

Final compromises EPBD

(Compiled version of batch 1, 2, 3, 4, 5 and 6)

Definitions

Definition: Technical building system

COM text	CA 1	Covering AMs:
3. ‘technical building system’ means technical equipment for space heating, space cooling, ventilation, domestic hot water, built-in lighting, building automation and control, on-site electricity generation, on-site infrastructure for electro-mobility, or a combination of such systems, including those using energy from renewable sources, of a building or building unit;	3. ‘technical building system’ means technical equipment for space heating, space cooling, ventilation, management of indoor air quality , domestic hot water, built-in indoor and outdoor lighting systems, solar shading, elevators and escalators , building automation and control [add1], on-site electricity generation and storage , on-site infrastructure for electro-mobility, or a combination of such systems, including those using energy from renewable sources, of a building or building unit;	15 (EPP) 204 (Kallas etc) 205 (Rubig) 206 (Marinescu) 207 (EFDD) 208 (Toia) 209 (Blanco Lopez etc) 211 (S&D) 212 (ALDE) 214 (Telicka) ENVI37 CA supported by: EPP, S&D, ECR, ALDE, Greens, EFDD, GUE
Add1 to compromise: - data transmission (based on AM 207, EFDD): Add1: “ <i>building data transmission and storage</i> ” Add1 supported by: Greens, EFDD		

Definition: Trigger points

COM text	CA 2	Covering AMs:
No text	<p>In Article 2, the following point is inserted:</p> <p>3x: “Trigger point” means an opportune moment, for example from a cost-effectiveness, cost-efficiency or disruption perspective, in the life cycle of a building for carrying out energy efficiency renovations.</p>	<p>219 (Greens) 220 (EFDD) 221 (S&D) 233 (ALDE) ENVI39</p> <p>CA supported by: EPP; S&D; ECR; ALDE; Greens, EFDD, GUE</p>

Definition: Building renovation passport

COM text	CA 3	Covering AMs:
No text	<p>In Article 2, the following point is added:</p> <p>4x. “building renovation passport” means a long-term roadmap, which is based on quality criteria and follows an energy audit, and that outlines relevant measures and renovations that would improve the energy performance of a specific building;</p>	<p>217 (S&D) 222 (S&D) 223 (EFDD) 224 (Greens) 232 (ALDE)</p> <p>CA supported by: EPP, S&D, ALDE; EFDD, GUE</p>

Definition: BACs – Building automation and control systems

COM text	CA 4	Covering AMs:
No text	<p>in Article 2, the following point is inserted:</p> <p>'16a. "building automation and control system" means a system comprising all products, software and engineering services for automatic controls including interlocks, monitoring, optimisation, for operation, human intervention and management to achieve energy-efficient, economical and safe operation of technical building systems'</p>	<p>16 (EPP) 226 (EFDD)</p> <p>CA supported by: EPP, S&D, ECR, ALDE, Greens, EFDD, GUE</p>

Definition: Effective rated output

COM text	CA 5	Covering AMs:
No text	<p>Article 2, point 17 is amended as follows:</p> <p>17. 'effective rated output' means the maximum calorific output, expressed in kW, specified and guaranteed by the manufacturer as being deliverable during continuous operation while complying with the useful efficiency indicated by the manufacturer where:</p> <p>(a) 'full load' means maximal capacity demand of technical building systems for space heating, space cooling, ventilation and domestic hot water (b) 'part load' means a part of full load capacity representing average operating conditions;</p>	<p>239 (ALDE) 240 (Kofod) 241 (Kofod)</p> <p>CA supported by: EPP, S&D, ECR; ALDE, Greens, GUE, EFDD</p>

Definition: Decarbonised building stock

COM text	CA 5a	Covering AMs:
No text	<p>Article 2 the following point is added:</p> <p>X. “Decarbonised building stock” means a building stock performing to Nearly Zero-Energy Building level and which is energy efficient to the maximum of its potential.</p>	<p>215 (EFDD) 216 (Greens) 231 (ALDE) 242 (Kofod) 243 (Poche) ENVI38</p> <p>CA supported by: S&D, ALDE; Greens, GUE, EFDD</p>

Long-term renovation strategies (art. 2a)

Art. 2a, para 1 – content on national long-term renovation strategies

COM text	CA 6	Covering AMs:
(a) the first paragraph consists of Article 4 of the Directive 2012/27/EU on energy efficiency, other than its last subparagraph; Member States shall establish a long-term strategy for mobilising investment in the renovation of the national stock of residential and commercial buildings, both public and private. This strategy shall encompass:	(a) the <i>following paragraph 1 is inserted:</i> '1. Member States shall establish a long-term strategy for the transformation of the national stock of residential and commercial buildings, both public and private, into a highly energy efficient and decarbonised building stock by 2050. The strategy shall include actions for mobilising investment to facilitate renovation needed to achieve the 2050 goals. This strategy shall encompass:	17 (EPP) 244 (Greens) 245 (S&D) 246 (Kofod etc.) 247 (Grossetete etc.) 248 (EFDD) 249 (Rubig etc.) 250 (Kallas etc.) 251 (ALDE) 253 (Telicka etc.) 254 (Langen) 255 (GUE) 256 (Martin) 257 (EPP) ENVI40 ENVI41 ENVI42 ENVI46 CA supported by: EPP; S&D, ALDE, Greens, GUE, EFDD

(a) an overview of the national building stock based, as appropriate, on statistical sampling;	(a) an overview of the national building stock, including relevant building typologies , based, as appropriate, on statistical sampling;	
(b) identification of cost-effective approaches to renovations relevant to the building type and climatic zone;	(b) identification of cost-effective approaches and actions to stimulate technology neutral renovations relevant to the building type and climatic zone, considering relevant trigger points in the life-cycle of the building [add1] ;	
(c) policies and measures to stimulate cost-effective deep renovations of buildings, including staged deep renovations;	(c) policies and actions to stimulate cost-effective deep renovations of buildings, including staged deep renovations and decarbonisation of the heating and cooling demand , for example by introducing a scheme for building renovation passports;	
	(ca) policies and actions to support targeted low-cost energy efficiency measures and renovations;	
	(d) policies and actions to target the worst performing segments of the national building stock, households subject to energy poverty and households subject to split-incentive dilemmas as well as multi-family dwellings facing challenges to conduct renovations, while taking into consideration affordability;	
	(e) policies and actions to target all public buildings, including social housing;	
	(ea) policies and actions aiming to accelerate technological transition towards smart and well-connected buildings and communities as well as deployment of very high-capacity networks;	
	(f) an overview of national initiatives to promote skills, training and education in the construction and energy efficiency sectors as well as education in both passive elements and smart technologies;	

(d) a forward-looking perspective to guide investment decisions of individuals, the construction industry and financial institutions;	(g) a forward-looking perspective to guide investment decisions of individuals, the construction industry, public institutions including municipalities, housing cooperatives and financial institutions;	
(e) an evidence-based estimate of expected energy savings and wider benefits.	(h) an evidence-based estimate of expected energy savings and wider benefits, such as those related to health, safety and air quality.	
New subparagraph	The development and implementation of the long-term renovation strategies shall be supported by structured, permanent stakeholder platforms, including representatives from local and regional communities, social dialogue representatives including employees, employers, SMEs and the construction sector, as well as minority representatives.	

Art. 2a, para 2, first subparagraph – milestones of long-term renovation strategies

COM text	CA 7	Covering AMs:
2. In their long-term renovation strategy referred to in paragraph 1, Member States shall set out a roadmap with clear milestones and measures to deliver on the long-term 2050 goal to decarbonise their national building stock, with specific milestones for 2030.	2. In their long-term renovation strategy referred to in paragraph 1, Member States shall set out a roadmap with clear milestones and actions to deliver on the long-term 2050 goal to ensure a highly energy efficient and decarbonised national building stock, with specific milestones for 2030 and 2040 as well as measurable progress indicators.	18 (EPP) 258 (EFDD) 259 (Zanonato) 260 (S&D) 261 (ENF) 262 (Poche) 263 (Greens) 264 (GUE) 265 (Grossetete etc) 266 (Toia) 267 (Kohlicek) 268 (Gerbrandy etc.) 269 (Telicka) 270 (Dalli) 271 (ENF) 272 (Gambus) ENVI41 ENVI44 CA supported by: EPP, S&D; ALDE; Greens

Art. 2a, para 2, subparagraph 1a (new) – milestones' contribution

COM text	CA 8	Covering AMs:
	<p>Member States shall specify how their milestones contribute to achieving the Union's energy efficiency target(s) in 2030 of X %, in accordance with Directive 2012/27/EU [updated reference], and the Union's target to reduce greenhouse gas emissions by 80-95 % by 2050.</p>	19 (EPP) 260 (S&D) 268 (Gerbrandy etc.) 269 (Telicka) 273 (Greens) 290 (ALDE) 313 (Gambus) ENVI41 ENVI43 ENVI44
		CA supported by: EPP, S&D, ALDE, Greens; EFDD,

