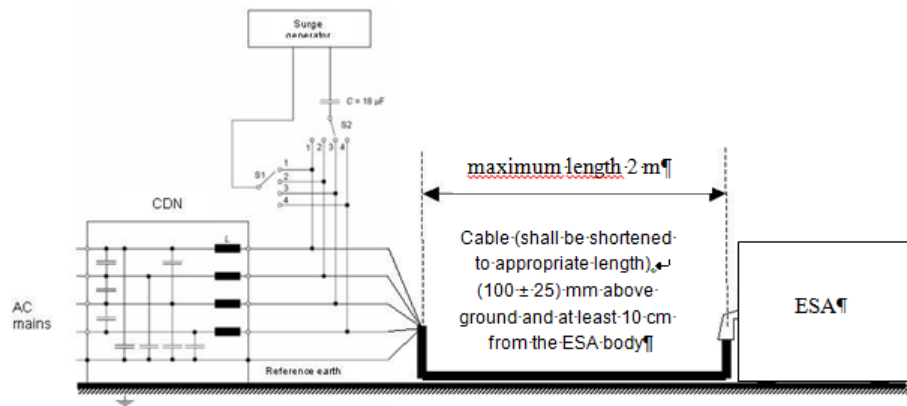
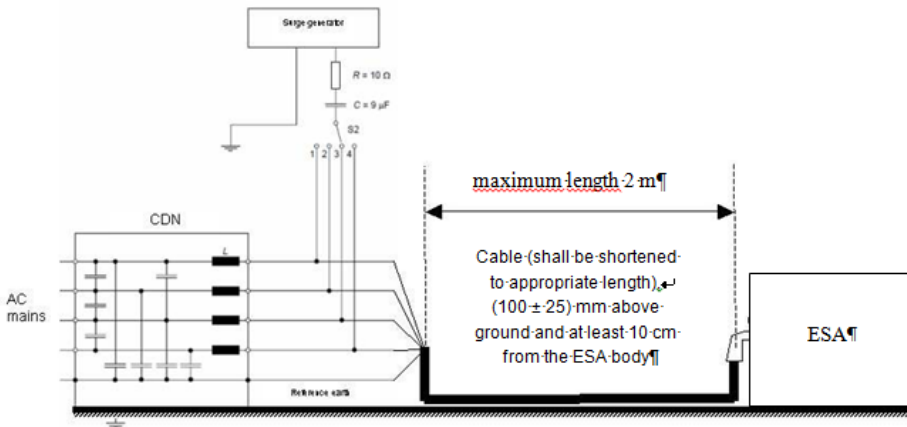


Figure 3: ESA in configuration “REESS charging mode coupled to the power grid” - Coupling between each line and earth for AC (three phases) power lines



II. Justification

1. Para 4.2.4: The Regulation No. 10 is involved with the electronic compatibility of all electronics systems included in vehicles or ESA. The problem raised by IEC in their informal document GRE-68-08 (and included in the official document GR/2013/3) has not been solved and cannot be solved by Regulation No. 10. In fact to do so, one should specify all existing regulation concerning equipment (ESA) in Regulation No. 10 (examples UNECE Regulation No. 13H and UNECE Regulation No. 13 for braking systems, UE/672/2010 in Europe for defrosting/defogging systems, UNECE Regulation No. 48 for lighting systems, UNECE Regulation No. 34 for prevention of fire risk regarding the charge dissipation, etc.). The aim of the Regulation No. 10 is not to protect any industry or to complement a lack of any Technical Services or Administrations whose task is, among others, to verify the respect of the parallel regulatory texts such as UNECE Regulation No. 37, No. 99, No. 127, No. 13H, No. 13, No. 48, No. 34, etc.

First of all, in para. 4.2.4.a. of the GRE-68-08 proposal, it is not explained how the applicant for the type-approval could demonstrate that the mentioned ESA was already approved according to Regulation No. 37, Regulation No. 99 or Regulation No. [128] and how the authorities could verify it.

Furthermore, in para. 4.2.4.b. of the GRE-68-08 proposal, it is required that the EMC test-house has to check that the mentioned ESA is not mechanically interchangeable with any (replaceable) approved light source according to Regulation No. 37, Regulation No. 99 or Regulation No. [128]. It is impossible for an EMC test-house to verify such a requirement.

In addition, in case of a Contracting Parties not mandating Regulations No. 37, No. 99 or No. 127 in their national legislation, any industry should also comply with Regulations No. 37, No. 99 or No. 127 in addition to Regulation No.10. It is not the role of any UNECE Regulation, notably Regulation No.10, to create barrier to trade. Consequently, the justification given by IEC in their informal document GRE-68-8 is not meaningful and is in conflict with the first purpose of Regulation No. 10: to verify the design for all electronics systems in regard to their electronic compatibility. This explains why OICA propose to delete the paragraph 4.2.4.

2. Appendix 8: The value of Resistor R_2 shall be increased from 100 k Ω to 1 M Ω because, if the value of this resistor is too low, the isolation protection circuit of a tested high voltage device could be activated and switch off the high voltage system under test.

Generally, REESS HV line isolated to the ground or vehicle body by 1M ohm or more to reduce the touch current. R_2 : 100k ohm in HVAN (High Voltage Artificial Network) will cause some leakage of current from HV lines. A certain level of leakage current will activate the fail-safe function which shut down the HV lines between REESS and HV power module. R_2 : resistance to the ground earth should apply 1M ohm which is equivalent value to insulation resistance of HV lines of REESS. This HVAN is applied in ESA immunity function test. To confirm the immunity performance in ESA, HVAN should keep the equivalent insulation resistance condition to vehicle test.

3. Appendix 8, figure 2, HV artificial network: editorial correction, from German to English nomenclature

4. Para. 7.15.2.2.: editorial correction; this clause should refer the ESA Annex.

5. Annex 15: Method of testing for immunity of vehicles

6. Annex 21: Method of testing for immunity of an ESA”.
 7. Annex 4 Table 1, Annex 5 Table 1, Annex 7 Table 1, Annex 8 Table 1, Annex 13 Table 1, Annex 14 Table 1, Annex 19 Table 1, Annex 20 Table 1: editorial correction; word “analyser” was missing.
 8. Annex 7, para. 4.4.: editorial correction; an unnecessary sentence was deleted. Test frequency is below the 1000MHz.
 9. Annex 9, Appendix 3: Figure had to be improved because vertical polarization is applied in this regulation. Vertical layout figure should thus be applied in this annex. In vertical layout figures, horn antenna figure will be better and easier to recognize the antenna polarization compared with bi-conical antenna in figures.
 10. Annex 9, Appendix 4: editorial correction.
 11. Annex 11 para. 2.1, Annex 12 para. 2.1, Annex 15 para. 2.1, Annex 16 para. 2.1.: editorial correction. Unnecessary sentence of these annexes were deleted; it seems that was wrongly copied and pasted from annex 12, 13.
Moreover, the missing number 80 was added.
 12. Annex 11, para. 3.1.: editorial correction, since a wrong table was referred to.
 13. Annex 13, para. 13.3.: editorial correction; missing “a to 1d”.
 14. Annex 17 para. 2.1., Annex 18 para. 2.1.: editorial correction. Unnecessary sentences were deleted.
 15. Annex 19, Table 2: editorial correction; an unnecessary sentence was deleted.
 16. Annex 21 para. 2.1., Annex 22 para. 2.1.2: editorial correction. Unnecessary sentence was deleted. This sentence was wrongly copied and pasted from annex 12, 13.
 17. The other corrections are purely editorial.
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