Art. 2a, para. 2, second subparagraph – energy poverty

COM text	CA 9	Covering AMs:
In addition, the long term renovation strategy shall contribute to the alleviation of energy poverty.	In addition, the long term renovation strategy shall outline relevant actions that contribute to the alleviation of energy poverty while supporting equal access to financing tools for energy efficiency renovations for vulnerable households.	20 (EPP) 276 (Gambus) 277 (277) 279 (Greens) 280 (S&D) 281 (Geier etc.) 282 (Dalli) 283 (Pieper etc.) 284 (Høkmark) 285 (GUE) 286 (Telicka) 288 (Marinescu) ENVI45 CA supported by: EPP, S&D, ALDE, Greens, GUE, EFDD

Art. 2a, para. 3 – financing

COM text	CA 10	Covering AMs:
3. To guide investment decisions as referred to in point (d) in paragraph 1, Member States shall introduce mechanisms for:	3. To enable and guide investment decisions as referred to in paragraph 1, Member States shall introduce or sustain mechanisms for:	21 (EPP) 291 (Greens) 292 (S&D) 294 (Van Brempt) 297 (Telicka etc.) 300 (EPP) 301 (Greens) 302 (ALDE) 304 (S&D) 305 (Greens) 307 (Greens) 309 (Dalli) 311 (Marinescu) 312 (Kappel) ENVI47 ENVI48 ENVI49 ENVI50 CA supported by: EPP, S&D, ECR; ALDE, Greens, EFDD
(a) the aggregation of projects, to make it easier for investors to fund the renovations referred to in points (b) and (c) in paragraph 1;	(a) the aggregation of projects, including by investment platforms , to make it easier for investors to fund the renovations referred to in paragraph 1;	
(b) de-risking energy efficiency operations for investors and the private sector; and	(b) reducing the perceived risk of energy efficiency operations for investors and the private sector, e.g. by subjecting the factor for collateral with certified	

	energy efficiency renovations to lower risk weighting in capital requirements;	
(c) the use of public funding to leverage additional private-sector investment or address specific market failures.'	(c) the use of public funding to leverage additional private-sector investment, including within the framework of the Smart Finance for Smart Buildings Initiative , or address specific market failures;	
	(c a) in line with current Eurostat guidance and clarifications within the framework of ESA 2010, the guidance of investments into an energy efficient public building stock and clarification on the interpretation of accounting rules, to support a holistic approach to public authorities investments; and	
	(caa) supporting project development assistance as well as facilitating aggregation of small and medium sized enterprises in groups and consortia to enable packaged solutions to potential clients;	
	(c b) accessible and transparent advisory tools, such as one-stop-shops for consumers and energy advisory services informing on energy efficiency renovations, and available financial instruments for energy efficiency renovations in buildings.	

Art. 2a, para. 3a (new): best practice

COM text	CA 10a	Covering AMs:
	<p>6c. The Commission shall make recommendations for Member States based on the collection and dissemination of best practices on successful public and private financing schemes for energy efficiency renovations as well as information on schemes for the aggregation of small-scale energy efficiency renovation projects. The Commission shall furthermore provide Member States with recommendations on financial incentives to renovate from a consumer perspective taking into account cost-efficiency differences between Member States;</p>	<p>476 (Nica etc) 480 (Toia)</p> <p>CA supported by: EPP, S&D, ECR, ALDE, Greens, EFDD,</p>

Art. 2a, para. 4 (new): public consultation

COM text	CA 11	Covering AMs:
	<p>4. Each Member State shall carry out a public consultation, including all relevant stakeholders, for a duration of at least three months on the draft long-term renovation strategy prior to the submission of its long-term renovation strategy to the Commission. A summary of the result of the public consultation shall be published as an annex to the strategy.</p>	<p>26 (EPP) 310 (Greens) 317 (Greens) 318 (S&D) 322 (EFDD) ENVI41 ENVI42</p> <p>CA supported by: EPP; S&D; ALDE; Greens, GUE, EFDD</p>

Art. 2a, para. 5 (new): implementation reporting

COM text	CA 12	Covering AMs:
	5. Each Member State shall include details of the implementation of its long-term renovation strategy, including on the planned policies and actions, in accordance with the reporting obligations [Article 19 (a)] of the Governance Regulation (XXX), as a part of their integrated national energy and climate progress report.	27 (EPP) 319 (EFDD) 326 (S&D)
		CA supported by: EPP; S&D; ALDE; Greens; EFDD;

Building requirements

Art. 6 - New buildings

COM text	CA 13	Covering AMs:
<p>(3) Article 6 is amended as follows:</p> <p>(a) in paragraph 1, the second subparagraph is deleted;</p> <p><i>For new buildings, Member States shall ensure that, before construction starts, the technical, environmental and economic feasibility of high-efficiency alternative systems such as those listed below, if available, is considered and taken into account:</i></p> <p>(a) decentralised energy supply systems based on energy from renewable sources;</p> <p>(b) cogeneration;</p> <p>(c) district or block heating or cooling, particularly where it is based entirely or partially on energy from renewable sources;</p> <p>(d) heat pumps.</p>	<p>3) Article 6 is amended as follows:</p> <p>(a) in paragraph 1, the second subparagraph is replaced by the following:</p> <p>For new buildings, Member States shall ensure that, before construction starts, the technical, environmental and economic feasibility of high-efficiency alternative systems, if available, is taken into account.</p>	<p>327 (Grossetete etc.) 328 (Rubig) 329 (Greens) 330 (ALDE) 331 (Rubig) ENVI54</p> <p>CA supported by: EPP; S&D; ECR; ALDE; Greens, GUE, EFDD</p>
<p>(b) paragraphs 2 and 3 are deleted;</p> <p><i>2. Member States shall ensure that the analysis of alternative systems referred to in paragraph 1 is documented and available for verification purposes.</i></p> <p><i>3. That analysis of alternative systems may be carried out for individual buildings or for groups of similar buildings or for common typologies of buildings in the same area. As far as collective heating and cooling systems are concerned, the</i></p>		

<i>analysis may be carried out for all buildings connected to the system in the same area.</i>		

Art. 7, para 5 - Existing buildings

COM text	CA 14	Covering AMs:
<p>(4) in Article 7, the fifth subparagraph is deleted;</p> <p><i>Member States shall encourage, in relation to buildings undergoing major renovation, the consideration and taking into account of high-efficiency alternative systems, as referred to in Article 6(1), in so far as this is technically, functionally and economically feasible.</i></p>	<p>(4) Article 7, the fifth paragraph is replaced by the following:</p> <p>Member States shall ensure, in relation to buildings undergoing major renovation, the taking into account of high-efficiency alternative systems, in so far as this is technically, functionally and economically feasible, as well as the due attention to fire safety and the encouragement of a healthy indoor climate conditions.</p>	<p>28 (EPP) 332 (S&D) 333 (Grossetete) 334 (S&D) 335 (Greens) 336 (Rubig) 337 (GUE) ENVI55 ENVI56</p> <p>CA supported by: EPP; S&D; ECR; ALDE; Greens, GUE, EFDD</p>

Electro-mobility

Art. 8, para. 2 - non-residential buildings

COM text	CA 15	Covering AMs:
<p>'2. Member States shall ensure that in all new non-residential buildings and in all existing non-residential buildings undergoing major renovation with more than ten parking spaces, at least one of every ten is equipped with a recharging point within the meaning of Directive 2014/94/EU on the deployment of alternative fuels infrastructure¹, which is capable of starting and stopping charging in reaction to price signals. This requirement shall apply to all non-residential buildings, with more than ten parking spaces, as of 1 January 2025.</p>	<p>2. Member States shall require that in all new non-residential buildings and in all existing non-residential buildings with more than ten parking spaces undergoing major renovation encompassing the electrical infrastructure of the building or the parking lot, at least one parking space is equipped with a recharging point, and that one of every ten parking spaces is equipped with adequate pre-cabling or pre-tubing, in order to enable installation of a recharging point [add1], within the meaning of Directive 2014/94/EU on the deployment of alternative fuels infrastructure of the European Parliament and the European Council.</p> <p>2a. Member States shall require installation of a minimum number of recharging points to all public and commercial non-residential buildings, with more than ten parking spaces, by 1 January 2025.</p> <p>2b. Member States shall apply the provisions of paragraph 2 to mixed-used buildings with more than ten parking spaces provided they are new or undergoing major renovation encompassing the</p>	29 (EPP) 341 (EFDD) 344 (Telicka) 345 (Reul) 346 (Niebler etc.) 347 (S&D) 348 (Poche) 349 (Rubig) 350 (Gambus) 351 (Czesak) 352 (Marinescu) 353 (Nica) 354 (Toia) 355 (Freund) 356 (Ludvigsson) 358 (Salini) 359 (Dalli) 360 (Virkkunen) 361 (Blanco Lopez) 363 (ENF) 364 (Martin) 397 (Toia)

¹ OJ L 307, 28.10.2014, p. 1

	electrical infrastructure of the building or the parking lot.	
Member States may decide not to set or apply the requirements referred to in the previous subparagraph to buildings owned and occupied by small and medium-sized enterprises as defined in Title I of the Annex to Commission Recommendation 2003/361/EC of 6 May 2003.	Member States may decide not to set or apply the requirements referred to in the previous subparagraph to buildings owned and occupied by small and medium-sized enterprises as defined in Title I of the Annex to Commission Recommendation 2003/361/EC of 6 May 2003.	
<p>Add1: (covering AMs AM398 Toia, AM352 Marinescu, AM350 Gambus, AM353 Nica etc., AM344 Telicka, AM341 EFDD)</p> <p>[add1]: - “which is capable of bi-directional charging and to react to price signals” -</p> <p>Add 1 supported by: S&D, Greens</p>		

Art. 8, para. 3 - residential buildings

COM text	CA 16	Covering AMs:
<p>3. Member States shall ensure that newly built residential buildings and those undergoing major renovations, with more than ten parking spaces, include the pre-cabling to enable the installation of recharging points for electric vehicles for every parking space.</p>	<p>3. Member States shall ensure that new residential buildings and those undergoing major renovations encompassing the electrical infrastructure of the building or the adjacent or built-in parking lot, with more than ten parking spaces, include the adequate pre-cabling or pre-tubing to enable the installation of recharging points for electric vehicles for every parking space.</p>	<p>30 (EPP) 371 (Geier) 374 (Greens) 377 (Buzek) 378 (Grossetete etc.) 379 (Gambus) 380 (Martin etc.) 381 (S&D) 382 (Freund) 383 (Toia) 384 (Ludvigsson) 386 (Blanco Lopez) 389 (Dalli) 393 (Nica etc.) ENVI60</p> <p>CA supported by: EPP, S&D, ECR; ALDE, Greens;</p>

Art. 8, para. 4 - exemptions

COM text	CA 17	Covering AMs:
4. Member States may decide not to set or apply the requirements referred to in paragraphs 2 and 3 to public buildings which are already covered by Directive 2014/94/EU.';	4. Member States may decide not to set or apply the requirements referred to in paragraphs 2 and 3 to public buildings provided that they are already covered by comparable requirements according to the national transposition of Directive 2014/94/EU.	31 (EPP) 396 (EFDD) 402 (Greens) 403 (S&D) 404 (Rubig)
		CA supported by: EPP, S&D, ECR; ALDE; Greens, GUE, EFDD

Art. 8, new 4a - public parking lots

COM text	CA 18	Covering AMs:
	<p>4 a. Member States shall ensure that public parking lots operated by private entities are subject to the requirements referred to in paragraphs 2 and 3.</p>	32 (EPP) 396 (EFDD) 399 (Toia) 406 (Gambus)
		CA supported by: EPP, S&D, ECR; ALDE, Greens, GUE, EFDD

Art. 8, new 4b - permitting procedures

COM text	CA 19	Covering AMs:
	<p>4 b. Member States shall tackle regulatory barriers and ensure that there are simplified permitting and approval procedures for owners and tenants in order to enable the deployment of recharging points in existing residential and non-residential buildings.</p>	33 (EPP) 372 (Pieper) 376 (Virkkunen) 407 (S&D) 408 (Greens)
		CA supported by: EPP; S&D, ECR, ALDE; Greens, EFDD; GUE

Art. 8, new 4c - urban mobility and other technologies

COM text	CA 20	Covering AMs:
	<p>4c. Further to the requirements for electro-mobility infrastructure, Member States shall take into consideration the need for alternative fuels infrastructure in buildings and the deployment of dedicated infrastructures, e.g. by electro-mobility corridors, as well as the need for coherent policies for soft and green mobility, multi-modality and urban planning.</p>	<p>366 (Greens) 374 (Greens) 395 (Grossetete) 409 (Greens) (ENVI18 and ENVI19 on recitals)</p> <p>CA supported by: EPP; S&D; ECR; ALDE; Greens; GUE, EFDD</p>

Technical buildings systems

Art. 8, 5 - Technical building systems

COM text	CA 21	Covering AMs:
5. Member States shall ensure that, when a technical building system is installed, replaced or upgraded, the overall energy performance of the complete altered system is assessed, documented it and passed on to the building owner, so that it remains available for the verification of compliance with the minimum requirements set pursuant to paragraph 1 and the issue of energy performance certificates. Member States shall ensure that this information is included in the national energy performance certificate database referred to in Article 18(3).	5. Member States shall ensure that, when a technical building system is installed, replaced or upgraded, the overall energy performance of the complete altered system is assessed, both at full load and part load conditions, and when relevant, the impact on indoor air quality should also be assessed. The results shall be documented and passed on to the building owner, so that it remains available for the verification of compliance with the minimum requirements set pursuant to paragraph 1 and the issue of energy performance certificates. Member States shall ensure that this information is included in the national energy performance certificate database referred to in Article 18(3).	411 (GUE) 412 (Kofod) 413 (S&D) 414 (ALDE) 415 (Greens) 416 (Virkkunen) 417 (Toia) 418 (Grossetete etc.) 419 (Rubig) 420 (Geier) ENVI 61 CA supported by: EPP; S&D; ALDE, Greens, GUE, EFDD

Energy efficiency documentation

Art. 10, para. 6

COM text	CA 22	Covering AMs:
<p>Article 10 is amended as follows: paragraph 6 is replaced by the following:</p> <p>'6. Member States shall link their financial measures for energy efficiency improvements in the renovation of buildings to the energy savings achieved due to such renovation. These savings shall be determined by comparing energy performance certificates issued before and after renovation.';</p>	<p>6. Member States shall link their financial measures for energy efficiency improvements in the renovation of buildings to the energy savings achieved due to such renovation. These savings shall, where proportionate to the volume of the renovation, be determined by an energy audit or by comparing energy performance certificates issued before and after renovation, or by using standard values for calculation of energy savings in buildings or similar relevant, transparent methodology for documentation [add1].</p>	36 (EPP) 451 (Winkler) 452 (S&D) 454 (Kappel) 455 (Marinescu) 456 (Grossetete) 460 (Toia) 461 (Poche) 462 (Geier) ENVI63 CA supported by: EPP, S&D, ECR; ALDE; Greens, EFDD
<p>Add 1 to compromise: - <i>add1 to compromise: AM453 Zanonato inclusion of certification cost</i> <i>"Where the energy performance certificate attest an improvement in the building's energy performance, the certification costs may be included in the incentive provided by the Member State concerned."</i></p> <p>Add1 supported by: S&D, Greens, EFDD</p>		

EPC database

Art. 10, para. 6a and 6b (new)

COM text	CA 23	Covering AMs:
<p>the following paragraphs 6a and, 6b are inserted:</p> <p>'6a. When Member States put in place a database for registering EPCs it shall allow tracking the actual energy consumption of the buildings covered, regardless of their size and category. The database shall contain the actual energy consumption data of buildings frequently visited by the public with useful floor area of over 250 m² which shall be regularly updated.</p> <p>6b. Aggregated anonymised data compliant with EU data protection requirements shall be made available on request, at least for the public authorities for statistical and research purposes.'</p>	<p>6a. When Member States put in place a database or use an existing database for registering EPCs it shall allow tracking the actual-energy consumption of the buildings covered, regardless of their size and category. The database shall contain the actual energy consumption data of buildings owned, managed or occupied by public authorities with useful floor area of over 250 m² which shall be regularly updated.</p> <p>6b. Aggregated anonymised data compliant with EU data protection requirements shall be made available on request, at least for the public authorities for statistical and research purposes [add1].'</p>	<p>37 (EPP) 470 (S&D) ENVI64</p> <p>CA supported by: EPP; S&D, ECR, ALDE, Greens, GUE, EFDD</p>
<p>Add1 to compromise: Data available on request to building owners (AM 475 Greens): Add1: "<i>whereas the full dataset shall be available for the building owner.</i>"</p> <p>Add1 supported by: S&D, Greens, EFDD</p>		

Inspection

Art. 14 – heating systems

COM text	CA 24	Covering AMs:
paragraph 1 is replaced by the following: '1. Member States shall lay down the necessary measures to establish a regular inspection of the accessible parts of systems used for heating buildings, such as the heat generator, control system and circulation pump(s) for non-residential buildings with total primary energy use of over 250MWh and for residential buildings with a centralised technical building system of a cumulated effective rated output of over 100 kW. That inspection shall include an assessment of the boiler efficiency and the boiler sizing compared with the heating requirements of the building. The assessment of the boiler sizing does not have to be repeated as long as no changes were made to the heating system or as regards the heating requirements of the building in the meantime.';	<p>'1. Member States shall lay down the necessary measures to establish a regular inspection of the accessible parts of systems used for heating buildings, such as the heat generator, control system and circulation pump(s) for non-residential buildings with total primary energy use of over 250MWh and for residential buildings with a centralised technical building system for space and domestic water heating purposes of a cumulated effective rated output of over 70 kW. That inspection shall include an assessment of the heat generator efficiency, both at full load and part load condition, and the heat generator sizing compared with the heating requirements of the building. The assessment of the heat generator sizing does not have to be repeated as long as no changes were made to the heating system or as regards the heating requirements of the building in the meantime.';</p>	38 (EPP) 488 (EPP) 489 (EFDD) 490 (Telicka) 492 (Gerbrandy) 493 (Nica etc.) 495 (Virkkunen) ENVI67 ENVI68 ENVI70 39(EPP) 40 (EPP) 444 (Langen) 446 (Grossetete) 501 (S&D) 502 (Greens) 503 (Greens) 504 (ALDE) 505 (EFDD) CA supported by: EPP, S&D, ALDE, Greens, GUE, EFDD
(b) paragraphs 2, 3, 4 and 5 are deleted and replaced by the following: '2. As an alternative to paragraph 1 Member States may set requirements to ensure that non-residential buildings with total primary	(b) paragraphs 2, 3, 4 and 5 are deleted and replaced by the following: 2. Member States shall require that non-residential buildings with total primary energy use of over 250 MWh per year are equipped with	

<p>energy use of over 250 MWh per year are equipped with building automation and control systems. These systems shall be capable of:</p> <ul style="list-style-type: none"> (a) continuously monitoring, analysing and adjusting energy usage; (b) benchmarking the building's energy efficiency, detecting losses in efficiency of technical building systems, and informing the person responsible for the facilities or technical building management about opportunities for energy efficiency improvement; (c) allowing communication with connected technical building systems and other appliances inside the building, and being interoperable with technical building systems across different types of proprietary technologies, devices and manufacturers. 	<p>building automation and control systems by 2023. These systems shall be capable of:</p> <ul style="list-style-type: none"> a) continuously monitoring, logging, analysing and adjusting energy usage to enable optimal energy performance at full load and part load conditions; b) benchmarking the building's energy efficiency, detecting losses in efficiency of technical building systems, and informing the person responsible for the facilities or technical building management about opportunities for energy efficiency improvement; c) allowing communication with connected technical building systems and other appliances inside the building, and being interoperable with technical building systems across different types of proprietary technologies, devices and manufacturers. 	
<p>3. As an alternative to paragraph 1 Member States may set requirements to ensure that residential buildings with centralised technical building systems of a cumulated effective rated output of over 100 kW are equipped:</p> <ul style="list-style-type: none"> a) with continuous electronic monitoring that measures systems' efficiency and inform building owners or managers when it has fallen significantly and when system servicing is necessary, and 	<p>3. Member States may require that residential buildings with technical building systems of a cumulated effective rated output for space and domestic water heating purposes of over 70 kW are equipped:</p> <ul style="list-style-type: none"> a) with continuous electronic monitoring functionality that measures systems' efficiency and inform building owners or managers when it has fallen significantly and when system servicing is necessary, and 	<p>41 (EPP) 409 (Greens) 512 (EPP) 514 (ECR) 515 (Pieper etc.) 516 (Buzek) 517 (ALDE) 518 (Kofod) 519 (Greens) 520 (ALDE) 521 (Grossetete etc.) 522 (EFDD)</p>

b) with effective control functionalities to ensure optimum generation, distribution and use of energy.';	b) with effective control functionalities to ensure optimum generation, distribution, storage and use of energy at both full load and part load conditions including hydronic balancing. ';	
	3a. Buildings that comply with paragraph 2 or 3 shall be exempted from the requirements laid down in paragraph 1.	42 (EPP) 514 (ECR) 515 (Pieper etc.) 516 (Buzek) 526 (S&D)
	3b. Technical building systems explicitly covered by an agreed energy performance criterion or a contractual arrangement on an agreed level of energy efficiency improvement, such as energy performance contracting as defined in point (27) of Article 2 of Directive 2012/27/EU, or that are operated by a utility or network operator and therefore subject to performance monitoring measures on the system side, shall be exempted from the requirements laid down in paragraph 1.	43 (EPP) 525 (S&D)

Art. 15 – air-conditioning systems

COM text	CA 25	Covering AMs:
<p>paragraph 1 is replaced by the following:</p> <p>'1. Member States shall lay down the necessary measures to establish a regular inspection of the accessible parts of air-conditioning systems for non-residential buildings with total primary energy use of over 250MWh and for residential buildings with a centralised technical building system of a cumulated effective rated output of over 100 kW. The inspection shall include an assessment of the air-conditioning efficiency and the sizing compared to the cooling requirements of the building. The assessment of the sizing does not have to be repeated as long as no changes were made to this air-conditioning system or as regards the cooling requirements of the building in the meantime.';</p>	<p>paragraph 1 is replaced by the following:</p> <p>1. Member States shall lay down the necessary measures to establish a regular inspection of the accessible parts of air-conditioning and ventilation systems for non-residential buildings with total primary energy use of over 250MWh and for residential buildings with a technical building system for air-conditioning and ventilation of a cumulated effective rated output of over 12kW. The inspection shall include an assessment of the air-conditioning and ventilation efficiency, both at full load and part load condition, and the sizing compared to the cooling requirements of the building. The assessment of the sizing does not have to be repeated as long as no changes were made to this air-conditioning or ventilation system or as regards the cooling requirements of the building in the meantime.</p> <p>Member States may set different inspection frequencies depending on the type and effective rated output of the air-conditioning system, whilst taking into account the costs of the inspection of the system and the estimated energy cost savings that may result from the inspection;</p>	44 (EPP) 528 (Greens) 531 (EPP) 534 (Zanonato) ENVI75 45 (EPP) 444 (Langen) 446 (Grossetete) 543 (Martin etc.) 544 (S&D) 46 (EPP) 546 (EFDD) 558 (Greens)

CA supported by:

EPP, S&D, ALDE, Greens, GUE, EFDD

<p>paragraphs 2, 3, 4 and 5 are deleted and replaced by the following:</p> <p>'2. As an alternative to paragraph 1</p> <p>Member States may set requirements to ensure that non-residential buildings with total primary energy use of over 250 MWh per year are equipped with building automation and control systems. These systems shall be capable of:</p> <ul style="list-style-type: none"> a) continuously monitoring, analysing and adjusting energy usage; b) benchmarking the building's energy efficiency, detecting losses in efficiency of technical building systems, and informing the person responsible for the facilities or technical building management about opportunities for energy efficiency improvement; c) allowing communication with connected technical building systems and other appliances inside the building, and being interoperable with technical building systems across different types of proprietary technologies, devices and manufacturers. 	<p>paragraphs 2, 3, 4 and 5 are deleted and replaced by the following:</p> <p>'2. Member States shall require that non-residential buildings with total primary energy use of over 250 MWh per year are equipped with building automation and control systems by 2023. These systems shall be capable of:</p> <ul style="list-style-type: none"> a) continuously monitoring, analysing, logging and adjusting energy usage to enable optimal energy performance at full load and part load conditions; b) benchmarking the building's energy efficiency, detecting losses in efficiency of technical building systems, and informing the person responsible for the facilities or technical building management about opportunities for energy efficiency improvement; c) allowing communication with connected technical building systems and other appliances inside the building, and being interoperable with technical building systems across different types of proprietary technologies, devices and manufacturers. 	
<p>3. As an alternative to paragraph 1 Member States may set requirements to ensure that residential buildings with centralised</p>	<p>3. Member States may require that residential buildings with technical building systems of a cumulated effective rated output for air-</p>	<p>47 (EPP) 550 (EPP) 558 (Greens) 559 (EFDD)</p>

<p>technical building systems of a cumulated effective rated output of over 100 kW</p> <ul style="list-style-type: none"> a) with continuous electronic monitoring that measures systems' efficiency and inform building owners or managers when it has fallen significantly and when system servicing is necessary, and b) with effective control functionalities to ensure optimum generation, distribution and use of energy.'; 	<p>conditioning or ventilation of over 12 kW are equipped:</p> <ul style="list-style-type: none"> a) with continuous electronic monitoring functionality that measures systems' efficiency and inform building owners or managers when it has fallen significantly and when system servicing is necessary, and b) with effective control functionalities to ensure optimum generation, distribution, storage and use of energy at both full and part load conditions including hydronic balancing.'; 	<p>560 (Grossetete etc.)</p>
	<p>3a. Buildings that comply with paragraph 2 or 3 shall be exempted from the requirements laid down in paragraph 1.</p>	<p>48 (EPP) 551 (Zanonato) 552 (Toia) 554 (Kofod etc.) 562 (S&D)</p>
	<p>3b. Technical building systems explicitly covered by an agreed energy performance criterion or a contractual arrangement on an agreed level of energy efficiency improvement, such as energy performance contracting as defined in point (27) of Article 2 of Directive 2012/27/EU, or that are operated by a utility or network operator and therefore subject to performance monitoring measures on the system side, shall be exempted from the requirements laid down in paragraph 1.</p>	<p>49 (EPP) 561 (S&D)</p>

Smartness indicator

Art. 8, para. 6 - competence

COM text	CA 26	Covering AMs:
<p>The Commission is empowered to adopt delegated acts in accordance with Article 23 supplementing this Directive with a definition of 'smartness indicator' and with the conditions under which the 'smartness indicator' would be provided as additional information to prospective new tenants or buyers.</p>	<p>The Commission is empowered to adopt delegated acts in accordance with Article 23, with a definition of a 'smartness indicator', after consultation with relevant stakeholders, and on the basis of the outlined design and methodology set out in Annex Ia. The definition shall include information on how the indicator could be introduced following a test-phase, how the indicator would be connected to the energy performance certificates referred to in Article 11 and how it could be provided as additional and meaningful information to prospective new investors, tenants, buyers and market participants.</p>	34 (EPP) 35 (EPP) 424 (Tellicka etc.) 425 (Langen) 427 (EPP) 428 (Rubig) 429 (Høkmark) 430 (Kappel) 431 (Greens) 432 (S&D) 433 (Grossetete etc.) 434 (GUE) 435 (Virkkunen) 436 (Geier) 437 (ECR) 438 (EFDD) 439 (ALDE) 440 (GUE) 441 (Greens) 442 (Marinescu) 443 (Grossetete etc.)
<p>The smartness indicator shall cover flexibility features, enhanced functionalities and capabilities resulting from more interconnected and built-in intelligent devices being integrated into the conventional technical building systems. The features shall enhance the ability of occupants and the building itself to react to comfort or operational requirements, take part in demand response and contribute to the optimum, smooth and safe operation of the various energy systems and district infrastructures to which the building is connected.;</p>	<p>The smartness indicator shall cover enhanced energy savings, benchmarking and flexibility features, enhanced functionalities and capabilities resulting from more interconnected and built-in intelligent devices being integrated into the conventional technical building systems. The features shall enhance the ability of occupants and the building itself to react to comfort or operational requirements, in particular at part load condition, including by adapting the energy consumption, to take part in demand response and to contribute to the optimum, efficient, smooth and safe operation of the various energy systems, including renewable</p>	CA supported by: EPP, S&D, ALDE, Greens, EFDD

	energy generated on-site, and district infrastructures to which the building is connected.	

Art. 23 - delegation of competence to the Commission

COM text	CA 27	Covering AMs:
<p>1. The power to adopt delegated acts referred to in Articles 5, 8 and 22 is conferred on the Commission subject to the conditions laid down in this Article.</p> <p>2. The power to adopt delegated acts referred to in Article 5, 8 and 22 shall be conferred on the Commission for an indeterminate period of time from [date of the entry into force...].</p> <p>3. The delegation of power referred to in Articles 5, 8 and 22 may be revoked at any time by the European Parliament or by the Council. A decision to revoke shall put an end to the delegation of the power specified in that decision. It shall take effect the day following the publication of the decision in the Official Journal of the European Union or at a later date specified therein. It shall not affect the validity of any delegated acts already in force.</p> <p>4. Before the adoption of a delegated act, the Commission shall consult experts designated by each Member State in accordance with the principles laid down in the Inter-institutional Agreement on Better Law-Making of 13 April 2016.</p>	<p><i>(No change to the Commission proposal is suggested delegation in line with inter-institutional agreement)</i></p> <p>1. The power to adopt delegated acts referred to in Articles 5, 8 and 22 is conferred on the Commission subject to the conditions laid down in this Article.</p> <p>2. The power to adopt delegated acts referred to in Article 5, 8 and 22 shall be conferred on the Commission for an indeterminate period of time from [date of the entry into force...].</p> <p>3. The delegation of power referred to in Articles 5, 8 and 22 may be revoked at any time by the European Parliament or by the Council. A decision to revoke shall put an end to the delegation of the power specified in that decision. It shall take effect the day following the publication of the decision in the Official Journal of the European Union or at a later date specified therein. It shall not affect the validity of any delegated acts already in force.</p> <p>4. Before the adoption of a delegated act, the Commission shall consult experts designated by each Member State in accordance with the principles laid down in the Inter-institutional Agreement on Better Law-Making of 13 April 2016.</p>	<p>CA supported by: EPP, S&D, ALDE, Greens, GUE, EFDD</p>

Annex Ia (new) - substance of delegated act

COM text	CA 28	Covering AMs:
No text	<p>1 a. The following annex is added:</p> <p>'ANNEX Ia</p> <p>Common general framework methodology for the definition of a 'smartness indicator' for Buildings as referred to in Article 8, paragraph 6.</p> <p>1. The Commission shall lay down a common general framework methodology to determine the smartness indicator value, rating the ability of a building or building unit to adapt its operation to the needs of the occupant and the grid and to improve its energy efficiency and overall performance.</p> <p>The methodology shall take into account a number of features including smart meters, building automation and control systems, smart thermostats, built-in home appliances, (smart) recharging points for electric vehicles, energy storage and detailed functionalities and the interoperability of these features. Those impacts shall be assessed for potential benefits for the energy efficiency and performance levels, as well as the enabled flexibility, indoor climate conditions and comfort of the relevant building or building unit.</p> <p>2. The smartness indicator shall be determined and calculated in accordance with three key functionalities relating to the building and its technical building systems:</p> <p>a) the ability to maintain, efficiently, high building performance and operation through the reduction of energy demand and a greater use of energy from renewable sources (electricity and heat), including the ability of the building to manage its own demand or on-site generation by re-managing its own resources;</p> <p>(b) the ability to adapt its operation mode in response to the needs of the occupant ensuring high standards of indoor health and climate conditions, paying due attention to the availability of user-friendly displays and remote controllability and reporting of indoor air quality and energy use; and</p>	<p>58 (EPP) 627 (Greens) 628 (Werner) 629 (S&D)</p> <p>CA supported by: EPP, S&D, ALDE; Greens, GUE, EFDD</p>

	<p>c) the flexibility of a building's overall electricity demand, including its ability to enable participation in active and passive as well as implicit and explicit demand-response, which shall be measured in terms of how much of the building's load can be shifted at any one time in terms of kW peak, and the capacity in terms of kWh of how much of that flexibility can then be delivered to the grid, including offtake and injection.</p> <p>This would enable and support the active participation of consumers in the electricity supply market in accordance with the Directive 2009/72/EC of the European Parliament and of the Council*.</p> <p>The framework methodology shall take into account European standards, in particular those developed under mandate M/480.</p> <p>3. The framework methodology shall ensure full interoperability between smart meters, building automation and control systems, built-in home appliances, smart thermostats within the building and indoor air quality sensors and ventilations, and promote the use of benchmarking and European standards including the Smart Appliances Reference ontology. The smartness indicator shall consider and set a value on openness to third-party systems, for infrastructure such as the electricity grid and district heating network, electric vehicle infrastructure and demand-response aggregators, with a view to ensuring compatibility in communications, systems control and relevant data or signals transmission [add1].</p> <p>4. The framework methodology shall include the data handling process within a building or beyond a building's boundaries, which could include data originating in or received by the building itself or the user or occupant. This process shall be based on protocols that allow authenticated and encrypted message exchanges between the occupant and the relevant products or devices within the building. In particular when processing personal data, such as data coming from frequent and remote metering or sub-metering or processed by smart-grid operators, the principles of occupant ownership, data protection, privacy and security shall be ensured. This common methodology framework shall cover real time data and energy-related data coming out of cloud based solutions and shall ensure the security of data, smart meter readings and data communications, and the privacy of final customers, in compliance with relevant Union data protection and privacy law as well as best available techniques for cyber security.</p> <p>5. The framework methodology shall take into account the positive influence of existing communication networks, in particular the existence of high-speed-ready in-building physical infrastructure, such as the voluntary</p>	
--	----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--

	<p>'broadband ready' label, and the existence of an access point for multi-dwelling buildings, in accordance with Article 8 of Directive 2014/61/EU of the European Parliament and of the Council**.</p> <p>6. The framework methodology shall set out the most appropriate format or visual representation of the smartness indicator parameter and shall be simple, transparent, and easily understandable for consumers, owners, investors, and demand response market participants. It shall complement the energy performance certificate insofar as there is an established link to the energy performance of the building.</p> <p>* Directive 2009/72/EC of the European Parliament and of the Council of 13 July 2009 concerning common rules for the internal market in electricity (OJ L 211, 14.8.2009, p. 55).</p> <p>** Directive 2014/61/EU of the European Parliament and of the Council of 15 May 2014 concerning measures to reduce the cost of deploying high-speed electronic communication networks (OJ L 155, 23.5.2014, p. 1).'</p>	
	<p>Add1 to CA28 (as addition to point 3, based on AM 627, Greens): (following the last sentence on values for openness to third-party) <i>"as well as possible rebound effects per system and the overall installation, as well as related user-friendliness for detection of behavioural patterns and reference values for reduced performance in case technical building systems are not properly maintained or energy performance recommendations are not implemented."</i></p> <p>Add1 supported by: Greens, EFDD</p>	

General

Art. 19 – review, para 1

COM text	CA 29	Covering AMs:
(9) in Article 19, '2017' is replaced by '2028';	(9) in Article 19, '2017' is replaced by '2024';	50 (EPP) 564 (Lange) 566 (Martin) 567 (Toia) 568 (Greens) 569 (EFDD) 570 (Gerbrandy) ENVI76 CA supported by: EPP, S&D, ECR, ALDE, Greens, GUE, EFDD

Art. 19 – review, para 2a

COM text	CA 29a	Covering AMs:
	<p>(9 a) in Article 19, the following paragraph is added:</p> <p>'The Commission shall, in particular, assess the need for further harmonisation of energy performance certificates in accordance with Article 11 of this Directive.</p>	51 (EPP) 564 (Lange) 571 (S&D) 572 (Greens) 574 (Marinescu) 576 (EFDD) ENVI65 CA supported by: EPP, S&D, ECR; ALDE, Greens, GUE

Art. 19a (new) – Actions to be taken by the Commission before review

COM text	CA 29b	Covering AMs:
	<p>Article 19a is added:</p> <p>"The Commission shall before 2020 conclude a feasibility study, clarifying the possibilities and timeline to introduce a building renovation passport, potentially as part of the recommendations section of the energy performance certificates, in order to provide a long-term, step-by-step renovation roadmap for a specific building.</p>	<p>571 (S&D) 572 (Greens) 575 (EFDD) 576 (EFDD) 582 (Greens)</p> <p>CA supported by: EPP, S&D, ALDE, Greens; GUE, EFDD,</p>

Art. 20, para 2 - information obligations

COM text	CA 30	Covering AMs:
Member States shall in particular provide information to the owners or tenants of buildings on energy performance certificates, their purpose and objectives, on cost-effective ways to improve the energy performance of the building and, where appropriate, on financial instruments available to improve the energy performance of the building.;	Member States shall in particular provide information through independent, accessible and transparent advisory tools such as one-stop-shops to the owners, managers or and tenants of buildings on cost-effective ways measures to improve the energy performance of the building, including through renovation advice , on energy performance certificates, their purpose and objectives, on replacing fossil fuel boilers with more sustainable alternatives and, where appropriate , on financial instruments available to improve the energy performance of the building.	52 (EPP) 577 (Greens) 578 (EFDD) 579 (S&D) 580 (GUE) 581 (Kallas etc.) ENVI49 CA supported by: EPP, S&D, ECR, ALDE, Greens, GUE, EFDD

Annex

Annex, para 1 (a) – energy performance (EPBD Annex I, point 1)

COM text	CA 31	Covering AMs:
<p>Annex I is amended as follows:</p> <p>(a) point 1 is replaced by the following:</p> <p>'1. The energy performance of a building shall reflect its typical energy use for heating, cooling, domestic hot water, ventilation and lighting.</p> <p>The energy performance of a building shall be expressed by a numeric indicator of primary energy use in kWh/(m².y), harmonised for the purpose of both energy performance certification and compliance with minimum energy performance requirements. The energy performance and the methodology applied for its determination shall be transparent and open to innovation.</p> <p>Member States shall describe their national calculation methodology following the national annex framework of related European standards developed under mandate M/480 given by the European Commission to the European Committee for Standardisation (CEN).';</p>	<p>Annex I is amended as follows:</p> <p>(b) point 1 is replaced by the following:</p> <p>'1. The energy performance of a building shall transparently reflect its typical energy use for heating, cooling, domestic hot water, ventilation, lighting and other technical building systems.</p> <p>The energy performance of a building shall be expressed by a numeric indicator of primary energy use in kWh/(m².y), harmonised for the purpose of both energy performance certification and compliance with minimum energy performance requirements. The methodology applied for its determination shall be transparent and open to innovation.</p> <p>Member States shall describe their national calculation methodology, taking into account the terminology and definitions contained in the national annex framework of related European standards developed under mandate M/480 given by the European Commission to the European Committee for Standardisation (CEN).;</p>	<p>53 (EPP) 592 (Greens) 593 (Rubig) 594 (Nica etc) 595 (EFDD) 596 (Rubig) 598 (EFDD) 599 (S&D) ENVI78</p> <p>CA supported by: EPP, S&D, ECR, ALDE, Greens, GUE</p>

Annex, para 1 (b) – PEF (EPBD Annex I point 2)

COM text	CA 32	Covering AMs:
<p>Annex I is amended as follows:</p> <p>point 2 is replaced by the following:</p> <p>'2. The energy needs for space heating, space cooling, domestic hot water and adequate ventilation shall be calculated in order to ensure minimum health and comfort levels defined by Member States.</p> <p>The calculation of primary energy shall be based on primary energy factors per energy carrier, which may be based on national or regional annual weighted averages or on more specific information made available for individual district system.</p> <p>Primary energy factors shall discount the share of renewable energy in energy carriers so that calculations equally treat: (a) the energy from renewable source that is generated on-site (behind the individual meter, i.e. not accounted as supplied), and (b) the energy from renewable energy sources supplied through the energy carrier.';</p>	<p>Annex I is amended as follows:</p> <p>point 2 is replaced by the following:</p> <p>2. The energy needs for space heating, space cooling, domestic hot water, lighting, ventilation and other technical building systems shall be calculated in order to maximise health, indoor air quality and comfort levels defined by Member States at national or regional level. [add1]</p> <p>The calculation of primary energy shall be based on primary energy factors per energy carrier, which may be based on national or regional annual, and possibly in addition seasonal or monthly, weighted averages or on more specific information made available for individual district system.</p> <p>The calculations by Member States shall first consider the energy needs and subsequently equally take into account: (a) the energy from renewable sources that is generated and used on-site (behind the individual meter, i.e. not accounted as supplied), and (b) the energy from renewable energy sources supplied through the energy carrier.';</p>	<p>54 (EPP) 55 (EPP) 56 (EPP) 57 (EPP) 600 (EFDD) 601 (ALDE) 602 (Poche) 603 (Grossetete etc) 604 (S&D) 605 (Nica etc) 606 (Rubig) 607 (EFDD) 608 (Rubig) 609 (Greens) 610 (EFDD) 611 (Greens) 612 (Ludvigsson) 613 (S&D) 614 (Gyurk) 615 (ALDE) 616 (Rubig) 617 (Greens) ENVI80 ENVI81</p> <p>CA supported by: EPP, S&D, ALDE, Greens, GUE,</p>

	<p>The application of primary energy factors shall ensure that the optimal energy performance of the building is pursued, thereby supporting the national implementation of the requirements of Article 9.</p>	
<p>Add1 to CA: (AM602 Poche and 603 Grossete etc.)</p> <ul style="list-style-type: none">- “<i>In particular, the temperature on any inner surface of the building should not drop below dew point temperature.</i>” <p>Add1 supported by:</p> <ul style="list-style-type: none">- EPP, S&D, ALDE, Greens, GUE		

RECITALS

Recital 1	CA33	AMs covered
(1) The Union is committed to a sustainable, competitive, secure and decarbonised energy system. The Energy Union and the Energy and Climate Policy Framework for 2030 establish ambitious Union commitments to reduce greenhouse gas emissions further (by at least 40 % by 2030, as compared with 1990), to increase the proportion of renewable energy consumed (by at least 27 %) and to make energy savings of at least 27 %, reviewing this level having in mind an Union level of 30 %, and to improve Europe's energy security, competitiveness and sustainability.	(1) The Union is committed to a sustainable, competitive, secure and decarbonised energy system and to a high level of human health protection . The Energy Union and the Energy and Climate Policy Framework for 2030 establish ambitious Union commitments to reduce greenhouse gas emissions further (by 80 - 95 % by 2050, as compared with 1990), to increase the proportion of renewable energy consumed according to the renewable energy directive 2009/28/EC [updated reference] and to make energy savings of according to the energy efficiency directive 2012/27/EU [updated reference] , reviewing this level having in mind an Union level of 30 %, and to improve Europe's energy security, competitiveness, affordability and sustainability.	61 S&D 62 GUE 63 Gerbrandy 65 Dalli 66 Marias 67 Rubig 68 Gierek 69 S&D ENVI1 CA supported by: EPP, S&D, ALDE, Greens, EFDD

Recital 6	CA34	AMs covered
(6) The Union is committed to developing a secure, competitive and decarbonised energy system by 2050. To meet this goal, Member States and investors need milestones to ensure that buildings are decarbonised by 2050. In order to ensure this decarbonised building stock by 2050, Member States should identify the intermediary steps to achieving the midterm (2030) and longterm (2050) objectives.	(6) The Union is committed to developing a secure, competitive and decarbonised energy system by 2050. To achieve this goal, it is vital that the existing building stock, which is responsible for about 36% of all CO2 emissions in the EU, is highly energy efficient, and decarbonised up to nearly zero-energy standard by 2050. Member States should seek a cost-efficient equilibrium between decarbonising energy supplies and reducing final energy consumption . To that end, Member States and investors need a clear vision to guide their policies and investment decisions, which includes well-defined national milestones and actions for energy efficiency to achieve the short-term (2030), mid-term (2040) and long-term (2050) objectives.	1 EPP 78 Marcellesi 79 Gerbrandy 81 ALDE 83 Marias 86 Van Brempt ENVI5 ENVI6 ENVI3 CA supported by: EPP, S&D, ALDE, EFDD

	CA35 (6a) The 2015 Paris Agreement on climate change (COP 21) must be reflected in the Union's efforts to decarbonise its building stock. Taking into account that almost 50% of Union's final energy demand is used for heating and cooling, of which 80% is used in buildings, achievement of Union's energy and climate goals strongly depends on EU's efforts to refurbish its building stocks by giving priority to energy efficiency and savings, making full use of the energy efficiency first principle, as well as ensuring effective deployment of renewables.	2 EPP 84 Marcellesi 85 Czesak 87 S&D 89 Buzek 90 EPP ENVI5 ENVI6 ENVI7 ENVI8 ENVI9 CA supported by: EPP, S&D, ECR, ALDE, Greens, GUE, EFDD
--	------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

Recital 7 (7) The provisions on long-term renovation strategies provided for in Directive 2012/27/EU of the European Parliament and of the Council should be moved to Directive 2010/31/EU, where they fit more coherently.	CA36 (7) The provisions on long-term renovation strategies provided for in Directive 2012/27/EU of the European Parliament and of the Council should be moved to Directive 2010/31/EU, where they fit more coherently, and updated to clarify the ambitions of a highly energy efficient and decarbonised building stock. The long-term renovation strategies and the renovations they stimulate will boost growth and competitiveness through the creation of local, non-outsourcable jobs, and provide citizens with energy efficient, healthy and safe buildings.	3 EPP 91 Van Brempt 93 Marcellesi 94 EFDD 124 Marcellesi 125 Martin ENVI10 CA supported by: EPP, S&D, ALDE, Greens, EFDD
-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------------------------------------------------------------------------------------------------

Recital 7a new	CA37	
	<p>(7 a) To facilitate the cost effective achievement of the Union's climate and energy goals as well as cost-efficient renovations in buildings, national long-term renovation strategies should integrate considerations for improvements to health and indoor climate, including by combining renovation with the removal of asbestos and other harmful substances, preventing the illegal removal of harmful substances, and facilitating compliance with existing legislative acts such as Directive 2009/148/EC² and Directive 2016/2284³.</p>	4 EPP 99 EFDD 100 ALDE 103 Manka 264 GUE ENVI11 CA supported by: EPP, S&D, ALDE, GUE, EFDD

Recital 7b new	CA38	
	<p>(7 b) To achieve a highly energy efficient and decarbonised building stock, and to ensure that the long-term renovation strategies will deliver the needed progress, in particular by an increase in deep renovations, Member States must offer clear guidelines and outline measurable, targeted actions, including for the worst performing segments of the national building stock, for energy-poor consumers, for social housing and for households subject to split-incentive dilemmas, while taking into consideration affordability. To further support the needed improvements in the national rental stock, Member States should consider the</p>	5 EPP 95 S&D 104 ALDE 182 S&D ENVI4 ENVI11 CA supported by: EPP, S&D, ALDE, Greens, GUE, EFDD,

² Directive 2009/148/EC of the European Parliament and of the Council of 30 November 2009 on the protection of workers from the risks related to exposure to asbestos at work (Text with EEA relevance)

³ Directive (EU) 2016/2284 of the European Parliament and of the Council of 14 December 2016 on the reduction of national emissions of certain atmospheric pollutants, amending Directive 2003/35/EC and repealing Directive 2001/81/EC (Text with EEA relevance)

	introduction or continued application of requirements for a certain level of energy performance, according to the energy performance certificates, for rental properties.	
--	----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--

Recital 7c new	CA39	
	<p>(7 c) Taking into account the Commission's impact assessment, specifying that renovation would be needed at an average rate of 3 % to cost-effectively accomplish EU's ambitions for energy efficiency, it is essential that Member States specify their expected output and contribution to achieving the overall energy efficiency target(s) in 2030 of X %, in accordance with Directive 2012/27/EU [updated reference], taking into account that every 1 % increase in energy savings reduces gas imports by 2,6 % and thereby contributes actively to the Union's energy independence.</p>	<p>6 EPP 102 Van Brempt 106 Zanonato 109 Marcellesi ENVI13</p> <p>CA supported by: EPP, S&D, ALDE, Greens, EFDD</p>

Recital 7d new	CA40	
	<p>(7 d) Ambitious goals for deep renovation of the existing building stock will create millions of jobs in the Union, in particular in small and medium-sized enterprises. In that context, it is necessary for Member States to provide a clear link between their national long-term renovation strategies and adequate initiatives to promote skills development and education in the construction and energy efficiency sectors.</p>	<p>7 EPP 92 Van Brempt 98 GUE 101 Dalli 137 ALDE ENVI11 ENVI12</p> <p>CA supported by: EPP, S&D, ECR, ALDE, Greens, EFDD</p>

Recital 8	CA41	AMs covered
<p>(8) The agendas of the Digital Single Market and the Energy Union should be aligned and serve common goals. The digitalisation of the energy system is quickly changing the energy landscape, from the integration of renewables to smart grids and smart-ready buildings. In order to digitise the building sector, targeted incentives should be provided to promote smart-ready systems and digital solutions in the built environment.</p>	<p>(8) The agendas of the Digital Single Market and the Energy Union should be aligned and serve common goals. The digitalisation of the energy system is quickly changing the energy landscape, from the integration of renewables to smart grids and smart-ready buildings. This offers new opportunities for energy savings, by providing consumers with more accurate information about their consumption patterns, and by enabling the system operator to better manage the grid. In order to digitise the building sector and promote a systemic development of smart cities, targeted incentives should be provided to promote suitable and smart-ready systems and digital solutions in the built environment while taking into account the less digitally engaged consumers. The incentives should take into account the Union's connectivity targets and ambitions for deployment on high-capacity communication networks, which are a prerequisite to smart homes and well-connected communities, ensuring also that development of such networks is not hampered by building solutions that might negatively affect connectivity.</p>	<p>AM covered: 112 S&D 113 ALDE 114 ALDE 115 Marias 116 S&D 195 Gambus 196 Gambus</p> <p>CA supported by: EPP, S&D, ECR, ALDE</p>

Recital 9	CA42	AMs covered
<p>(9) In order to adapt this Directive to the technical progress, the power to adopt acts in accordance with Article 290 of the Treaty on the Functioning of the European Union should be delegated to the Commission to supplement it by defining the smartness indicator and enabling its implementation. The smartness indicator should be used to measure buildings' capacity to use ICT and electronic systems to optimise operation and interact with the grid. The smartness indicator will raise awareness amongst building owners and occupants of the value</p>	<p>(9) In order to adapt this Directive to the technical progress, the power to adopt acts in accordance with Article 290 of the Treaty on the Functioning of the European Union should be delegated to the Commission to supplement it by defining the smartness indicator and enabling its implementation in accordance with the methodology set out in this Directive. The smartness indicator should be coherent with energy performance certificates and should be used to measure buildings' capacity to use ICT and electronic systems to optimise operation, performance, indoor comfort and interact with the grid. The</p>	<p>8 EPP 118 ALDE 119 Kappel 120 EFDD 121 Marcellesi 122 S&D 123 EPP</p> <p>CA supported by:</p>

behind building automation and electronic monitoring of technical building systems and will give confidence to the occupant about the actual savings of these new enhanced-functionalities.	smartness indicator will raise awareness amongst building owners and occupants of the value behind building automation and electronic monitoring of technical building systems and will give confidence to the occupant about the actual savings of these new enhanced-functionalities.	EPP, S&D, ALDE, Greens, EFDD
---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	------------------------------

Recital 10	CA43	AMs covered
(10) Innovation and new technology also make it possible for buildings to support the overall decarbonisation of the economy. For example, buildings can leverage the development of the infrastructure necessary for the smart charging of electric vehicles also provide a basis for Member States, if they choose to, to use car batteries as a source of power. To reflect this aim, the definition of technical building systems should be extended.	(10) Innovation and new technology also make it possible for buildings to support the overall decarbonisation of the economy, including the transport sector . For example, buildings can leverage the development of the infrastructure necessary for deployment of the smart charging of electric vehicles and also provide a basis for Member States, if they choose to, to use car batteries as a source of power. To reflect this aim, the definition of technical building systems should be extended.	9 EPP 131 Dalli 132 Marias CA supported by: EPP, S&D, ECR, ALDE, Greens, GUE, EFDD,

Recital 10a new	CA44	
	(10 a) Pre-cabling and pre-tubing set the right conditions to rapidly deploy recharging points if and where needed, therefore Member States should ensure the development of electro-mobility in a balanced and cost-effective way. In particular, where a major renovation touching upon electric infrastructure, takes place, adequate roll out of pre-cabling and pre-tubing should follow with a view to provide the sufficient cabling, tubing and electric power within the meaning of the Alternative Fuels Infrastructure Directive 2014/94/EU for installation of recharging points in the parking spaces.	370 EFDD 371 Geier 386 S&D CA supported by: EPP, S&D, ECR, ALDE, GUE

	CA44a	
--	-------	--

	<p>The requirements for electro-mobility infrastructure set out in this Directive should form a part of a holistic strategic urban planning in Member States to promote alternative, safe and sustainable modes of transport and applying a coherent approach to the electrical infrastructure by providing for example dedicated parking infrastructure for electrical bicycles and for people of reduced mobility.</p>	<p>ENVI18 <i>Matching CA20 as agreed</i></p> <p>CA supported by: EPP, S&D, ECR, ALDE, Greens, GUE, EFDD,</p>
--	---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	---------------------------------------------------------------------------------------------------------------------------------

Recital 11	CA45	AMs covered
(11) The impact assessment identified two existing sets of provisions, whose aim could be achieved in a more efficient manner compared to the current situation. First the obligation, before any construction starts, to carry out a feasibility study on highly-efficiency alternative systems becomes an unnecessary burden. Second, provisions related to inspections of heating systems and air-conditioning systems were found to not sufficiently ensure, in an efficient manner, the initial and maintained performance of these technical systems. Even cheap technical solutions with very short payback periods, such as hydraulic balancing of the heating system and installation/replacement of thermostatic control valves, are insufficiently considered today. Provisions related to inspections are amended to ensure a better result from inspections.	(11) The impact assessment identified two existing sets of provisions, whose aim could be achieved in a more efficient manner compared to the current situation. First the obligation, before any construction starts, to carry out a feasibility study on highly-efficiency alternative systems becomes an unnecessary burden. Second, Provisions related to inspections of heating systems and air-conditioning systems were found to not sufficiently ensure, in an efficient manner, the initial and maintained performance of these technical systems. Furthermore, cheap technical solutions with very short payback periods, such as hydraulic balancing of the heating system and installation/replacement of thermostatic control valves, are insufficiently considered today and should be explored further, including as solutions for assisting energy-poor consumers. Provisions related to inspections are amended to ensure a better result from inspections.	10 EPP 141 Marcellesi 142 Kappel ENVI20 CA supported by: EPP, S&D, ECR, ALDE, Greens, GUE, EFDD

Recital 11a new	CA46	
	<p>(11 a) For new buildings, Member States should ensure that, before construction starts, the technical, environmental and economic feasibility of high-efficiency alternative systems is taken</p>	328 Rubig 329 Marcellesi 330 ALDE

	<p>into account. Such systems could include decentralised energy supply systems based on energy from renewable sources or waste heat; cogeneration; district or block heating or cooling and heat pumps.</p>	<p>CA supported by: EPP, S&D, ECR, ALDE, Greens, GUE, EFDD</p>
--	--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	---------------------------------------------------------------------------------------

Recital 12	CA47	
(12) Notably for large installations, building automation and electronic monitoring of technical building systems have proven to be an effective replacement for inspections. The installation of such equipment should be considered as the most cost-effective alternative to inspections in large non-residential and multifamily buildings of a sufficient size that allow a payback of less than three years. The current possibility to opt for alternative measures is therefore deleted. For small scale installations, the documentation of the system performance by installers and the registration of this information in the databases on energy performance certification will support the verification of compliance with the minimum requirements set for all technical building systems and reinforce energy performance certificates role. In addition, existing regular safety inspections and programmed maintenance work will remain an opportunity to provide direct advice on energy efficiency improvements.	(12) Building automation, facility management and electronic monitoring of technical building systems holds great potential to provide cost-effective and significant energy savings for both consumers and businesses. Notably for large installations, building automation and electronic monitoring of technical building systems have proven to be effective and can, in some cases, replace inspections in large non-residential and multifamily buildings of a sufficient size that allow a payback of less than three years as it enables acting on the information provided, thereby securing energy savings over time. The current possibility to opt for alternative measures is therefore deleted, however it should be possible to exempt technical systems explicitly covered by an ESCO programme from the inspection requirement. To avoid double inspections, installations that are operated by a utility or network operator and that are subject to inspections at the system level should be exempt from this requirement. For small-scale installations, the documentation of the system performance by installers and the registration of this information in the databases on energy performance certification will support the verification of compliance with the minimum requirements set for all technical building systems and reinforce energy performance certificates (EPC) role. In addition, existing regular safety inspections and programmed maintenance work will remain an	11 EPP 147 S&D 148 ECR 149 ENF 150 Winkler 151 EFDD 152 Gerbrandy 153 Virkkunen 154 Kappel ENVI22 ENVI23 <p>CA supported by: EPP, S&D, ECR, ALDE, GUE, EFDD</p>

	opportunity to provide direct advice on energy efficiency improvements.	
--	-------------------------------------------------------------------------	--

Recital 12a new	CA48	AMs covered
	<p>(12 a) Member States should ensure that energy performance upgrades of existing buildings also contribute to achieving a healthy indoor environment, including by the removal of asbestos and other harmful substances and by avoiding problems such as mould, as well as safeguarding the fundamental safety structures of the buildings, in particular in relation to fire safety and seismic safety.</p>	<p>99 EFFD 103 Manka 332 S&D 337 GUE ENVI24</p> <p>CA supported by: EPP, S&D, ECR, ALDE, Greens, GUE, EFDD,</p>

Recital 13	CA49	AMs covered
(13) To ensure their best use in building renovation, financial measures related to energy efficiency should be linked to the depth of the renovation, which should be assessed by comparing energy performance certificates (EPCs) issued before and after the renovation.	<p>(13) To ensure their best use in building renovation, public financial measures related to energy efficiency should be linked to the depth of the renovation and promote holistic building renovations as the best way of ensuring high energy performance and improved indoor comfort. Such renovations should be assessed by comparing EPCs issued before and after the renovation where proportionate to the volume of the renovation, or by similar adequate and proportionate documentation methods.</p>	<p>12 EPP 160 Van Brempt 162 GUE 163 ALDE 166 Kappel 167 Winkler 168 Gerbrandy 200 S&D ENVI24</p> <p>CA supported by: EPP, S&D, ECR, ALDE, Greens, EFDD</p>

Recital 13a new	CA50	
	<p>(13a) Financial mechanisms and incentives should have a central position in the national long-term renovation strategies and be actively promoted by Member States, including by facilitating energy efficient mortgage standards for certified energy efficient building renovations, promoting investments for public authorities in an energy efficient building stock, such as by clarifying accounting standards for public investments, and by providing accessible and transparent advisory tools for consumers on their financing options for energy efficient renovations in buildings.</p>	13 EPP 158 S&D 171 Marcellesi 172 EFDD 174 S&D 177 Van Brempt 178 S&D ENVI25 ENVI26 CA supported by: EPP, S&D, ECR, ALDE, Greens, GUE, EFDD

Recital 16	CA51	
(16) To meet the objectives of energy efficiency policy for buildings, the transparency of EPCs should be improved by ensuring that all necessary parameters for calculations, for both certification and minimum energy performance requirements, are set out and applied consistently. Member States should put in place adequate measures to ensure, for example, that the performance of installed, replaced or updated technical building systems is documented in view of building certification and compliance checking.	(16) To meet the objectives of energy efficiency policy for buildings, the transparency of EPCs should be improved by ensuring that all necessary parameters for calculations, for both certification and minimum energy performance requirements, are set out and applied consistently. Member States should put in place adequate measures to ensure, for example, that the performance of installed, replaced or updated technical building systems is documented in view of building certification and compliance checking. With a view to ensure a well-functioning EPC system, the Commission should, in the review process for the evaluation of this Directive, assess the need for further harmonisation of the EPCs.	CA supported by: EPP, S&D, ECR, ALDE, Greens, GUE, EFDD

Recital 17	CA52	
(17) Commission Recommendation (EU) 2016/1318 of 29 July 2016 on nearly zero-energy buildings presented how the implementation of the Directive could simultaneously ensure the transformation of the building stock and the shift to a more sustainable energy supply, which also supports the heating and cooling strategy. To make sure appropriate implementation takes place, the general framework for the calculation of the energy performance of buildings should be updated with the support of the work elaborated by the European Committee for Standardisation (CEN), under Mandate M/480 that was given by the European Commission.	(17) Commission Recommendation (EU) 2016/1318 of 29 July 2016 on nearly zero-energy buildings presented how the implementation of the Directive could simultaneously ensure the transformation of the building stock and the shift to a more sustainable energy supply, which also supports the heating and cooling strategy. To make sure appropriate implementation takes place, the general framework for the calculation of the energy performance of buildings should be updated with the support of the work elaborated by the European Committee for Standardisation (CEN), under Mandate M/480 that was given by the European Commission. Calculations of energy performance of buildings should be applied pursuing the optimal energy performance, in accordance with the principle of “energy efficiency first” and while expressed in a numeric indicator of primary energy use in kWh/(m².y), Member States should supplement this by providing an additional numeric indicator for the entire building’s overall energy needs.	CA supported by: EPP, S&D, ECR, ALDE, Greens, GUE, EFDD

Recital 19	CA53	AMs covered
(19) The objectives of this Directive, namely to reduce the energy needed to meet the energy demand associated with the typical use of buildings, cannot be adequately achieved by the Member States acting alone. The objectives of the Directive can be more effectively ensured by acting at Union level because this guarantees consistency shared objectives, understanding and political drive. Therefore, the Union adopts measures in accordance with the principle of subsidiarity as set out in Article 5 of the Treaty on the European Union. In accordance with the principle of proportionality, as also	(19) The objectives of this Directive, namely to reduce the energy needed to meet the energy demand associated with the typical use of buildings, cannot be adequately achieved by the Member States acting alone. The objectives of the Directive can be more effectively ensured by acting at Union level because this guarantees consistency shared objectives, understanding and political drive. Therefore, the Union adopts measures in accordance with the principle of subsidiarity as set out in Article 5 of the Treaty on the European Union. In accordance with the principle of proportionality, as also set out in that Article, this Directive does not go beyond what is necessary to achieve those	14 EPP 60 Marias 70 Gambus 197 ALDE 198 EFDD 199 Marcellesi CA supported by: EPP, S&D, ECR, ALDE, Greens, GUE, EFDD

set out in that Article, this Directive does not go beyond what is necessary to achieve those objectives.	objectives. It fully respects the Member States' national specifics and differences and respects competences in accordance with Article 194(2) of the Treaty on the Functioning of the European Union. Further, the objective of this Directive is to allow the sharing of best practices in order to facilitate the transition to highly energy efficient building stock in the European Union.	
-----------------------------------------------------------------------------------------------------------	---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--